Chapter 14
Anger and the Reactive–Proactive Aggression Distinction in Childhood and Adolescence

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Abstract  Years ago, Averill (1982) stressed that all anger does not result in aggression, and that all aggression is not the result of anger. The second half of this idea, that aggression can have other catalysts besides anger, foreshadows the distinction between reactive and proactive aggression. Reactive aggression is defensive, retaliatory, and in response to real or perceived provocation. Proactive aggression, on the other hand, is displayed to reach a goal, whether that goal involves material or territorial gain or social dominance. This chapter will review and critique existing empirical work demonstrating that anger is positively related to reactive aggression, but not proactive aggression, in children and adolescents. Our review will include both questionnaire-based and laboratory-based studies. We will also include a section on the assessment of reactive and proactive aggression, how this assessment is often confounded with the measurement of anger, and ideas for untangling these constructs.

Johnny and Marcus are on the playground at recess. Johnny is shooting baskets, but Marcus really wants Johnny’s basketball so that he can start a game with his friends. Marcus comes up behind Johnny, pushes and trips him, and grabs the ball from his hands when he falls. Johnny gets up, sputtering and red-faced, and lunges at Marcus. Johnny pins Marcus to the ground and hits him hard, completely forgetting about the basketball that rolls away.

This vignette illustrates an important theoretical distinction between two types of aggression, here labeled reactive and proactive. Reactive aggression is defensive, retaliatory, and in response to real or perceived provocation. Proactive aggression, on the other hand, is displayed to reach a goal, whether that goal involves material or territorial gain or social dominance. In the above vignette, Marcus’ goal-oriented aggression would be labeled proactive, whereas Johnny’s retaliatory aggression would be labeled reactive.

Years ago, Averill (1982) stressed that all anger does not result in aggression, and that all aggression is not the result of anger. The second half of this idea, that aggression can have other catalysts besides anger, foreshadows the distinction between reactive and proactive aggression. This distinction has been recognized for decades by researchers of both human and animal aggression. Many different labels have been used to represent the distinction, including hostile/instrumental, affective/predatory, and effectual/ineffectual. However, in all cases, aggression researchers are referring to the same basic phenomenon, that some instances of aggression are driven by defense and retaliation, whereas other instances are for the purpose of achieving a desired goal. Anger is a critical
component of reactive aggression, but proactive aggression is described as unemotional. In this respect, reactive aggression appears closely linked to the aggression-hostility-anger syndrome discussed by Reuter, by Spielberger, and by Williams in this book.

This chapter will review and critique existing empirical work demonstrating that anger is positively related to reactive aggression, but not proactive aggression, in children and adolescents. Our review will include both questionnaire-based and laboratory-based studies. We will also include a section on the assessment of reactive and proactive aggression, how this assessment is often confounded with the measurement of anger, and ideas for untangling these constructs.

14.1 Questionnaire-Based Studies of Anger and Reactive Versus Proactive Aggression

The hypothesis that reactive but not proactive aggression is related to difficulties with anger and its regulation has garnered support across a number of studies (DeCastro, Merk, Koops, Verrman, & Bosch, 2005; Dodge & Coie, 1987; Little, Brauner, Jones, Nock, & Hawley, 2003; Little, Jones, Henrich, & Hawley, 2003; McAuliffe, Hubbard, Rubin, Morrow, & Dearing, 2007; Price & Dodge, 1989; Raine et al., 2006). These studies demonstrated the distinction in a diversity of samples, including elementary-school children (McAuliffe et al., 2007; Price & Dodge, 1989), lower-class African-American boys (Dodge & Coie, 1987), German adolescents (Little, Brauner et al., 2003; Little, Jones et al., 2003), Dutch behavior-disordered boys (DeCastro et al., 2005), and antisocial adolescents (Raine et al., 2006).

Effects were robust even when anger was assessed using a variety of different methodologies. One study used hypothetical vignettes (DeCastro et al., 2005), and several others used peer nominations on items such as “Who gets angry easily?” (Dodge & Coie, 1987; Little, Brauner et al., 2003; Little, Jones et al., 2003; McAuliffe et al., 2007; Price & Dodge, 1989). Finally, a number of studies used children’s self-report on various rating scales (Little, Brauner et al., 2003; Little, Jones et al., 2003; McAuliffe et al., 2007; Raine et al., 2006). The assessment of the subtypes of aggression in these studies is so essential a topic that we devote an entire section to it near the end of this chapter.

In summary, these studies suggest that reactive but not proactive aggression is linked to difficulties with anger and its regulation. However, in all of the studies reviewed above, anger was assessed as a trait through self- or peer report. None of the studies included observational measures of children’s state of anger or measured the physiological arousal that likely accompanies it. We review studies of these issues next.

14.2 Laboratory-Based Studies of Anger and Reactive Versus Proactive Aggression

Theorists use terms such as “hotheaded” to refer to children engaged in reactive aggression and “cold-blooded” to refer to children engaged in proactive aggression. Thus, episodes of reactive aggression are thought to be characterized by high levels of physiological arousal. In contrast, episodes of proactive aggression are consistent with a profile of low physiological arousal (Dodge, 1991; Dodge & Pettit, 2003; Vitaro & Brendgen, 2005).

To date, only one study of the associations between the subtypes of aggression, state anger, and physiological arousal has been published. This is also the only published investigation of the
relations between reactive and proactive aggression and an observational measure of anger. In this project, teacher ratings of reactive and proactive aggression were gathered on 272 second-grade children (Hubbard et al., 2002). In a laboratory procedure, these children then lost a board game to a peer confederate who cheated. Observational data on children’s anger expression and physiological data on their skin conductance reactivity (SCR) were collected during each turn of the game (for review of the psychophysiology of anger, see Stemmle, this book). We found that reactive, but not proactive aggression, was positively related to observed anger expression and SCR. Moreover, these relations held not only when SCR and anger expression were aggregated across the game but also in terms of rate of increase over the time span of the game. That is, children higher in teacher-rated reactive aggression had steeper increases in their SCR and anger expression across the game. These increases were not related to proactive aggression.

Furthermore, over the course of the game, higher levels of teacher-rated reactive aggression were associated with stronger turn-by-turn relations between children’s observed anger and their SCR, although these relations did not vary by children’s level of proactive aggression (Hubbard et al., 2004). Thus, reactive aggression in the classroom was related to a strong moment-by-moment connection between children’s anger expression and their physiological arousal in a laboratory-based peer interaction. These findings point to the importance of understanding more about the connection between children’s anger expression and their online physiological arousal. Some children may have a harder time keeping their physiological arousal from manifesting itself in observable anger (i.e., they have not mastered the display rules for dissembling their angry feelings), and these difficulties may be related to reactive aggression.

More work is clearly needed in several areas. First, the question of whether proactive aggression is characterized by lack of physiological arousal and anger remains open. Second, teacher ratings of classroom-based reactive aggression were related to physiological arousal and observed anger in a laboratory-based peer-provocation situation, but aggression itself was not elicited or measured in the laboratory context. It is important to know more about whether children’s physiological and emotional profiles differ in-the-moment when they are engaging in actual episodes of reactive versus proactive aggression.

We have recently pilot-tested procedures designed to meet these goals (Hubbard et al., 2009). Our sample for this pilot work consisted of 36 fourth- and fifth-grade boys and girls from diverse racial/ethnic groups. Three laboratory tasks all involved computer-based picture exchanges with virtual peers designed to provide an opportunity for participants to display either reactive or proactive aggression. In each task, participants prepared computer art pictures while they believed that a virtual peer was preparing his/her own picture in another room. Each participant took part in all three tasks, with a different virtual peer each time. During the reactive aggression tasks, the participant sent his/her picture to the virtual peer, who both criticized it and spoiled it. (Two reactive tasks were used, one involving low provocation from the virtual peer and one involving high provocation.) The participant then had an opportunity to comment on the virtual peer’s picture and spoil it if he/she chose to do so. The proactive aggression task involved a similar picture exchange. However, in this case, the virtual peer was not provocative (he/she praised the participant’s picture and did not spoil it), but the participant increased his/her chance of winning a chosen prize if he/she spoiled the virtual peer’s picture. Thus, the reactive tasks involved peer provocation but no instrumental gain from aggression, whereas the proactive task involved no peer provocation but clear instrumental gain from aggression.

We examined two hypotheses. First, we hypothesized that children’s aggression would relate positively to their anger expression during the reactive tasks, but not the proactive task. Support for this hypothesis was found across all three tasks. In both the low- and high-provocation reactive tasks, angry verbal intonations were positively correlated with both behavioral reactive aggression (the
amount the participant spoiled the virtual peer’s picture) and verbal reactive aggression. In contrast, as expected, no significant relations between anger and aggression emerged for the proactive task.

Our second hypothesis was that children’s aggression would relate positively to their physiological arousal during the reactive tasks, but that these relations would be negative during the proactive task. Strong support emerged for this hypothesis as well. The higher children’s SCR and heart rate (HR) were in the reactive tasks, the more likely they were to engage in behavioral and verbal aggression during those tasks. Conversely, the lower children’s SCR and HR were in the proactive task, the more likely they were to engage in behavioral and verbal aggression during that task.

These results suggest not only that elevated physiological arousal is a primary mechanism driving reactive aggression, but that proactive aggression is actually marked by a notable absence of physiological arousal. Children with the lowest levels of physiological arousal during the proactive task were the most likely to aggress against the virtual peer in an attempt to improve their chances of winning a desired prize. These data provide the first empirical support of theory suggesting that proactive aggression is literally “cold-blooded,” in that it is displayed when children are particularly calm and unruffled. These findings mirror a larger literature suggesting that conduct problems and psychopathy in children and adolescents are associated with low levels of physiological reactivity (see, for reviews and meta-analyses, Lorber, 2004; Ortiz & Raine, 2004; Scarpa & Raine, 1997). Furthermore, our work suggests that this larger literature may be indexing relations between physiological arousal and children’s proactive aggressive behavior in particular.

In our view, more laboratory-based assessments of the subtypes of aggression and accompanying physiological and emotional processes are needed. Only through such time- and labor-intensive approaches will we deepen our understanding of the way in which anger and physiology differentially accompany and/or drive episodes of children’s reactive and proactive aggression.

14.3 Assessment of Reactive and Proactive Aggression in Children

We turn now to a description and critique of the measurement approaches used throughout these studies, as well as to suggestions for improving our assessment of the subtypes of aggression. In particular, we are concerned by the extent to which existing measures of the subtypes of aggression confound the assessment of reactive aggression with the assessment of anger. Many measures include items intended to index reactive aggression that actually describe anger and not aggressive behavior at all. This confusion between anger and aggression is an issue that has plagued researchers of childhood aggression for decades. In our view, it is critical to remember that all angry feelings do not lead to aggressive actions, that anger is an emotion and aggression is a set of behaviors, and that these two constructs require separate and careful assessment.

14.3.1 The Questionnaire Developed by Dodge and Coie (1987)

Many of the studies reviewed here assessed reactive and proactive aggression using a six-item questionnaire developed by Dodge and Coie in 1987. The rating scale was originally developed for use by teachers, and in five of the ten studies demonstrating relations between anger and reactive aggression, teacher report on this scale was used to assess the subtypes of aggression (DeCastro et al., 2005; Dodge & Coie, 1987; Hubbard et al., 2004; Hubbard et al., 2002; Price & Dodge, 1989). An additional study used the scale as part of an aggregated approach to the assessment of reactive and proactive aggression (McAuliffe et al., 2007); teacher and parent report on the Dodge and Coie
(1987) scale were combined with teacher and parent report on a scale developed by Brown, Atkins, Osborne, and Milmanow (1996), as well as peer nominations.

The Dodge and Coie (1987) scale includes three items indexing reactive aggression: (1) "When this child has been teased or threatened, he/she gets angry easily and strikes back," (2) "This child claims that other children are to blame in a fight and feels like they started the trouble," and (3) "When a peer accidentally hurts this child, such as by bumping into him/her, this child assumes that the peer meant to do it, and then overreacts with anger or fighting." Three other items index proactive aggression: (4) "This child gets other children to gang up on a peer that he/she does not like," (5) "This child uses physical force, or threatens to use force, in order to dominate other children," and (6) "This child threatens or bullies other children in order to get his/her own way."

In many ways, the psychometric properties of the scale are strong: e.g., intrascale correlations and coefficient alphas are high, suggesting strong internal consistency. More impressive were data regarding convergent validity. Observational data on children's reactive and proactive aggression in playgroups over five consecutive days were collected, in addition to teacher ratings of the subtypes of aggression on these six items. Teacher ratings of reactive aggression correlated positively with directly observed reactive aggression, even after teacher ratings of proactive aggression were partialled out; the complementary finding held for proactive aggression. In contrast, the correlations between teacher ratings of each subtype of aggression and observations of the other subtype of aggression were nonsignificant.

However, discriminant validity was weaker. In particular, in the development of the scale, items were retained that had factor loadings of greater than 0.40 on both the reactive and proactive subscales. In addition, in the original study, the eigenvalue of the proactive factor was only 0.74 (by convention, factors with eigenvalues <1.0 can be neglected). Finally, confirmatory factor analyses in three studies have replicated the two-factor structure, with the reactive and proactive items loading onto separate factors. (Fite, Coldor, & Pelham, 2006 [parent report]; Poulin & Boivin, 2000 [teacher and parent report]; Smithmyer, Hubbard, & Simons, 2000 [corrrectional facility staff report]). However, one other study failed to replicate this two-factor structure (Roach & Gross, 2003 [teacher report]).

The most concerning issue, in our view, is that two of the three reactive aggression items explicitly describe anger (#1, #3). This wording is particularly troublesome when this scale is used as a measure of the subtypes of aggression in studies demonstrating relations between reactive aggression and anger, the focus of our review. It is difficult to interpret a finding showing that reactive aggression assessed via the Dodge and Coie (1987) scale is related to anger assessed via another method, when in fact the items in the scale describe anger almost as much as they describe reactive aggression.

This issue is worrisome, because so much of the small literature supporting relations between reactive aggression and anger, including several studies from our own laboratory, is based on the use of this particular questionnaire. The findings that have emerged from these studies, reviewed above, make great theoretical and intuitive sense. However, our faith in these findings would be greatly enhanced if they were replicated with other measures with stronger psychometric properties and wording that avoids reference to anger. We turn now to a description of other such measures.

14.3.2 Other Questionnaire Measures of Reactive and Proactive Aggression

Throughout the years, researchers have attempted to develop other questionnaire measures of the subtypes of aggression, and these measures have been used in a few of the studies reviewed in this chapter. The next measure to emerge was a teacher-rating form by Brown and colleagues (Brown
et al., 1996). The psychometric properties of this scale were somewhat improved over the Dodge and Coie (1987) scale. However, the questionnaire suffered from many of the same difficulties, with several of the reactive aggression items describing anger clearly but never actually mentioning aggressive behavior (e.g., “This child gets mad when he/she doesn’t get his/her way,” “This child gets mad when corrected,” “This child gets mad for no good reason”). In spite of the improved psychometrics, this scale never “caught on” with researchers, who continued to rely on the Dodge and Coie (1987) scale. In fact, only one study reviewed in this chapter utilized this measure in the assessment of the subtypes of aggression (Mauliff et al., 2007).

In the last 5 years, two new self-report measures of reactive and proactive aggression have appeared. However, because they are so newly developed, these questionnaires have not been used in any studies beyond the initial reports of their development, or, in one instance, an additional paper by the same research group. So, time will tell the psychometric strength of these measures and whether they will become commonly used to assess the subtypes of aggression. For now, we will provide a brief overview of each scale’s initial development.

The first measure, developed by Raine and colleagues (Raine et al., 2006), includes 11 items indexing reactive aggression and 12 items indexing proactive aggression. Internal consistency estimates for each subscale were strong, the authors provided compelling evidence that a two-factor model fit the data better than a one-factor model, and they replicated these results across two samples of 16-year-olds. However, concerns with item wording apply to this measure, too. Many of its items do not actually describe aggressive behavior at all, but rather simply anger (e.g., “Reacted angrily when provoked by others,” “Got angry when frustrated,” “Become angry for no reason when you don’t get your way”).

The second adolescent self-report measure, developed by Little and colleagues (Little, Brauner et al., 2003; Little, Jones et al., 2003), is considerably more promising. This measure assesses two forms (overt and relational) and two functions (reactive and proactive) of aggression. Six items assess overt aggression, with no reference to function (e.g., “I’m the kind of person who hits, kicks, or punches others”). Six more items repeat these items, but with the phrase “to get what I want” added, to assess proactive overt aggression. Similarly, six other items repeat the first six items, but this time with phrases such as “When I’m hurt by someone” added to assess reactive overt aggression. The same pattern is followed to create six items each to assess basic relational aggression, proactive relational aggression, and reactive relational aggression. These items were very carefully worded to avoid any mention of anger. To create scores for reactive aggression, reactive overt aggression scores are regressed on to overt aggression scores, and reactive relational aggression scores are regressed on to relational aggression scores; the resulting residuals representing “pure” reactive aggression are then averaged together. The same approach is used to create proactive aggression scores. Little and colleagues collected data on this scale from two large samples of fifth- through tenth-grade German adolescents. In both samples, a model with two forms and two functions of aggression fits the data better than other models, and internal consistency estimates were good. Furthermore, results were replicated across different ages and genders.

Clearly, this scale represents an advance over previous questionnaires, and we are eager to see it used in future studies. However, the fact that the scale has only been developed in a self-report format is a limitation, because it can only be used to assess the subtypes of aggression in older children or adolescents. Little and colleagues claim that only self-report measures are appropriate for determining a behavior’s function, because no one but the individual can know why he/she behaved in a particular way. However, we disagree. Observational studies of the subtypes of aggression suggest that independent observers can reliably agree on the function of aggression (Boivin, Dodge, & Coie, 1995; Dodge & Coie, 1987; Hubbard, Dodge, Gillessen, Coie, & Schwartz, 2001; Price & Dodge, 1989), suggesting that parents, teachers, and peers may be able to do so as well. We consider
the development of new teacher-, parent-, and even peer-report measures of reactive and proactive aggression that follow the format developed by Little and colleagues to be an important next step.

### 14.3.3 Observational or Laboratory-Based Approaches to Measuring Reactive and Proactive Aggression

Finally, two of the studies reviewed here assessed the subtypes of aggression observed in naturally occurring situations or provoked in laboratory paradigms. First, Price, and Dodge (1989) assessed reactive and proactive aggression in kindergarten and first-grade children through observational coding during free play periods at school, as well as with the Dodge and Coie (1987) teacher-rating scale. In this study, peer nominations assessing anger were positively related to both teacher-rated and observational measures of reactive aggression but not to these measures of proactive aggression.

Second, the task recently developed in our laboratory provides children with opportunities to display both reactive and proactive aggression (Hubbard et al., 2008). In this task, participants are given the chance to spoil a virtual peer’s picture, sometimes for instrumental gain and sometimes in response to provocation. Behavior-based measures of reactive and proactive aggression (the amount the participant spoils the picture) as well as observationally coded measures of verbal reactive and proactive aggression are collected. In our pilot work, both of these measures of reactive aggression were positively related to observationally coded anger expression and to physiological arousal.

The findings from these observational or laboratory-based studies are important, as are the findings from the investigations by Little and colleagues. Above, we outlined serious concerns about the confounding of anger and reactive aggression in most questionnaire measures of aggression subtypes. Given these concerns, it is difficult to feel sure of the validity of studies demonstrating positive relations between reactive aggression and anger or physiological arousal that have used these questionnaire measures. However, when the subtypes of aggression are assessed using Little and colleagues’ measure, in which confounds with anger were carefully avoided, and comparable results emerge, our faith in their validity is greatly enhanced. Studies using observational or laboratory-based approaches to assess the subtypes of aggression provide even further replication and increased credibility.

### 14.4 In Conclusion

Throughout this review, we have suggested several future directions for researchers of reactive aggression and anger in children to consider. Most important were two recommendations. First, we need more time- and labor-intensive observational and laboratory-based investigations into the subtypes of aggression and anger. Second, we need theoretically derived and psychometrically strong measures of reactive and proactive aggression in children, measures that do not confound reactive aggression with anger. Little and colleagues have paved the way in this regard, but development of teacher-, parent-, and peer-report measures that follow their lead are much needed.

Yet, even with all that we still have to do, we are encouraged by all that we have learned thus far. Credible evidence is growing to suggest that reactive aggression is associated with and/or driven by anger and physiological arousal, but that proactive aggression is marked by a lack of anger and arousal. These findings may seem commonsensical and simply in logical keeping with theory. As our review suggests, though, conducting rigorous research to back up this theory is actually quite challenging. We are making progress, and we will continue to do so, particularly if researchers undertake projects aimed at the goals described above. As evidence grows that reactive aggression
and proactive aggression are driven by very different emotional and physiological processes, our understanding of the nature of childhood aggression will grow as well.

References


