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Social-Cognitive Processes Related to Risk for Aggression in Adolescents

Tania Bartolo, Maya Peled, & Marlene M. Moretti

The relationship between childhood maltreatment and the development of aggression and delinquency is well established,¹ with a large proportion of those experiencing physical abuse in childhood showing increased rates of aggression during childhood and involvement in violent crime during adolescence, which persists into adulthood.² Despite the well established relationship between child maltreatment and the emergence of aggressive and violent behaviors in children and youth, the mechanisms underlying this effect are not well understood. In part this reflects the focus of research over the past several decades on documenting specific forms of maltreatment, timing of maltreatment, and specific emotional and behavioral outcomes in children and youth. Understanding the social-cognitive processes that underlie aggressive behavior is critical in designing prevention and risk reduction programs.

In this paper we summarize findings from the Gender and Aggression Project (GAP) on two social-cognitive processes that are central to the development of aggressive and violent behavior: rejection sensitivity and anger rumination. Each risk factor will be defined in detail, previous research will be briefly summarized, and key findings from our research will be presented. The relevance of these constructs to the judicial system is also discussed with special reference to how understanding social-cognitive processes that underlie aggression can assist in guiding sentencing and rehabilitation decisions. Gaps in the current research are noted as well as areas for future research.

REJECTION SENSITIVITY AND RUMINATION

WHAT IS REJECTION SENSITIVITY?

Rejection sensitivity (RS) is the disposition to defensively expect, readily perceive, and overreact to perceived rejection by others.³ The RS model proposes that severe and prolonged rejection in early childhood leads to the development of expectations of rejection from others. When even minimal cues of rejection are encountered in individuals high in RS they activate what has been referred to as a “defensive motivational system.”⁴ In this state of threat, such individuals will interpret ambiguous or even slightly negative information as highly rejecting. This bias to expect and perceive rejection results in a range of maladaptive behaviors, which negatively affect the individual’s interpersonal functioning. Perceived rejection has been found to result in two different (but not mutually exclusive) responses—anxiety and anger. It has been proposed that angry expectations of rejection result in externalizing behaviors such as aggression, hostility, and delinquent acts in response to mild or ambiguous threat. Anxious expectations of rejection, in contrast, result in internalizing symptoms such as depression and social withdrawal.⁵ Of most interest to our current discussion, however, is the association between RS and aggressive and delinquent behavior. Previous research has shown that individuals high in RS respond to rejection with increased aggression,⁶ hostile thoughts and actions⁷ as well as violence against romantic partners.⁸ What is most problematic is that while those high in RS use these behaviors as a means to protect against or avoid possible rejection,⁹ they instead elicit and exacerbate

Footnotes

1. Kenneth A. Dodge, Gregory S. Petit & John E. Bates, *How the Experience of Early Physical Abuse Leads Children to Become Chronically Aggressive*, in DEVELOPMENTAL PERSPECTIVES IN TRAUMA: THEORY, RESEARCH, AND INTERVENTION: ROCHESTER SYMPOSIUM ON DEVELOPMENTAL PSYCHOLOGY 263-288 (Dante Cicchetti & Sheree L. Toth eds., 1997); Carolyn Smith & Terence P. Thornberry, *The Relationship Between Childhood Maltreatment and Adolescent Involvement in Delinquency*, 33 CRIMINOLOGY 451 (1995); Cathy S. Widom, *Does Violence Beget Violence? A Critical Examination of the Literature*, 106 PSYCHOL. BULL. 3 (1989); Cathy S. Widom, *Child Victims: Searching for Opportunities to Break the Cycle of Violence*, 7 APPLIED & PREVENTATIVE PSYCHOL. 225 (1998).
2. Ariana E. Wall & Richard P. Barth, *Aggressive and Delinquent Behavior of Maltreated Adolescents: Risk Factors and Gender Differences*, 8 STRESS, TRAUMA, & CRISIS 1 (2005).
3. Geraldine Downey, Scott Feldman & Ozlem Ayduk, *Rejection Sensitivity and Male Violence in Romantic Relationships*, 7 PERS. RELATIONSHIPS 45 (2000).
4. Geraldine Downey, Vivian Mougios, Ozlem Ayduk, Bonita E. London & Yuichi Shoda, *Rejection Sensitivity and the Defensive Motivational System*, 15 PSYCHOL. SCI. 668 (2004).
5. Bonita London, Geraldine Downey, Cheryl Bonica & Iris Paltin, *Social Causes and Consequences of Rejection Sensitivity*, 17 J. RES. ON ADOLESCENCE 481 (2007).
6. Ozlem Ayduk, Anett Gyurak & Anna Luerssen, *Individual Differences in the Rejection-Aggression Link in the Hot Sauce Paradigm: The Case of Rejection Sensitivity*, 44 J. EXPERIMENTAL SOC. PSYCHOL. 775 (2008).
7. Ozlem Ayduk, Geraldine Downey, Alessandra Testa, Ying Yen & Yuichi Shoda, *Does Rejection Elicit Hostility in Rejection Sensitive Women?* 17 SOC. COGNITION 245 (1999).
8. Downey, Feldman & Ayduk, *supra* note 3.
9. Valerie Purdie & Geraldine Downey, *Rejection Sensitivity and Adolescent Girls’ Vulnerability to Relationship-Centered Difficulties*, 5 CHILD MALTREATMENT 338 (2000).

interpersonal rejection. Hence, what they fear and wish to avoid is intensified through their maladaptive beliefs and consequent aggressive actions. This creates a vicious cycle as beliefs of rejection are reinforced once the hostile and aggressive actions elicit actual rejection.¹⁰ This in turn affirms and deepens their maladaptive beliefs and thereby limits opportunities for change. In sum, the cognitive-behavior-interpersonal sequence becomes entrenched and reflexive, making attempts to break free from the cycle extremely difficult.

WHAT IS RUMINATION?

Rumination is a maladaptive cognitive process involving repetitive thoughts that are intrusive and aversive. Sadness rumination, or thinking repeatedly about one's feelings of sadness, has been studied extensively and has been found to intensify symptoms of depression.¹¹ Anger rumination refers to thinking repeatedly about one's angry feelings and is associated with increased anger as well as increased overt and relational aggression.¹² This increased anger is fueled by persistent thoughts about past events that made the individual angry as well as by repeated thoughts of revenge against the perceived perpetrator.¹³ Individuals who engage in anger rumination are more likely than others to retaliate aggressively after being provoked,¹⁴ and may even direct their aggression toward innocent targets.¹⁵ Anger rumination can therefore be a risk factor for acting aggressively and can contribute to young people's engagement in violent criminal behavior. Rumination on anger might influence developmental pathways by "locking in" dysfunctional patterns of thoughts, feelings, and behaviors. For example, such individuals may find it difficult to focus on other, likely more adaptive thoughts as they become absorbed in their angry feelings. As a result, adolescents who engage in high levels of anger rumination may be at heightened risk for chronically poor adjustment, including violence and aggression. Therefore, studying rumination in adolescence offers an opportunity to better understand how cognitions and emotions unfold developmentally and how they may contribute to health risk or criminal behaviors.

WHY ARE SOME YOUTH PRONE TO REJECTION SENSITIVITY?

Numerous studies show that child maltreatment places children and youth at risk for rejection sensitivity. This is consistent with the original theoretical conceptualization of RS as stemming from early childhood maltreatment and neglect from primary caregivers.¹⁶ According to this view, repeated rejection and neglect from those closest to the child are especially detrimental early in life as they shape the ways in which children understand and approach future relationships. These early relationships with caregivers form what is referred to as an "internal working model," which directs how information is encoded and interpreted and how individuals interact within their environment.¹⁷ When caregivers are consistent and respond to the needs of their child in a positive and supportive way the child develops a secure model of relationships. Such a child comes to expect acceptance and support from others. When caregivers respond to their child's needs with rejection or neglect, the child instead develops an insecure model for subsequent relationships. These children become highly sensitive to interpersonal rejection and often develop exaggerated and maladaptive interpersonal strategies.¹⁸ For example, they may attempt to force and coerce others into meeting their needs through aggressive acts and respond strongly to even the mildest evidence of rejection. Alternatively, they may threaten to harm themselves to capture and control the attention of others. Studies have confirmed that parental emotional neglect¹⁹ and exposure to family violence²⁰ during childhood increase defensive expectations of rejection in youth and young adults.

[R]epeated rejection and neglect from those closest to the child are especially detrimental early in life as they shape the ways in which children understand and approach future relationships.

10. Geraldine Downey, Lauren Irwin, Melissa Ramsay & Ozlem Ayduk, *Rejection Sensitivity and Girls' Aggression*, in *GIRLS AND AGGRESSION: CONTRIBUTING FACTORS AND INTERVENTION PRINCIPLES* 7 (Marlene M. Moretti, Candice L. Odgers & Margaret A. Jackson eds., 2004).
11. Jannay Morrow & Susan Nolen-Hoeksema, *Effects of Responses to Depression on the Remediation of Depressive Affect*, 58 *J. PERSONALITY & SOC. PSYCHOL.* 519 (1990).
12. Overt aggression refers to direct behaviors intended to hurt others, including insults, threats, and physical abuse. Relational aggression refers to indirect, socially based behaviors intended to harm others, such as spreading rumors or ostracizing individuals from social groups. See Brad J. Bushman, Angelica M. Bonacci, William C. Pedersen, Eduardo A. Vasquez & Norman Miller, *Chewing on It Can Chew You Up: Effects of Rumination on Triggered Displaced Aggression*, 88 *J. PERSONALITY & SOC. PSYCHOL.* 969 (2005); Denis G. Sukhodolsky, Arthur Golub & Erin N. Cromwell, *Development and Validation of the Anger Rumination Scale*, 31 *PERSONALITY & INDIVIDUAL DIFFERENCES* 689 (2001).
13. Bushman, Bonacci, Pedersen, Vasquez & Miller, *supra* note 12.
14. Katrina Collins & Robert Bell, *Personality and Aggression: The*

- Dissipation-Rumination Scale*, 22 *PERSONALITY & INDIVIDUAL DIFFERENCES* 751 (1997); Gian V. Caprara, *Indicators of Aggression: The Dissipation-Rumination Scale*, 7 *PERSONALITY & INDIVIDUAL DIFFERENCES* 763 (1986).
15. Bushman, Bonacci, Pedersen, Vasquez & Miller, *supra* note 12.
16. Scott I. Feldman & Geraldine Downey, *Rejection Sensitivity as a Mediator of the Impact of Childhood Exposure to Family Violence on Adult Attachment Behavior*, 6 *DEV. & PSYCHOPATHOLOGY* 231 (1994).
17. JOHN BOWLBY, *ATTACHMENT AND LOSS: VOLUME I: ATTACHMENT* (1969).
18. Geraldine Downey & Scott I. Feldman, *Implications of Rejection Sensitivity for Intimate Relationships*, 70 *J. PERSONALITY & SOC. PSYCHOL.* 1327 (1996).
19. Geraldine Downey, Hala Khouri & Scott I. Feldman, *Early Interpersonal Trauma and Adult Adjustment: The Medial Role of Rejection Sensitivity*, in *ROCHESTER SYMPOSIUM ON DEVELOPMENTAL PSYCHOPATHOLOGY, VOLUME VIII: THE EFFECTS OF TRAUMA ON THE DEVELOPMENTAL PROCESS* 85 (Dante Cicchetti & Sheree L. Toth eds., 1997).
20. Feldman & Downey, *supra* note 16.

Like rejection sensitivity, retrospective research on sadness rumination suggests emotional maltreatment in childhood is a risk factor.

Rejection in the form of harsh parenting practices predicts increases in expectations of rejection in school-aged children over time.²¹ These defensive expectations in turn promote incorrect perceptions of rejection in ambiguous situations, and result in maladaptive reactions such as aggressive behavior. In sum, children who experience maltreatment

are more prone to RS because maltreatment increases RS—a defensive encoding and maladaptive interpretation of interpersonal information. Once established, RS gives rise to a range of problematic interpersonal behavior, including aggression and violence, which in turn precipitate precisely what is most feared—rejection and abandonment.

WHY ARE SOME YOUTH PRONE TO RUMINATION?

Less research is available on the causes of rumination. Some studies have examined possible developmental antecedents of sadness rumination but none have focused on precursors to anger rumination. Like rejection sensitivity, retrospective research on sadness rumination suggests emotional maltreatment in childhood is a risk factor. Individuals who engage in high compared to low levels of sadness rumination report experiencing greater parental emotional abuse or rejection (low levels of emotional warmth and acceptance) and greater parental criticism and blame about stressful life events.²² Children who experience emotional abuse or neglect often develop negative views of themselves and others, and come to believe that sharing their feelings with others is unacceptable, unsafe, or an ineffective way of regulating their emotions. Over time these children may develop a tendency to ruminate rather than turn to others for comfort and assistance in dealing constructively with their frustrations. Not only is there a link between emotional maltreatment in childhood and later rumination, but sadness rumination has also been found to be the mechanism or mediator through which emotional maltreatment leads to depression.²³ Similar associations have been found between sexual abuse and sadness rumination in relation to depression.²⁴

The development of anger rumination, and its role in predicting maladaptive conditions, is likely similar to that of sadness rumination. Specifically, childhood emotional and sexual abuse could serve as a “breeding ground”²⁵ for the development of both anger rumination and sadness rumination, and in turn be risk factors for adolescent aggression and depression. Other forms of child maltreatment may play a central role, such as childhood physical abuse or neglect, which have been found to be risk factors for later aggression and delinquency.²⁶ Research is needed on the antecedents of anger rumination and its role in predicting violence and aggression in adolescence. In sum, children exposed to maltreatment are more prone to rumination, which in turn increases risk for depression and aggression. Prospective longitudinal studies that follow individuals from childhood would help to elucidate the roots of anger rumination and its impact on the persistence of problems during adolescence and beyond.

**FINDINGS FROM THE GENDER AND AGGRESSION PROJECT
WAS REJECTION SENSITIVITY RELATED TO AGGRESSION AMONG HIGH-RISK ADOLESCENT GIRLS AND BOYS?**

Rejection sensitivity in high-risk youth has been examined in several Gender and Aggression Project studies, both within the Virginia and Vancouver sites. The relationship between angry expectations of rejection and interpersonal aggression in a sample of incarcerated girls was the focus of one such investigation at the Virginia site. These angry expectations were found to significantly predict physical aggression toward both friends and romantic partners. Victimization in the form of maternal psychological abuse was also found to predict interpersonal aggression in this sample, supporting previous research showing an association between maltreatment and subsequent aggressive behavior. Most importantly, however, angry expectations of rejection were found to predict an additional 10% of the variation in the girls’ interpersonal aggression after controlling for three forms of victimization (maternal physical abuse, maternal psychological abuse, and exposure to maternal domestic abuse). Angry expectations of rejection were also found to partially mediate the relationship between victimization (in the form of witnessing maternal domestic abuse) and interpersonal aggression.

21. Purdie & Downey, *supra* note 9.

22. Lauren B. Alloy, Lyn Y. Abramson, Nancy A. Tashman, Dena S. Berrebbi, Michael E. Hogan, Wayne G. Whitehouse, Alisa G. Crossfield & Antonia Morocco, *Developmental Origins of Cognitive Vulnerability to Depression: Parenting, Cognitive, and Inferential Feedback Styles of the Parents of Individuals at High and Low Cognitive Risk for Depression*, 25 COGNITIVE THERAPY & RES. 397 (2001); Judy Garber & Cynthia Flynn, *Predictors of Depressive Cognitions in Young Adolescents*, 25 COGNITIVE THERAPY & RES. 353 (2001); Filip Raes & Dirk Hermans, *On the Mediating Role of Subtypes of Rumination in the Relationship Between Childhood Emotional Abuse and Depressed Mood: Brooding Versus Reflection*, 25 DEPRESSION & ANXIETY 1067 (2008).

23. Raes & Hermans, *supra* note 22.

24. Michael Conway, Morris Mendelson, Constantina Giannopoulos, Patricia A.R. Csank & Susan L. Holm, *Childhood and Adult Sexual Abuse, Rumination on Sadness, and Dysphoria*, 28 CHILD ABUSE & NEGLECT 393 (2004).

25. Alloy, Abramson, Tashman, Berrebbi, Hogan, Whitehouse, Crossfield & Morocco, *supra* note 22.

26. Jonathan B. Kotch, Terri Lewis, Jon M. Hussey, Diana English, Richard Thompson, Alan J. Litrownik, Desmond K. Runyan, Shrikant I. Bangdiwala, Benyamin Margolis & Howard Dubowitz, *Importance of Early Neglect for Childhood Aggression*, 121 PEDIATRICS 725 (2008); Magda Stouthamer-Loeber, Rolf Loeber, D. Lynn Homish & Evelyn Wei, *Maltreatment of Boys and the Development of Disruptive and Delinquent Behavior*, 13 DEV. & PSYCHOPATHOLOGY 941 (2001).

sion.²⁷ These findings clearly indicate that angry expectations of rejection are an important mechanism in the expression of aggression in high-risk females. In addition, they provide support for the role of maltreatment in the development of RS.

Furthermore, angry expectations of rejection were associated with higher rates of offenses as well as several forms of self-reported aggression (including overt, relational, reactive,²⁸ and instrumental aggression). What is most interesting is that this association between angry expectations and aggressive behavior was still found two years later after females were released and living in the community.²⁹ This therefore suggests that the association between angry expectations of rejection and aggression not only is significant but remains quite stable in high-risk girls. Moreover, the influence of these angry expectations on aggression appears to be maintained across contexts (in this case, while incarcerated and in a community setting).

Results from the Virginia site also indicate that RS may be related to the broader spectrum of mental health issues among justice-involved girls. Both anxious and angry expectations of rejection were found to be concurrently associated with higher levels of self-reported anxiety as well as a higher likelihood of the presence of generalized anxiety disorder and/or major depression at 16 years of age.³⁰ These anxious and angry expectations of rejection remained associated with higher levels of self-reported anxiety even after the girls had been living in the community for a period of over a year. This suggests that RS serves as an important social-cognitive mechanism in the development and maintenance of both internalizing and externalizing behaviors across contexts.³¹ In addition to its association with anxiety and depression, angry expectations of rejection at age 17 were also found to predict increases in borderline personality³² traits at age 19 in this sample,³³ even after controlling for initial levels of symptoms at age 17.

Previous research has shown that aggressive and/or delinquent adolescent females are at risk for a number of poor health outcomes later in life,³⁴ and RS may serve to further

exacerbate this susceptibility. As such, the potential impact of RS on health outcomes was investigated in this group of incarcerated females.³⁵ In agreement with previous research, aggression in adolescence was found to predict higher levels of mental health impairment, physical health risk, and personal victimization at age 19. More importantly, however, angry expectations of rejection were found to moderate the association between aggression in mid-adolescence and later health outcomes, with a stronger association found between adolescent aggression and poorer health outcomes in females high in angry expectations. These findings suggest that the presence of high levels of RS in high-risk girls may signal a poor prognosis not only for their interpersonal functioning but for their mental and physical health as well. It may be the case that the deficits in interpersonal functioning associated with high levels of RS result in maladaptive relationships and inadequate social support, which creates a heightened sensitivity to mental health issues. RS, therefore, does more than predict and maintain problem behavior; it also serves to negatively impact the health and quality of life of these young women.

Findings from the Gender and Aggression Project clearly implicate RS in the development and maintenance of aggression and adverse health outcomes in high-risk girls. The question that remains, however, is whether RS increases risk similarly among high-risk girls and boys. As aggression in females is more often found to be directed to those closest to them,³⁶ which is not always the case in males, one would predict that RS (which adversely affects interpersonal functioning) would affect girls' outcomes to a greater extent than boys'. Several studies conducted at the Vancouver site focused on determining whether such sex-specific differences in behaviors associated with RS were present in high-risk

[A]ngry expectations of rejection were associated with higher rates of offenses as well as several forms of self-reported aggression...

27. Emily G. Marston, Preeti Chauhan & N. Dickon Reppucci, Investigating the Impact of Rejection Sensitivity in a Sample of Incarcerated Girls, Poster Presented at the Annual Meeting of the American Psychology-Law Society, St. Petersburg, FL (March 2006).

28. Reactive aggression refers to aggression that occurs as an angry defensive response to provocation from others. Instrumental aggression (also referred to as proactive aggression) is aggression that occurs deliberately and in anticipation of self-serving outcomes. See Todd D. Little, Christopher C. Henrich, Stephanie M. Jones & Patricia H. Hawley, *Disentangling the "Whys" from the "Whats" of Aggressive Behavior*, 27 INT'L J. BEHAV. DEV. 122 (2003).

29. Emily G. Marston, Rejection Sensitivity in Normative and High Risk Adolescent Girls: Associations with Internalizing and Externalizing Problems (May, 2007) (unpublished Master's thesis, University of Virginia) (on file with authors).

30. Marston, *supra* note 29.

31. *Id.*

32. Borderline personality symptoms involve instability in interper-

sonal relationships, unstable mood, impulsivity, and recurrent self-harm behaviors. See PSYCHIATRIC ASS'N, DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS (4th ed. 2000).

33. Emily G. Marston, Mandi L. Burnette & N. Dickon Reppucci, Borderline Traits, Rejection Sensitivity and Interpersonal Aggression in Highly Aggressive Females, Talk Presented at the Biennial Meeting of the Society for Research in Child Development, Denver, CO (April 2009).

34. Anna M. Bardone, Terrie E. Moffitt, Avshalom Caspi, Nigel Dickson, Warren R. Stanton & Phil A. Silva, *Adult Physical Health Outcomes of Adolescent Girls with Conduct Disorder, Depression, and Anxiety*, 37 J. AM. ACAD. CHILD & ADOLESCENT PSYCHIATRY 594 (1998).

35. Emily G. Marston, Candic Odgers, N. Dickon Reppucci & Marlene M. Moretti, Health Outcomes for High Risk Girls Transitioning to Adulthood, Talk Presented at the Annual Meeting of the American Psychology-Law Society, San Antonio, TX (March 2009).

36. Downey, Irwin, Ramsay & Ayduk, *supra* note 10.

Anger rumination (controlling for sadness rumination) was uniquely related to anger, relational aggression and overt aggression.

adolescents. Consistent with findings from the Virginia site, angry expectations of rejection were found to be related to both overt and relational aggression in females; this finding, however, did not emerge for males, as neither angry nor anxious expectations of rejection were predictive of either form of aggression.³⁷

Sex-specific relationships were also observed in these adolescents when examining the role of both angry and anxious expectations of rejection in the association between childhood maltreatment and later aggressive behavior. Maltreatment (maternal and paternal) was found to predict both overt and relational aggression in males, but a similar association was not present in females. With regards to the role of RS, sex-specific interactions between levels of RS and a history of maltreatment were also found in this sample. In girls, those with high levels of anxious expectations of rejection who reported a history of maltreatment were found to have increased levels of both overt and relational aggression compared to girls with lower levels of anxious expectations.³⁸ This interaction between anxious expectations of rejection and a history of maltreatment was not found to be predictive of either form of aggression in boys. Among these males, those high in angry expectations of rejection with a history of maltreatment were found to engage in higher levels of relational aggression than those low in angry expectations. Angry expectations of rejection and a history of maltreatment did not predict either form of aggression in girls.

Gender differences were also found to play a role in the relationship between attachment and aggression.³⁹ Girls but not boys with high levels of RS displayed higher levels of anxiety about attachment relationships. High-risk boys, on the other hand, displayed higher levels of avoidance of attachment relationships and this avoidance was related to

aggression directed toward their romantic partners. Most importantly, angry expectations of rejection were found to play a role in the association between anxiety about attachment relationships and aggressive behavior specifically in these high-risk girls. High levels of angry expectations in girls who had attachment anxiety significantly predicted higher levels of aggression toward romantic partners. This finding is consistent with previous research on the role of RS in adolescent girls,⁴⁰ suggesting that girls who have anxious attachment styles in their relationships with others respond aggressively when they feel threatened with rejection.

In sum, findings from both the Virginia and Vancouver GAP sites, in combination with previous research, confirm the role of RS in aggression among high-risk girls. Evidence for the role of RS in aggression among high-risk boys was less robust yet still present. Other studies provide stronger evidence that RS is important among males; for example, RS was found to be related to intimate partner violence in males specifically.⁴¹ Thus, it is important to recognize that RS influences high-risk girls and boys but these effects appear to be somewhat different. Further research on sex differences in RS is required, especially within high-risk groups.

WAS RUMINATION RELATED TO AGGRESSION AMONG HIGH-RISK ADOLESCENT GIRLS AND BOYS?

Rumination among high-risk youth was also investigated as part of the GAP (Vancouver site).⁴² Anger rumination (controlling for sadness rumination) was uniquely related to anger, relational aggression, and overt aggression. These results are consistent with previous research on adults demonstrating a link between anger rumination and anger,⁴³ and anger rumination and aggression.⁴⁴ Our results confirm that anger rumination operates similarly in adolescents and adults and is specifically and distinctly (i.e., controlling for and separate from sadness rumination) related to overt and relational forms of aggression.

Not only did anger rumination predict both relational and overt aggression, but this association was independent of anger. In other words, the cognitive act of repeatedly think-

37. Tania Bartolo, Ruth Coupland & Marlene M. Moretti, Examining the Relationship Between Rejection Sensitivity and Psychopathy in At-Risk Male and Female Adolescents, poster presented at the Banff XLI International Conference on Behavioural Science, Psychopathic Traits in Youth: Research and Practice, Banff, AB (March 2009).

38. Tania Bartolo & Marlene M. Moretti, Examining the Relationship Between Childhood Maltreatment and Adolescent Aggression: The Role of Rejection Sensitivity, in *Childhood Maltreatment: Associations with Personality, Interpersonal and Behaviour Problems in Justice-Involved Adolescent Girls*, paper presented as part of Symposium, Childhood Maltreatment: Associations with Personality, Interpersonal and Behavior Problems in Justice-Involved Adolescent Girls, American Psychology-Law Society Annual Conference, Vancouver, BC (March 2010).

39. Ingrid Obsuth, Marlene M. Moretti & Andree Steiger, The Role of Rejection Sensitivity in the Relations Between Attachment and Aggression in High Risk Boys and Girls, talk presented at the Biennial Meeting of the Society for Research in Child

Development, Denver, CO (April 2009).

40. Downey, Irwin, Ramsay & Ayduk, *supra* note 10.

41. Downey, Feldman & Ayduk, *supra* note 3.

42. Maya Peled & Marlene M. Moretti, *Rumination on Anger and Sadness in Adolescence: Fueling of Fury and Deepening of Despair*, 36 J. CLINICAL CHILD & ADOLESCENT PSYCHOL. 66 (2007).

43. Brad J. Bushman, *Does Venting Anger Feed or Extinguish the Flame? Catharsis, Rumination, Distraction, Anger, and Aggressive Responding*, 28 PERSONALITY & SOC. PSYCHOL. BULL. 724 (2002); Cheryl L. Rusting & Susan Nolen-Hoeksema, *Regulating Responses to Anger: Effects of Rumination and Distraction on Angry Mood*, 74 J. PERSONALITY & SOC. PSYCHOL. 790 (1998).

44. Jon P. Maxwell, *Anger Rumination: An Antecedent of Athlete Aggression?* 5 PSYCHOL. SPORT & EXERCISE 279 (2004); Maya Peled & Marlene M. Moretti, *Ruminating on Rumination: Are Rumination on Anger and Sadness Differentially Related to Aggression and Depressed Mood?* 32 J. PSYCHOPATHOLOGY & BEHAV. ASSESSMENT 108 (2009).

ing about one's angry thoughts has a direct relation with aggression, independent of whether one *feels* angry. This is important because it suggests that interventions must focus not only on reducing and controlling feelings of anger (the emotional component) but also on identifying and exiting rumination cycles (i.e., the cognitive component). Mindfulness-based cognitive therapy (MBCT)⁴⁵ has shown promising results in reducing sadness rumination and depressive relapses, and it might be useful to evaluate whether this approach could help to decrease anger rumination, anger, and aggression.

We also found that sadness rumination (controlling for anger rumination) uniquely predicted depression, which replicated previous research on rumination and depression in adolescence⁴⁶ and confirmed previous findings in the adult literature on the unique relation between sadness rumination (and not anger rumination) and depressive symptoms. Interestingly, our results showed that among youth with the same levels of anger rumination, those with higher levels of sadness rumination appear *less* at risk of acting aggressively. In this sense, the presence of depressive rumination may be a buffer against aggressive acting out.

Important differences between girls and boys emerged in our study. First, the at-risk adolescent girls reported more anger rumination compared to boys, a finding that is different from studies with adults where levels have been generally comparable.⁴⁷ It is not clear if our findings reflect differences in clinical versus normative samples, or whether they are due to development shifts whereby anger rumination is particularly elevated during adolescence for girls compared to boys. Future studies assessing clinical and normative adolescent samples will be valuable for determining the comparability of results in these two populations. Similar research with clinical adult populations with defining features of anger and aggression, such as adults in forensic facilities, would be useful for determining whether women in these settings demonstrate higher levels of anger rumination compared to men.

SOCIAL-COGNITIVE RISK AND THE JUSTICE SYSTEM

We have presented an array of findings that demonstrate how dysfunctional interpersonal expectations and the inability to inhibit repetitive dysfunctional thought patterns increase risk for aggressive behavior and various types of psychopathology both concurrently and prospectively. We have also shown that child maltreatment places children at risk for developing these interpersonal expectations. Girls seem partic-

ularly sensitive to the effects of dysfunctional interpersonal beliefs and expectations and, compared to boys, these processes are more likely to increase their aggressiveness within relationships.

It is critical to recognize that social-cognitive processes generally operate automatically and without awareness. These processes are unintended and often extraordinarily difficult to inhibit. Thus, for example, girls who quickly perceive and react to interpersonal threat with aggression, and who are unable to stop ruminating on such events, are not doing so with purpose or intention. Such experiences are typically deeply distressing and compromise the ability of individuals to cope with other day-to-day demands. This is likely particularly problematic during adolescence as the capacity for planning, anticipation of outcomes, and inhibition is less well developed than in adulthood.⁴⁸

How does this relate to the juvenile judicial system? First, the question of intention is critical in determining sentencing. One might argue, as others have,⁴⁹ that adolescence is a period of reduced responsibility by virtue of neuro-psychological immaturity. This immaturity is most likely more pronounced among girls who have experienced maltreatment and have developed a sensitivity and tendency to react strongly and aggressively to interpersonal threat. Even though they may fully understand that their actions are wrong their competence in translating this into behavioral control likely falls short. Such factors should be taken into consideration in reaching conclusions about their intent and their capacity to have acted otherwise.

Adolescence is a period of change and rapid development. As adolescents move toward adulthood their capacity to be aware of and inhibit their emotional reactions to interpersonal stress increases, as does their ability to regulate thought processes and behavior. We also know that beliefs and expectations about interpersonal relationships are greatly influenced by experience. Downey and others⁵⁰ have described this as a dynamic process, whereby positive interpersonal experiences alter expectations and reactions to interpersonal

Social-cognitive processes generally operate automatically and without awareness. These processes are unintended and often extraordinarily difficult to inhibit.

45. Patricia C. Broderick, *Mindfulness and Coping with Dysphoric Mood: Contrasts with Rumination and Distraction*, 29 COGNITIVE THERAPY & RES. 501 (2005); S. Helen Ma & John D. Teasdale, *Mindfulness-Based Cognitive Therapy for Depression: Replication and Exploration of Differential Relapse Prevention Effects*, 72 J. CONSULTING & CLINICAL PSYCHOL. 31 (2004).

46. Rebecca J. Park, Ian M. Goodyear & John D. Teasdale, *Effects of Induced Rumination and Distraction on Mood and Overgeneral Autobiographical Memory in Adolescent Major Depressive Disorder and Controls*, 45 J. CHILD PSYCHOL. & PSYCHIATRY 996 (2004); Jennifer S. Silk, Laurence Steinberg & Amanda S. Morris,

Adolescents' Emotion Regulation in Daily Life: Links to Depressive Symptoms and Problem Behavior, 74 CHILD DEV. 1869 (2003).

47. Sukhodolsky, Golub & Cromwell, *supra* note 12.

48. Marlene Moretti & Maya Peled, *Adolescent-Parent Attachment: Bonds that Support Healthy Development*, 9 PAEDIATRICS & CHILD HEALTH 551 (2004); Peled & Moretti, *supra* note 42.

49. Laurence Steinberg & Elizabeth S. Scott, *Less Guilty by Reason of Adolescence: Developmental Immaturity, Diminished Responsibility, and the Juvenile Death Penalty*, 58 AM. PSYCHOL. 1009 (2003).

50. Downey, Irwin, Ramsay & Ayduk, *supra* note 10.

situations. As a result, intervention can be extremely productive in reducing risk especially if treatment focuses on how girls perceive and react to their experiences with others. Building self-regulatory and social skills will also help girls who are at risk for aggressive behavior to approach relationships with less anxiety and anger, and to respond more positively to new social opportunities. Likewise, effective treatment for rumination, such as cognitive behavior therapy, can assist them in breaking free of maladaptive thinking and in reducing distress, thereby lowering their risk for aggression.

Our findings and those of others clearly have relevance for sentencing and treatment recommendations. Assessment of these risk factors can play a significant role in informing the courts and those involved in treatment delivery.



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