

**Does Attachment in Infancy Predict
Aggression in Middle Childhood?**

by

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ABSTRACT

Children with insecure or disorganized attachments are at an increased risk for later internalizing and externalizing behavior problems, including aggression. The goal of this study was to examine whether infant attachment predicts reactive and proactive aggression in middle childhood, in a sample of children who had a history of neglect or abuse. I hypothesized that children with an insecure or disorganized attachment would show greater proactive and reactive aggression than children with secure or organized attachments. Attachment in infancy was assessed using the Strange Situation. Aggression in middle childhood was assessed using a video game that enticed a child to use either proactive or reactive aggression to win a prize in a game against a virtual peer. Neither attachment security nor attachment disorganization predicted reactive or proactive aggression. Future studies should use a larger sample and assess the validity of the aggression measure.

Chapter 1

INTRODUCTION

Children who have insecure attachments show an increased risk for externalizing behavior problems (Fearon et al., 2010), including aggression. Childhood aggression has been linked to maladaptive outcomes later in life, including delinquency and relationship violence (Brendgen et al., 2001). While several studies have examined links between attachment and aggression, few have examined the two subtypes of aggression: proactive and reactive. In a cross-sectional study that examined associations between attachment and aggression, insecure attachment was positively associated with reactive and proactive aggression (Marcus & Kramer, 2001). However, this study included a normative sample, relied on parent-report for both attachment and aggression, and was not longitudinal. Thus, important gaps in the literature remain. The goal of the current study was to examine whether attachment in infancy predicts proactive and reactive aggression at age ten among a high-risk sample of children with Child Protective Services (CPS) involvement.

Attachment in Infancy

Based on early caregiving experiences, children develop attachments to their primary caregivers (Benoit, 2004). Four different types of attachments can form, including secure, insecure-avoidant, insecure-resistant, and disorganized attachments. Secure infants use their parents as a secure base to explore and as a

source of comfort during distress (Ainsworth et al., 1978). When distressed, insecure-avoidant infants turn away from their parents, whereas insecure-resistant infants are difficult to soothe. Secure and insecure attachments are organized, meaning that children have developed strategies for how they respond to distress in the presence of their parents. However, children with disorganized attachments demonstrate a breakdown in strategy when they are distressed and in the presence of their parents; they might respond to their parents in unusual and contradictory ways when distressed (Main & Solomon, 1986). For example, these children might crawl over to their parents but then suddenly turn into the wall, not displaying a clear strategy for handling their distress in the presence of their parents.

Secure attachments often serve as a protective factor for children's development. Securely attached children develop better self-confidence, are at reduced risk for mental health problems, and have more effective emotion-regulation than children with insecure or disorganized attachments (Cassidy, 1994; Goldberg, 1997; Madigan et al., 2013). Children with insecure attachments are more likely to have internalizing behavior problems, such as anxiety and depression, than children with secure attachments (Fearon et al., 2010; Madigan et al., 2013). These internalizing symptoms have been observed in children as young as one year of age (Briggs-Gowan et al., 2006). A meta-analytic study with a large sample size ($N = 5,236$) demonstrated that children who have insecure attachments are consistently more likely to develop internalizing behavior problems than children with secure attachments

(Madigan et al., 2013). Taken together, these findings suggest that attachment in infancy is linked to a child's emotional well-being later in life.

In addition, insecure and disorganized attachments in particular have been linked with children's externalizing behavior problems (Fearon et al., 2010), which include behaviors such as disruptive behaviors, delinquency, or aggression (Liu, 2006). One longitudinal study found that infants with disorganized attachments were more likely to show higher levels of externalizing behavior problems (assessed by parent report on the Child Behavior Checklist) at age eight (Bureau et al., 2009). Thus, while secure attachments reduce children's risk, insecure or disorganized attachments increase children's risk for developing internalizing and externalizing behavior problems (Kochanska & Kim, 2012).

Aggression

Aggression in childhood can manifest itself in physical, verbal, or social ways. Across these different behaviors, aggression may be used to accomplish a goal. Later in life, children who are aggressive in childhood demonstrate decreased motivation, are more likely to drop-out of high school and have poor academic performance than children who are not aggressive in childhood (Riccio et al., 2011). Aggression during childhood is also a major risk factor for adult crime and violence (Liu, 2006). Aggression will also likely continue through a child's life to adulthood (Huesmann et al., 2009). Furthermore, aggression in childhood can also impact society, as aggressive teens commit the most crimes (Snyder & Sickmund, 1999). It is extremely important

for us to study the various forms of childhood aggression in order to inform prevention.

Researchers have distinguished between two types of aggression: reactive and proactive (Dodge, 1991). Proactive aggression refers to when a child purposefully acts aggressively to achieve a goal, whereas reactive aggression occurs when a child acts aggressively in response to provocation, usually when someone else has threatened the child first (Dodge, 1991). For example, a child showing proactive aggression could push a peer down to steal his or her ball, displaying aggression in order to get what he or she wants. However, if that peer pushed back, the peer would be displaying reactive aggression, displaying aggression because the child aggressed first. Not only are the children's ultimate goals different, their social- information processing patterns are different as well. Children who use proactive aggression are more likely to view aggression and its consequences in positive ways, such as a form of leadership or humor (Crick & Dodge, 1996), than children who do not use proactive aggression. This is consistent with theory because children who use proactive aggression do it to achieve a goal and to ultimately get more power. So in order to justify the aggression, they may see the goal as worthy of the aggression, and even as a positive response. Before the aggression occurs, reactively aggressive children will see their peer's behavior as intentionally mean, than children who are not reactively aggressive (Crick & Dodge, 1996). Because they assume their peer intended to be mean, they respond in aggressive ways. While the two types of aggression are often correlated (Merk et. al., 2005), it is important to view them as distinct constructs; they happen as a response to

different emotions and have different goals. Additionally, proactive and reactive aggression have different outcomes later in life. Proactive aggression in childhood predicts delinquency later in life, whereas reactive aggressive predicts relationship violence (Brendgen et al., 2001). Similarly, it was found that 6-year-old children who show more reactive aggression have more internalizing problems such as depression than children who display only proactive aggression, and proactively aggressive children at this age are more delinquent than children who only display reactive aggression (Vitaro et, al., 2002).

A variety of factors have been shown to impact aggression. Boys have been found to be more aggressive than girls in a number of studies. In one study, 9-10 year old boys scored significantly higher on all self-report, parent-report, and teacher-report measures for both reactive and proactive aggression than girls (Baker et al, 2008). However, this gender effect could also be due to gender stereotypes in society, meaning it is also an environmental factor. Indeed, one study showed that proactive and reactive aggression results more from environmental than genetic factors, suggesting that factors like abuse and caregiving might play an important role in both types of aggression (Brendgen et al., 2006). In addition, children living in chronic poverty are more likely to show aggressive behavior than children not living in poverty (Mazza et. al., 2016). Parental supervision, maternal warmth, and other positive caregiving behaviors have been shown to moderate the effects of proactive and reactive aggression on maladaptive outcomes (Brendgen et.al., 2001). These findings highlight the need to further our understanding about how the environment

and the parent-child relationship impact aggression, especially in regards to attachment differences in a high risk sample.

Neglect and/or abuse in infancy has been linked to a variety of undesirable outcomes, including aggression. Particular behavioral problems can occur including poor self-esteem, hyperactive or withdrawn behavior, or aggressive behavior (Odhayani et. al., 2013). In one study, even when controlling for SES, children who had a history of neglect had higher scores in the aggressive subsection of the parent-report Child Behavior Checklist than children who did not have a history of neglect (Spratt et. al., 2012). Similarly, a longitudinal study found that only early neglect within the first two years of life (rather than physical abuse) resulted in higher parent-reported aggression scores in early childhood (Kotch et. al., 2008).

Links between Attachment and Aggression

A few studies have examined the relation between attachment and aggression. For example, in one longitudinal study, boys with insecure-avoidant attachments in infancy (assessed in the Strange Situation) were rated higher on aggression by their teachers in elementary school than boys with insecure-resistant attachments (Renken et al., 1989). This study also demonstrated that both boys and girls in stressful life circumstances were more likely to have higher teacher-rated aggression scores than those without the stress (Renken et al., 1989). A cross-sectional study found that at age four, children who were insecurely attached to their mothers (assessed using the Strange Situation) were coded as more aggressive overall while playing with another child than securely attached children (Booth et al., 1991). Of note, this study measured

both constructs using observational assessments and included high-risk and comparison samples (Booth et. al., 1991). Findings from a longitudinal study that used self-report measures for both attachment and aggression suggest that children who are insecurely attached at age three behave more aggressively in kindergarten than those who are more securely attached (Schmidt et al., 2010). In addition, this study also found that children who have more stress in their family were more aggressive in kindergarten than those children with less household stress (Schmidt et al., 2010). To the best of my knowledge, only one study has examined attachment as it relates to both reactive and proactive aggression. Marcus and Kramer (2001) studied children aged 3-8 and found that children with less secure attachments in childhood had higher levels of both reactive and proactive aggression than those with higher levels of security (Marcus & Kramer, 2001). However, this study relied on parent-report to assess attachment and aggression rather than the “gold standard” Strange Situation.

Current Study

Taken together, previous studies have explored the effects of attachment in infancy and aggression. However, no studies have examined attachment in infancy as a predictor of both reactive and proactive aggression in middle childhood, particularly among a high-risk sample. Moreover, many studies examining links between attachment and later aggression rely on survey measures rather than observational assessments of aggression. To address this gap in the literature, the goal of the current study was to examine the effects of attachment in infancy on reactive and proactive aggression at age ten among a sample of CPS-referred children. I hypothesized that

children with an insecure or disorganized attachment in infancy would show more proactive and reactive aggression at age ten than those with secure attachments.

Chapter 2

METHODS

Procedures

The data collected for this study were gathered in the context of a longitudinal study of evaluating the effects of a parenting intervention, the Attachment and Biobehavioral Catch-Up Intervention (ABC). The children in the study ($N = 103$) were referred by CPS due to concerns for abuse or neglect in infancy. These children were considered “high-risk” due to their history of childhood maltreatment. However, attachment data were only available for 80 of these high risk children, so that is the sample size of the current study. After receiving the intervention, these families participated in annual follow up visits. At the first follow-up visit (around four months after the last intervention session), the mother and child completed the Strange Situation to assess the child’s attachment quality. During a follow-up visit when children were approximately ten years of age, their reactive and proactive aggression was assessed. Table 1 presents demographic characteristics (Table 1).

Participants Demographics

Table 1. *Participant Demographics*

| Characteristic | |
|--|-----------|
| Child Age (years; <i>M</i> & <i>SD</i>) | 10.65 yrs |
| Child Gender (% male) | 51.9% |
| Child Race | |
| African-American (%) | 70.2% |
| Caucasian (%) | 6.7% |
| Biracial (%) | 15.4% |
| Other (%) | 7.7% |
| Child Ethnicity | |
| Non-Hispanic or Latino (%) | 79.8% |
| Hispanic or Latino (%) | 20.2% |
| Parent Gender (% female) | 93.3% |
| Parents' Employment Status | |
| Employed (%) | 53.8% |
| Unemployed (%) | 46.2% |
| Education | |
| > High School Degree (%) | 32.7% |
| High School Degree or GED (%) | 48.1% |
| Some College (%) | 16.3% |
| Baccalaureate Degree (%) | 1.9% |
| Household Income | |
| < \$10,000 (%) | 2.9% |
| \$10,000 - \$19,999 (%) | 7.4% |
| \$20,000 - \$29,000 (%) | 14.7% |
| \$30,000 - \$39,000 (%) | 11.8% |
| \$40,000 - \$59,000 (%) | 14.7% |
| \$60,000 - \$99,000 | 19.1% |
| \$99,000 < | 19.1% |
| Did Not Report (%) | 10.3% |

Measures

Infant Attachment. Attachment was assessed using the Strange Situation paradigm when children were infants ($M = 19.76$ months, $SD = 6.24$ months). Developed by Ainsworth and colleagues in 1978, this standardized laboratory paradigm exposes the child to situations that deliberately elicit distress, including being left alone in a room or with a stranger. First, the child is exposed to a new room and plays freely with his or her parent (3 minutes). Then, a stranger enters the room and the child continues to play in the presence of the parent (3 minutes). The parent then leaves the room for three minutes or until the child is extremely distressed. The parent then returns, and the stranger leaves (3 minutes). The parent leaves again leaving the child alone in the room (3 minutes), until the stranger returns. The stranger is in the room with the child for three minutes until the parent returns. Then the stranger leaves and the parent and child play for three more minutes.

Coders assessed the child's behavior during reunions with his or her parent, and the child was assigned an attachment classification. Children can be classified as having a secure, insecure avoidant, insecure resistant, or a disorganized attachment to their parent. The child's behaviors during the reunion with the parent are particularly important during coding. If the child goes immediately to the parent, reaches out his or her arms, and is genuinely happy to see the parent, the child would be classified as having a secure attachment. If the child avoids contact with the parent, he or she would be classified as having an insecure avoidant attachment. If the child takes a long time to be soothed by their parent, then he or she would be classified as insecure

resistant. If the child acts in a disorganized way, such as walking towards the wall instead of the parent, the child would be classified as having a disorganized attachment. In addition, how long the child takes to sooth if upset is also pivotal. If the child soothes easily, then he or she would be classified as having a secure attachment. The child also receives a secondary classification of organized or disorganized, allowing us to spilt them by both security and organization style. Just over a third of the Strange Situations (34%) were coded by two coders. The two coders agreed on 85% of the classifications including both the original classification as secure, avoidant, resistant, or disorganized and the secondary classification of disorganized children as also secure, avoidant, or resistant ($k = .74$). In addition, the two coders agreed on 92% of two-way secure-insecure classifications ($k = .76$) and 87% of the two-way organized-disorganized classifications ($k = .76$). Any disagreements were resolved by conferencing.

Aggression. When children were ten years old ($M = 10.65$ yrs, $SD = .47$ yrs), they completed a research visit at the University of Delaware and played two video games on the computer. The first video game assessed proactive aggression, and the second video game assessed reactive aggression. For both video games, the child was told he or she was playing against a same-age, same-sex peer. However, the video game used peer simulation, so the child was actually playing against the computer. During the five-minute video games, the child was instructed to collect shooting stars as an astronaut in space. The child caught stars and earned points by pressing the correct button on a controller. Additionally, the child was provided a foot pedal. A

researcher explained that when the child pressed the foot pedal, the child “zapped” the opponent’s astronaut. When the opponent is “zapped,” he or she could not catch stars or score points. If the child pressed the pedal, he or she could hear the “peer” make comments like “why did you do that?” The child was told that the opponent also had a foot pedal and could “zap” the child’s astronaut. The researcher was not present in the room while the child was playing either video game.

Proactive Aggression. The first video game was developed to specifically assess proactive aggression. The child was told he or she was playing *against* the “peer” and the child who collected the most stars would win a prize. The opponent never “zapped” the child’s astronaut. Additionally, the game was fixed so that the child always won the prize, regardless of how many times he or she “zapped” the opponent. The number of times the child pressed the foot pedal and the total amount of time the foot pedal was pressed were used as measures of proactive aggression.

Reactive Aggression. The second video game was developed to specifically assess reactive aggression. During this video game, the child was told he or she was not playing against the peer in the same game. Rather, their games were separate; both the child and his or her opponent could win money based on how quickly they caught stars. The child was told each star was worth ten cents and the computer decided whether or not the child caught a star fast enough. However, it was made clear to the child that he or she could still press the foot pedal and “zap” the opponent and the opponent could also “zap” the child’s astronaut. When “zapped,” the child and the opponent could not earn any money. The game was fixed, such that even though the

opponent “zapped” the child’s astronaut several times, the child always earned four dollars. The number of times the child pressed the foot pedal and the total amount of time the foot pedal was pressed were used as measures of reactive aggression.

Chapter 3

RESULTS

Preliminary analyses for the attachment classifications and aggression variables examined gender and intervention differences. In addition, preliminary analyses examined relations among demographic characteristics (e.g., child age, child race, parent education) and attachment classifications and aggression variables.

Primary analyses addressed whether attachment in infancy predicted reactive and proactive aggression at age ten.

Preliminary Analyses for Attachment Variables

The four way classification of attachment was broken down in the following way; of the 80 children, 39 were classified as secure, 7 were classified as insecure avoidant, 2 were classified as insecure-resistant, and 32 were classified as having a disorganized attachment. The sample in this study is unique because of the relatively few children classified as having an insecure attachment ($N = 9$), and the large proportion of children who were classified as having a disorganized attachment ($N = 32$). Instead of using the four- way classification, we used two- way classifications (secure versus insecure, and organized versus disorganized). For the secure- insecure classification, 39 children were classified as secure, and 41 children were classified as insecure (or disorganized). For the organized- disorganized classification, 48 children were classified as organized and 32 children were classified as disorganized.

Gender was unrelated to the secure-insecure classifications, $\chi^2(1, N = 80) = 1.23, p = .27$ and the organized-disorganized classifications, $\chi^2(1, N = 80) = .13, p =$

.72. Intervention status was also unrelated to the secure- insecure classifications, $\chi^2(1, N = 80) = 1.23, p = .27$, and organized-disorganized classifications, $\chi^2(1, N = 80) = 2.14, p = .14$. However, with a larger sample ($N = 120$), there are ABC effects on attachment when comparing the children who received the intervention to a control sample (Bernard et al. 2012). In addition, the child's race was unrelated for the organized- disorganized classification, $\chi^2(3, N = 80) = .28, p = .96$. However, the child's race was related for the secure-insecure classification, $\chi^2(3, N = 80) = 12.22, p < .01$, such that children who were white or multiracial were more likely to receive a classification as insecure than secure. Similarly, the child's ethnicity was unrelated for the organized- disorganized classification, $\chi^2(1, N = 80) = .97, p = .33$. However, the child's ethnicity was related for the secure-insecure, $\chi^2(1, N = 80) = 4.09, p = .04$, such that children who were Hispanic were more likely to receive a classification of insecure than secure. Finally, child age at time of the Strange Situation was unrelated to both the secure- insecure classification, $r(80) = .03, p = .83$, and the organized-disorganized classification, $r(80) = -.002, p = .98$.

Preliminary Analyses for Aggression Variables

Proactive aggression did not significantly vary based on gender, $t(102) = .81, p = .42$. There was no significant differences even when the log-transformed data were used, $t(102) = 1.10, p = .27$. Also, reactive aggression in the high risk sample did not significantly vary based on gender, $t(99.55) = 1.60, p = .11$. There was no significant differences even when the log-transformed data were used, $t(102) = .99, p = .32$.

Proactive aggression did not significantly vary based on intervention status, $t(102) = .66, p = .51$. There was no significant differences even when the log-transformed data were used, $t(102) = 1.12, p = .27$. Similarly, reactive aggression did not significantly vary based on intervention status, $t(102) = .14, p = .89$. There was no significant differences even when the log-transformed data were used, $t(102) = -.30, p = .77$.

With regard to differences in proactive and reactive aggression based on child race, a MANOVA indicated no significant differences in proactive and reactive aggression based on race, $F(12, 256.93) = 1.20, p = .28$. There was no significant differences even when the log-transformed data were used, $F(12, 256.93) = 1.20, p = .28$.

Proactive aggression did not significantly vary based on ethnicity, $t(102) = -.57, p = .57$. This was consistent even when the log-transformed data were used, $t(102) = -.19, p = .85$. Similarly, reactive aggression did not significantly vary based on ethnicity, $t(102) = .33, p = .74$. There was no significant differences even when the log-transformed data were used, $t(102) = .90, p = .37$.

Child age was unrelated to proactive aggression when using the log-transformed data, $r(104) = .02, p = .80$. However, child age was marginally related to reactive aggression for CPS-referred children when using the log-transformed data, $r(104) = .19, p = .05$.

Families' reported household income was unrelated to proactive aggression when using the log-transformed data, $r(81) = -.02, p = .15$. Similarly, families' reported

household income was unrelated for high risk children's reactive aggression when using the log-transformed data, $r(81) = -.15, p = .19$.

Primary Analyses

Attachment Differences: Secure versus Insecure

Proactive aggression did not significantly vary based on attachment classification for the secure-insecure dichotomy, ($M_{\text{secure}} = 72.32, SD_{\text{secure}} = 88.52$; $M_{\text{insecure/disorganized}} = 54.01, SD_{\text{insecure/disorganized}} = 66.05$), $t(78) = 1.05, p = .30$. There was no significant differences even when the log-transformed data were used, $t(78) = -.12, p = .90$.

Attachment security did not predict reactive aggression, ($M_{\text{secure}} = 65.11, SD_{\text{secure}} = 87.44$; ($M_{\text{insecure/disorganized}} = 85.05, SD_{\text{insecure/disorganized}} = 88.72$), $t(78) = -1.01, p = .32$. There was no significant differences even when the log-transformed data were used, $t(78) = -1.34, p = .19$.

Attachment Differences: Organized versus Disorganized

Attachment disorganization did not predict proactive aggression ($M_{\text{organized}} = 62.69, SD_{\text{organized}} = 82.80$; $M_{\text{disorganized}} = 63.30, SD_{\text{disorganized}} = 71.10$), $t(78) = .03, p = .97$. There was no significant differences even when the log-transformed data were used, $t(78) = .82, p = .42$.

Attachment disorganization did not predict reactive aggression ($M_{\text{organized}} = 65.74, SD_{\text{organized}} = 87.70$; $M_{\text{disorganized}} = 89.71, SD_{\text{disorganized}} = 88.14$), $t(78) = 1.20, p = .24$., When using the transformed data, the effect did not reach significance, $t(78) =$

1.73, $p = .09$. ($M_{\text{organized}} = 1.36$, $SD_{\text{organized}} = .73$; $M_{\text{disorganized}} = 1.63$, $SD_{\text{disorganized}} = .66$).

Chapter 4

DISCUSSION

The goal of the current study was to examine whether attachment classification in infancy predicted proactive and reactive aggression observed in middle childhood. I hypothesized that an insecure or disorganized attachment classification would lead to greater proactive and reactive aggression at age ten than a secure or organized attachment. Results from the current study did not support hypotheses. Specifically, there were no significant differences in levels of proactive or reactive aggression based on attachment classification in infancy.

The current study's findings were inconsistent with previous research (Booth et al., 1991; Renken et al., 1989; Schmidt et al., 2010; Marcus & Kramer, 2001). A longitudinal study found that boys with insecure-avoidant attachments in infancy had higher teacher-rated aggression in elementary school (Renken et. al., 1989). One cross-sectional study used the Strange Situation and a different observational measure of attachment and found attachment security predicted overall aggression (Booth et al., 1991). Another longitudinal study also found that attachment security predicted aggressive behaviors in kindergarten (Schmidt et. al., 2010). Marcus and Kramer conducted a study with similar constructs and found significant differences in self-reported attachment to parents and self-reported reactive and proactive aggression (2001). The motivation for the current study was to see if this result held when using observational data. However, no significant differences was found.

Significant links may not have been found because of the unique characteristics of the sample. This sample had a very low rate of insecure attachments ($N=9$) and a very high rate of disorganized attachments ($N=32$). All of the prior research had found significant results within a secure vs insecure dichotomy. It may be that because we had to include the disorganized children in with the insecurely attached children, no difference emerged.

In addition, this sample was considered high risk because they had CPS-involvement in infancy. They also had a very low socioeconomic status, the mean income being \$21,394. Some of the similar previous studies did find that stressful life circumstances predicted aggressive behavior (Renken et al., 1989; Schmidt et al., 2010). Other studies have found that children with a history of abuse or neglect were more likely to be aggressive than those without (Odhayani et. al., 2013; Spratt et. al., 2012; Kotch et. al., 2008). It may be that for the current sample of children, who either had a history of abuse or neglect in infancy, attachment security could not protect against this early caregiving experience.

Strengths and Limitations

There were several strengths to this study. First, this study used a longitudinal design, assessing the same children from infancy to age ten. This allowed us to assess differences in aggression more than nine years after attachment was measured. Additionally, another major strength of this study was its use of observational measures instead of self or parent reports. In particular, the current study's assessment of attachment using the Strange Situation (Ainsworth et al., 1978) is notable. The

Strange Situation is the gold standard in the field and a valid and reliable way of assessing attachment.

On the other hand, this study has several limitations. First, the small sample size resulted in low power to detect effects, and because of the small number of insecure classifications, I could not compare subtypes of insecure attachment (i.e., resistant and avoidant) on aggression outcomes. In addition, this was a high-risk sample characterized by CPS involvement in infancy. Thus, this study's findings cannot be generalized to the general population of 10-year-olds.

Another limitation of the study was its assessment of aggression. This study uses a novel video game, and it is important to establish its concurrent and predictive validity, since we don't know if really primes children to be reactively or proactively aggressive in this sample. Also, because they are just pushing one button at a time, maybe this game was too simple, since video gaming is a normal activity for most children. This could cause the children not to use aggressive behaviors (i.e., "zapping" the opponent) because the game is already "easy" for them, and they think they will win the prize regardless of performance. In addition, maybe the peer stimulation was not believable, and the children knew they were just playing with the computer. This could have made more children behave aggressively, even if they are usually not aggressive with their peers, because they did not see anything wrong with being mean to a computer. Future studies should be done to test the reliability and validity of this measure for this sample.

Future Directions

This study has several exciting future directions to be explored. First, an important area of research would be to examine the validity of our assessment of aggression. For example, a study could be completed to examine this measure alongside self, parent, or teacher reported measures of aggression, such as the Reactive–Proactive Aggression Questionnaire (RPQ). This survey has been found to be both reliable and valid (Raine et. al., 2006), and the children completed it at laboratory visits. Second, it is important to replicate this study in a larger sample and a sample with more diversity with regard to socioeconomic status. A larger sample may include more children classified as insecure, which may allow for differences to emerge. Lastly, it would be interesting to examine the effects of attachment on aggression later in development, such as adolescence, when aggression might have particularly negative effects (e.g., criminality, school drop-out).

Conclusions

These limitations notwithstanding, the current study represents an important first step in examining links between attachment in infancy and reactive and proactive aggression at age nine among a sample of CPS-referred children. Future research should assess the validity of the current study's assessment of aggression and be replicated with a larger sample. This important research could inform interventions to reduce children's risk for aggressive behavior.

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