

Delinquency, Anger, and Parental Warmth: An Analysis of Youth who are Minorities and Living in Extreme Poverty

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Family systems theory posits that the members of a family rely on one another to fulfill each other's social and emotional needs. This means that parents must respond to the actions and behaviors of others in the family. The current study expands the body of research on parental responses to youth behaviors. More specifically, the primary aim of the current study is to describe the relationship among perceived parental warmth, youth delinquency, and anger among adolescent males and females living in extreme poverty. Using longitudinal growth models, results uncovered unique effects for both male and female youths in relation to both mother and father figures. Youths, in general, experience greater perceived parental support when engaging in less delinquency and exhibiting less anger. The study addresses the nature of the complex relationship between parental responses and youths reporting significant anger and delinquency.

Family functions as the primary socialization context for children. Parents, like children and adolescents, respond to the actions and behaviors of others in the family. Qualitative evidence suggests that youth detention impacts how parents perceive their relationship with their child (Church, MacNeil, Martin, & Nelson-Gardell, 2009). Other evidence has shown that adolescent development is influenced by levels of family cohesion and that parenting behaviors are influenced by adolescents' developmental stages and related behaviors (Jang & Smith, 1997; Burke, Pardini, & Loeber, 2008; Williams & Steinberg, 2011; Gault-Sherman, 2012; Jagers et al., 2014). Still, there has been little work describing how parents respond to delinquent behaviors and the consequences of those responses on the family dynamic.

Research has established that effective parental behaviors include showing warmth, expressing support, setting standards, engaging in consistent discipline, and refraining from harsh punishments (Simmons et al., 2001). Parental warmth has been conceptualized as the "expression of interest in children's activities and friends, involvement in children's activities, expression of enthusiasm and praise for children's accomplishments, and demonstration of affection and love" (Amato, 1990, p. 614). Parental warmth is often examined based on the unique characteristics and effects of maternal warmth as compared to paternal warmth. For example, increases in maternal warmth are associated with higher levels of youth motivation, and increases in paternal warmth are often associated with lower levels of school delinquency (Lowe & Dotterer, 2013).

Parental warmth is predictive of delinquent behavior, with lower levels of warmth resulting in a higher propensity for adolescents to engage in delinquent behaviors (Fletcher, Steinberg, & Williams-Wheeler, 2004; Stattin & Kerr, 2000). Small proportions of adolescents are chronically delinquent and have difficulty internalizing family problems such as low parental warmth (Pepler, Jiang, Craig, & Connolly, 2010). This may exist since parental warmth is correlated

with psychological adjustment and personality disposition (Khaleque, 2013). Parenting behaviors and styles are also highly related to adolescent behaviors and emotional expressions. Difficult behavior exhibited by a child tends to negatively affect parental disciplinary strategies and parental involvement, which leads to an increased risk of childhood and adolescent delinquency (Hoeve, Duabs, Eichelsheim, van der Laan, Smeek, & Gerris, 2009). Two highly researched perspectives of parenting, the dimensions of parenting and parenting styles, are salient when examining the relationships among delinquency, anger, and parental warmth (Hoeve et al., 2009). The dimensions of parenting are conceptualized as the categorization of parenting behaviors (Rollins & Thomas, 1979). Examples of parenting dimensions include warmth, affection, acceptance, and monitoring (Rohner, 2004). Parenting styles are assemblages of parenting behaviors (Darling & Steinberg, 1993). For example, more authoritative parenting is a combination of supportive parenting and guidance of the child's behavior by the setting of appropriate boundaries and expectations (Hoeve et al., 2009).

The support dimension of parenting refers to parental behaviors toward the child that makes the child feel comfortable, accepted, and approved (Rollins & Thomas, 1979). This dimension includes both positive (acceptance, warmth, and responsiveness) and negative behavioral aspects (hostility and rejection) of parenting behaviors (Rohner, 2004). Overall, supportive parenting behaviors are negatively linked to delinquency, which indicates that high levels of parental support and warmth are associated with low levels of delinquency while low levels of parental support and warmth are linked to high levels of delinquency (Hoeve et al., 2009).

Parenting types consist of a two-dimensional framework of support and control (Maccoby & Martin, 1983). Parenting styles are combinations of the attitudes and behaviors of parents toward their children (Hoeve et al., 2009). This configuration creates a climate for parental behavior and is exhibited across an array of situations (Darling & Steinberg, 1993).

Prior research revealed positive effects of authoritative parenting styles on child adaptation, while neglectful parenting styles were associated with delinquent behaviors (Steinberg, Blatt, & Cauffman, 2006).

Although the criticality of parent behaviors (e.g., parental warmth) cannot be overstated, other factors such as the context or environment in which adolescents and families are embedded is important as well. For example, the Pittsburgh Youth Study found that being an African American male aged 13–16 years and residing in neighborhoods with lower socioeconomic statuses (SES) is positively correlated with delinquent behavior (Loeber & Wikstrom, 1993; Peeples & Loeber, 1994). Both adolescent and parental behaviors may be influenced by neighborhood characteristics. Past studies (Furstenberg, 1993; Klebanov, Brooks-Gunn, & Duncan, 1994; Simons, Johnson, Beaman, Conger, & Whitbeck, 1996) have shown that parents residing in neighborhoods that are low-SES tend to be less warm and more controlling in their attempts to teach children how to survive potential harm. Studies (Briggs, 1997; Conger, Ge, Elder, Lorenz, & Simons, 1994; McLoyd, 1990) have also linked neighborhood characteristics such as the levels of perceived and actual danger to harsher and more controlling parenting practices. In addition, parental warmth is particularly salient among youth from neighborhoods that are dealing with poverty, as parental warmth seems to supersede the effects of residing in a high-risk neighborhood (Deutsch, Crockett, Wolff, & Russell, 2012). Among youth who are particularly delinquent, parental warmth may not substantially impact their behavior. Still, parental warmth exhibits an overwhelmingly positive effect reducing delinquent behaviors, even when considering the most serious neighborhood contexts. African American children who reside in neighborhoods with lower socioeconomic statuses reportedly exhibit higher levels of externalizing behavior problems (Chase-Lansdale, Gordon, Brooks-Gunn, & Klebanov, 1997). Similarly, African American children who reside in neighborhoods with lower SES and households managed

by a single parent reportedly exhibit higher levels of peer-reported aggression (Kupersmidt, Griesler, DeRosier, Patterson, & Davis, 1995). Although the neighborhood ecology is an important element that may contribute to and interact with adolescent and parent behaviors, the current study specifically focuses on the bi-directionality of parent responses and adolescent behaviors.

Insight into the bi-directionality of parental behavior and child delinquency is essential for the development and improvement of intervention strategies. According to Quay (1977), because children who are impulsive and fearless are also unresponsive to the corrections frequently used by parents in response to undesirable behavior, parents frequently change parenting strategies—which leads to inconsistent parenting (Hoeve et al., 2009). This inconsistent parenting tends to create a cycle that exacerbates delinquent behavior and anger, thereby leading to a bi-directional effect of parenting behavior and child delinquency and anger (Salihovic, Kerr, & Ozdemir, 2012).

The body of research examining the effect of delinquency and anger on negative parenting behavior is limited. Many studies examine the effects of parenting behaviors and practices on child delinquency and anger (Frick et al., 2003; Lynam et al., 2008; Pardini & Loeber, 2008); however, these studies neglect to examine the possibility that the negative parental behavior is possibly, in part, a reaction to the negative traits and behaviors exhibited by the child (Salihovic et al., 2015). Specifically, the delinquent behavior and anger exhibited by the child or adolescent may elicit negative parental behaviors that, in turn, contribute to the maintained of delinquency and anger exhibited by the child (Salihovic et al., 2015). Evidence for reciprocal relationships between parental coldness, rejection, and delinquency suggests that the higher the initial levels of delinquency, the colder and rejecting parents become over time (Salihovic et al., 2015). In the same study, results also showed that delinquency predicted negative parental responses, which indicated that higher initial levels of delinquency increased negative parental responses over time (Salihovic et al., 2015).

The Current Study

The current study expands the body of research that explores the perceived parental responses to youth behaviors, namely delinquency and anger. Using the Mobile Youth Survey (MYS; Bolland 2004, 2007), the primary aim of the current study is to describe the relationship among perceived parental warmth, youth delinquency, and internalized and externalized anger among a longitudinal sample of adolescent males and females living in extreme poverty. More specifically, given the extant literature base and the primary aim of the study, we investigated: Is the perceived level of parental warmth (both maternal and paternal) related to adolescents' expression of anger (internalized and externalized) and engagement in delinquency?

Method

Sample

All adolescents sampled as part of the current study participated in the Mobile Youth Survey (MYS), a subset of the Mobile Youth and Poverty Study (MYPS). The MYPS is a 14-year longitudinal study of adolescents living in neighborhoods that are low-income within the city of Mobile, Alabama, and its neighboring communities. The MYS survey, one component of the MYPS, was collected annually from adolescents between 9 and 19 years of age between 1998 and 2011. The complete MYS data set from the MYS survey contains 35,828 data points consisting of survey results from 12,387 adolescents.

Several criteria were required for inclusion in our final study sample due to the longitudinal nature of the data set. First, observations for adolescents at ages 9 and 19 were removed due to a low prevalence of observations at those ages ($n = 61$ adolescents). Additionally, adolescents missing key variables utilized in the analysis were removed. For example, if the adolescent did not indicate that they had a maternal figure or a paternal figure, they did not complete the maternal and paternal warmth measure, and were therefore not included in the analysis. In

order to include identical samples for the analyses, the final sample for the current study was comprised of adolescents who self-reported having both maternal and paternal figures in their lives and completed all of the measures of interest. Identical samples were preferred in order to compare relationships between the maternal and paternal figures. A total of $n = 2,328$ adolescents were removed. Lastly, because longitudinal models can be better estimated when adolescents have two or more data points (e.g., data collected at a minimum of two ages), adolescents with a single data point ($n = 6,113$) were removed. The resulting sample included in the analysis contained 3,885 adolescents between the ages of 10 to 18 who had two or more data points between the years of 1998–2011. The data set contained a total of 16,575 observations, which averages around four years of data from each adolescent.

The final study sample ($N = 3,885$) was evenly split between the two genders, with 49% ($n = 1,905$) males and 51% ($n = 1,980$) females. Based on the 1990 census, the median household income in the MYS targeted neighborhoods was approximately \$5,000, with 73% of the residents in these neighborhoods living below the poverty line. The adolescents were relatively homogeneous with regard to other demographic characteristics. The sample comprised 97% ($n = 3,784$) Black American adolescents, with only a few identifying as either White American ($n = 9$) or other minority ($n = 92$). Additionally, approximately 90% of the sample qualified for reduced-cost or free lunch at some point during their participation in the MYS.

Procedures

The MYS survey data utilized a multiple-cohort design across 14 years, with new cohorts added each calendar year. Because of the complexity of the research project, a brief description of the survey methodology is provided here. However, full details of the sampling procedure, survey instruments, and missing data information are provided in Bolland and colleagues (2016). Neighborhoods that were lower-income and within or

surrounding Mobile, Alabama, were targeted for the MYS. Adolescents were contacted through the use of flyers, handouts at local businesses, and door-to-door contact, to sample as many adolescents as possible. Adolescents within three months of their 10th and 18th birthdays were invited to participate, pending parental consent. Adolescents were then encouraged to participate in each wave of the survey as long as they remained eligible (i.e., they had not aged out), with new participants contacted yearly.

Once parental consent and participant assent was obtained, adolescents typically were placed into groups of 20-30 and provided a survey booklet. Survey questions were read aloud by an intern with participants marking his/her answers inside the survey booklet. In the rare event that a participant required individual attention, that participant was given the survey in a one-on-one environment. Adolescents were given a monetary incentive of \$10 prior to 2006 for their participation, with that amount increasing to \$15 after 2006 (Bolland et al., 2016).

While every adolescent aged 10-18 (or within three months of that birthday, resulting in adolescents ages 9 and 19) who lived in a targeted neighborhood did not participate in the MYS, based on demographic factors, analysis did reveal that the sampling method resulted in what appears to be a representative sample of all of the adolescents living in extreme poverty in these neighborhoods (Bolland, 2012).

Measures

Parental Warmth

The parental warmth construct consists of two individual subscales: *maternal warmth* and *paternal warmth*. Both maternal warmth and paternal warmth were adapted from surveys developed by Lamborn, Mounts, Steinberg, and Dornbusch (1991) and Kerns and colleagues (2001). Of note, adolescents identified the individual, whether a biological parent/other relative/friend, whom they considered to be both their

Table 1. Frequencies of Parental Figure by Relationship

	Maternal Figure							
	Mother	Step-Mother	Grandmother	Aunt	Foster Mother	Father's Girlfriend	Older Sister	Other Person
Frequencies	78.0%	1.5%	12.1%	4.4%	0.3%	0.4%	1.8%	1.5%
	Paternal Figure							
	Father	Step-Father	Grandfather	Uncle	Foster Father	Mother's Boyfriend	Older Brother	Other Person
Frequencies	55.7%	18.0%	7.9%	8.5%	0.3%	1.9%	4.0%	3.7%

maternal figure and paternal figure. The parental warmth scales therefore relate to the parental figure of the adolescent, who may or may not be their biological parent.

Maternal warmth. For maternal warmth, adolescents were asked to respond to a set of six dichotomous items regarding maternal involvement. Adolescents were asked to keep in mind the person who they considered to be a mother figure (a question previously asked). Examples of these items include, "I can usually count on her to help me out if I have some kind of problem," and "We do fun things together." Participants were asked to agree or disagree to six items, coded as 0 and 1. A summative scale was created resulting in possible values ranging from 0 to 6, where higher numbers indicate greater maternal warmth. Internal reliability for the adapted scale was adequate ($\alpha = .63$).

Paternal warmth. Similarly, for *paternal warmth*, adolescents were given the same six items with the same response options as the maternal warmth scale; however, they were now asked to reflect on the person who they considered to be their father figure (a previously asked question). A summative scale was also created for these items, resulting in a scale with possible values between 0 and 6, with higher values indicating greater paternal warmth. Internal reliability for the adapted scale was good ($\alpha = .77$).

Anger

In the present study, anger was conceptualized using Spielberger and Sydeman's (1994) definition which defines anger as internalized and externalized. The two scales utilized in this study included a subset of items from Spielberger and Sydeman's State-Trait Anxiety Inventory (1984) that deal exclusively with responses to anger.

Internalized Anger. Internalized anger was measured using the following two items: "When I get angry, I keep thinking about it for a long time," and "When I get angry, I figure out what to do about it by myself." Response options were "often true for me," "sometimes true for me," and "almost never true for me." The responses were coded as 0-2 and summed, creating a scale ranging from 0-4, with higher values indicating an increased level of internalized anger. Principal components analysis was conducted to determine the effectiveness of creating a single summative scale for the items. The first eigenvalue was 1.36, with no other eigenvalues greater than 1, indicating a single summative scale was sufficient. This single summative scale accounted for 68% of the variance in the responses of the two items; however, our alpha reliability measure was smaller than expected at $\alpha = .53$, though not surprising considering the scale contained only two items with 3 response options each.

Externalized Anger. Externalized anger was measured using the following three items: "When I get angry, I get into fights," "When I get angry, I talk about it with other people," and "When I get angry, I yell a lot." Response options were, "often true for me," "sometimes true for me," and "almost never true for me," which were coded from 0-2 and summed to create a scale ranging from 0-6, with higher scores indicating greater externalized anger. Principal components analysis was also conducted for this scale. The first eigenvalue was 1.73, with no other eigenvalues greater than 1, indicating a single summative scale was sufficient. This single summative scale accounted for 58% of the variance in the responses of the 3 items and held adequate reliability, $\alpha = .63$.

Delinquency

Delinquency was measured using 18 items from the MYS. The delinquency measure used items reporting the recency and frequency of the following forms of delinquency: gun carrying and use, knife carrying and use, being arrested, and gang activity. The first six questions utilized in the scale addressed whether the adolescent had ever carried a gun, had ever carried a knife, had ever pulled a gun or knife on someone, had ever cut or shot someone, had ever been arrested, or had ever been involved in gang activity. A sample item was, "Have you ever carried a gun?" Adolescents responded with a "yes" or "no" for these items. Additional follow-up questions were then asked regarding the recency and frequency of each of these events. For both the gun and knife carrying, questions were asked about the previous year, 90 days, 30 days, and seven days (four additional items for each). Additionally, participants were asked to report information about gun and knife carrying for the past year. A sample item was, "In the past three months (90 days), did you carry a gun?" For each of these nine items, responses were collected with three options: "no," "yes, just once," or "yes, more than once." Activity regarding being arrested was addressed with one additional follow-up question that looked at recency within the last year. Gang activity was measured with two follow-up questions: the first asked whether adolescents were currently involved in a gang and the second asked whether they hang out with gang members. All three of the gang activity items (participation, current involvement, and association with gang members) were combined into a four-point ordinal scale reflecting the severity of gang involvement, rather than a cumulative sum of the items (i.e., association is different from prior participation, although the item sums are identical).

The final delinquency scale, calculated from the sum of the 15 individual items and the four-point gang involvement scale (comprised of three individual items) yielded a range from 0 and 28 points, with higher values indicating greater involvement in delinquency. As this

delinquency scale was created for the purposes of this research, a principle components analysis was used to determine the viability of creating a single summative score. The first eigenvalue was found to be 3.01, with no other eigenvalues greater than 1, indicating a single summative scale could be utilized. This scale accounted for 50% of the variance in the items and had a high Cronbach's alpha reliability of $\alpha = 0.74$.

Age and Gender

Age was measured in years and was centered at 10 to aid in the interpretation of the intercept values in our models. Gender was dichotomous, with males coded as 0 in the analysis.

Data Analysis

Two dependent variables were utilized in this study: maternal warmth and paternal warmth. Three sets of longitudinal growth models were estimated for each of the two dependent variables. First, the unconditional growth models were estimated for each dependent variable independent of any study factors. The unconditional growth model, using Singer and Willett (2003) notation, is parameterized as follows:

Ions of maternal and paternal figures differed, $\chi^2(7) = 3784.87, p < .001$. The maternal figure of the adolescent was more likely to be a biological parent as compared to the paternal figure. Additionally, there were a larger percentage of step-parents that were paternal figures as compared to maternal figures. Frequencies of other relations were similar for both parental figures.

Across the entire sample and across all ages, the average internalized anger score was $M = 2.04$, yet means did not significantly differ across all ages, $F(8, 16566) = 1.05, p = .392$. The average externalized anger score was equal to $M = 2.47$, with significant differences across the ages $F(8, 16566) = 16.41, p < .001$. Externalized anger decreased

Table 2. Mean Anger and Delinquency Across Age

Age	Internalized Anger	Externalized Anger	Delinquency
10	2.09	2.60	2.33
11	2.01	2.55	2.75
12	2.01	2.62	3.33
13	2.02	2.60	3.75
14	2.07	2.55	4.51
15	2.04	2.46	4.68
16	2.05	2.36	5.00
17	2.02	2.24	4.93
18	2.00	2.10	4.74

as the adolescent aged. Additionally, the overall average delinquency measure was 5.94, with significant differences across all ages, $F(8, 16566) = 48.42, p < .001$. Delinquency increased as the adolescent aged. Mean values for these three variables across all ages are displayed in Table 2.

Maternal Warmth: Unconditional Model

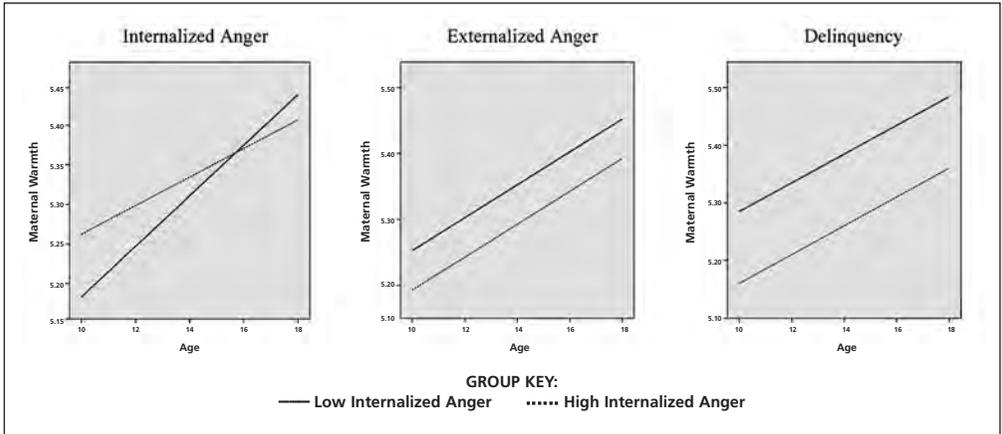
The unconditional growth model with maternal warmth as the dependent variable was first estimated, with parameter estimates displayed in Table 3. Results indicate that mean levels of maternal warmth at age 10 were significantly greater than 0, $\gamma = 5.26, t(3884) = 289.61, p < .001$. The maternal warmth scale ranged from 0–6, indicating that adolescents within the sample reported a high level of maternal warmth. As the adolescents aged, there was a significant increase in maternal warmth, $\gamma = 0.02, t(3879) = 4.581, p < .001$. Between the ages of 10 and 18, the average maternal warmth increased from 5.26 to 5.42.

Maternal Warmth: Anger and Delinquency Main Effects Model

A conditional model was next estimated for maternal warmth that included only the main effects of internalized anger, externalized anger, and delinquency in relation to change in maternal warmth over time. The conditional model was found to have a significantly better fit to the data as compared to the unconditional growth model, $\chi^2(4) = 207.8, p < .001$. Parameter estimates are displayed in Table 3. The mean level of maternal warmth at age 10 for adolescents with no delinquency, no internalized anger, and no externalized anger was 5.27 and was significantly greater than 0, $\gamma = 5.27, t(3884) = 157.25, p < .001$. Overall, maternal warmth was significantly higher at age 10 for those adolescents with higher levels of internalized anger, $\gamma = 0.04, t(8806) = 2.93, p = .003$. Maternal warmth, however, was significantly lower at age 10 for those adolescents with higher levels of externalized anger, $\gamma = -0.01, t(8806) = -2.68, p = .007$, and higher levels of delinquency, $\gamma = -0.02, t(8806) = -12.99, p < .001$. The effects of externalized anger and delinquency were consistent across all ages.

When looking at these independent variables over time, adolescents exhibited a significant increase in maternal warmth when their internalized anger was low, $\gamma = 0.04, t(3879) = 5.35, p < .001$. However, as internalized anger increased, the rate of increase slowed, $\gamma = -0.01, t(8806) = -2.33, p = .02$, with the slowest increases occurring at the highest levels of internalized anger. That is, the higher the level of internalized anger, the less maternal warmth the adolescent experienced across adolescence. Example trajectories for adolescents across all ages are plotted in Figure 1 by varying the levels of the variable of interest while holding the other two variables constant at the mean. That is, to visualize the effects of internalized anger, internalized anger values were plotted at the values of 1 (low) and 3 (high) while holding externalized anger and delinquency constant at their respective mean values. Looking at the example trajectories for internalized anger, those adolescents with low levels of internalized anger had lower

Figure 1. Trajectories of Maternal Warmth Across Adolescence: Main Effects Model



maternal warmth at age 10, but increased maternal warmth across adolescence. In contrast, adolescents exhibiting high internalized anger had higher maternal warmth at age 10, yet increased at a slower rate across adolescence, such that the maternal warmth was lower at age 18 for those adolescents with high internalized anger. For both externalized anger and delinquency, the plots showed the effects of these two variables are consistent across adolescence, as the lines are parallel. Adolescents with high externalized anger had consistently lower maternal warmth as compared to those with low externalized anger. Similarly, adolescents with high delinquency had consistently lower maternal warmth as compared to those with low delinquency.

***Maternal Warmth:
Anger and Delinquency Interaction Model***

Lastly, interaction effects between anger and delinquency were added to the previous model. The interaction model was found to be a better fit to the data as compared to the unconditional growth model, $\chi^2(10) = 231.7, p < .001$. The main effects and interaction effects models cannot

Table 3. Estimated Model Parameters for Maternal Warmth Across Adolescence

Model Parameters	Unconditional Model		Main Effects Conditional Model		Interaction Effects Conditional Model	
	Estimate	SE	Estimate	SE	Estimate	SE
Intercept	5.256**	0.018	5.271**	0.034	5.359**	0.026
IntAnger	--	--	0.040*	0.014	--	--
ExtAnger	--	--	-0.015*	0.006	-0.025**	0.006
Delinquency	--	--	-0.021**	0.002	-0.030**	0.004
Delinquency × Gender	--	--	--	--	-0.026*	0.011
IntAnger × Gender	--	--	--	--	0.020*	0.008
IntAnger × Delinquency	--	--	--	--	0.005*	0.002
ExtAnger × Del × Gender	--	--	--	--	0.006*	0.003
Age	0.018**	0.004	0.039**	0.007	0.024**	0.005
Age × IntAnger	--	--	-0.007*	0.003		
Age × Del × Gender	--	--	--	--	0.006*	0.002
Age × IntAnger × Del	--	--	--	--	-0.001**	0.001
Age × ExtAnger × Del	--	--	--	--	0.001**	0.001
Age × ExtAnger × Del × Gender	--	--	--	--	-0.002**	0.001
Fit Statistics						
Deviance	49,964.1		49,756.3		49,732.4	
AIC	49,976.1		49,776.3		49,764.4	

Note: IntAnger = Internalized Anger; ExtAnger = Externalized Anger; Del = Delinquency; * $p < .05$. ** $p < .001$.

be compared in this way because they are not nested models; however, the interaction effects model was found to have a lower AIC, indicating better fit to the data. Parameter estimates are displayed in Table 3. At age 10, adolescents with low internalized anger, low externalized anger, and low delinquency experienced high levels of maternal warmth, $\gamma = 5.36$, $t(3884) = 209.24$, $p < .001$. At age 10, males with

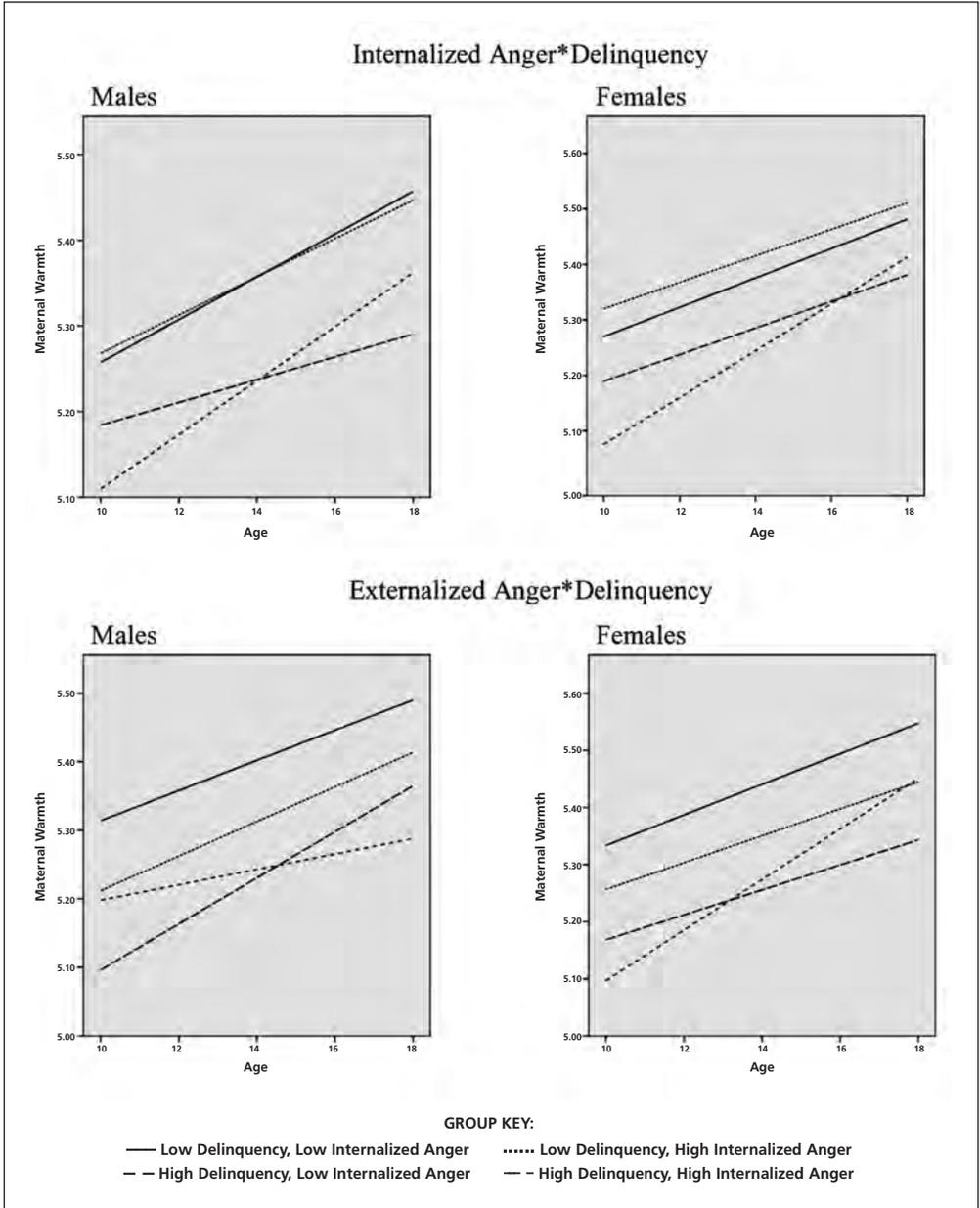
higher levels of delinquency reported lower levels of maternal warmth, $\gamma = -0.03$, $t(8800) = -8.27$, $p < .001$. This was also true for females, but to a significantly greater extent, $\gamma = -0.03$, $t(8800) = -2.47$, $p = .014$. Females with higher levels of internalized anger experienced higher levels of maternal warmth at age 10, $\gamma = 0.02$, $t(8800) = 2.42$, $p = .015$. Males were not affected by internalized anger alone at age 10; however, the interaction between internalized anger and delinquency was significant for both genders, but did not differ between the two genders, $\gamma = 0.01$, $t(8800) = 3.01$, $p = .003$. Adolescents with high internalized anger who also had high levels of delinquency experienced significantly higher levels of maternal warmth at age 10. In comparison, adolescents with higher levels of externalized anger experienced lower levels of maternal warmth, $\gamma = -0.03$, $t(8800) = -4.30$, $p < .001$. The interaction between externalized anger and delinquency, however, was only significant for the females, $\gamma = 0.01$, $t(8800) = 2.23$, $p = .026$. Females with higher levels of externalized anger and higher levels of delinquency experienced higher levels of maternal warmth at age 10.

Next, the interaction effects were considered across adolescence. All adolescents who did not engage in delinquency experienced a significant increase in maternal warmth over time, $\gamma = 0.02$, $t(3879) = 5.24$, $p < .001$. Delinquency alone did not affect this growth rate for males. That is, without any expression of either internalized or externalized anger, maternal warmth increased for all males independent of the level of delinquency that they participated in. In contrast, delinquency positively increased the growth rate for maternal warmth for females without an expression of either internalized or externalized anger, $\gamma = 0.01$, $t(8800) = 2.99$, $p = .003$. Females with higher levels of delinquency experienced higher levels of maternal warmth over time if they did not express any internalized or externalized anger. However, the expression of both internalized and externalized anger moderated these relationships between delinquency and maternal warmth. All adolescents expressing higher levels of internalized anger exhibited a slower increase in maternal

warmth when delinquency was also present, $\gamma = -0.001$, $t(8800) = -3.70$, $p < .001$. For both males and females, the presence of internalized anger slowed the increase of maternal warmth when delinquency was present, with a greater affect with higher levels of internalized anger. Externalized anger, in contrast, moderated this relationship differently for both genders. For males, higher levels of externalized anger in conjunction with high levels of delinquency resulted in a greater increase in maternal warmth over time, $\gamma = 0.001$, $t(8800) = 4.12$, $p < .001$. Females with higher levels of externalized anger and high levels of delinquency, in contrast, experienced a slowing of maternal warmth over time, $\gamma = -.002$, $t(8800) = -2.79$, $p = .005$. That is, for adolescents engaging in delinquency, the expression of externalized anger was more beneficial for males, as maternal warmth increased more rapidly. Females expressing externalized anger and engaging in delinquency experienced less of an increase in maternal warmth over time. While internalized anger had a negative effect in conjunction with delinquency for both genders, externalized anger only had a negative effect for females.

Example trajectories for these interaction effects for both genders are plotted in Figure 2. For each interaction effect, high and low values were plotted for the variables of interest, while holding any additional variables constant at the mean. Of note, these represent trajectories at these levels only, which is a small subset of trajectories estimated by the full model parameters. The plots for males and females with regard to internalized anger and delinquency were similar in pattern, though not identical. For both groups, adolescents with the lowest levels of maternal warmth at age 10 were adolescents that engaged in high levels of delinquency and also exhibited low levels of internalized anger. However, at age 18, adolescents with the lowest levels of maternal warmth were those that engaged in high levels of delinquency and exhibited high levels of internalized anger. High levels of internalized anger yielded higher levels of maternal warmth at age 10, yet resulted in lower levels of maternal warmth by age 18.

Figure 2. Trajectories of Maternal Warmth Across Adolescence: Interaction Effect



This effect was identical for males with regards to externalized anger and delinquency. Males with high externalized anger and engaged in delinquency had the lowest levels of maternal warmth at age 10; however, maternal warmth was higher at age 18 for males with high externalized anger as compared to peers with high delinquency levels. While externalized anger appeared to benefit males over time engaging in delinquency, males with low delinquency levels who exhibited high levels of externalized anger had lower levels of maternal warmth. The crossover effect, or the point at which externalized anger became a benefit for males engaging in high levels of delinquency, occurred between the ages of 14 and 15. Females with high externalized anger had higher levels of maternal warmth at age 10 if they engaged in high levels of delinquency. However, by age 18, higher levels of externalized anger resulted in lower levels of maternal warmth, independent upon the delinquency levels for the female adolescents. Externalized anger was beneficial for females engaging in high delinquency prior to age 14, with their crossover occurring between ages 13 and 14.

Paternal Warmth: Unconditional Model

The unconditional growth model for the paternal warmth of the adolescent as the dependent variable was first estimated for this set of models, with parameter estimates displayed in Table 4. The mean level of paternal warmth at age 10 was significantly greater than 0, $\gamma = 5.03$, $t(3884) = 195.12$, $p < .001$. With the paternal warmth scale ranging from 0–6, high levels of paternal warmth were also reported. However, the overall levels of paternal warmth were lower than that of maternal warmth. Paternal warmth levels overall, however, did not significantly change across adolescence, $\gamma = -0.004$, $t(3879) = -0.66$, $p = .51$. Between the ages of 10 and 18, the average paternal warmth overall only decreased from 5.03 to 5.00. While there is no overall change over time, there may still be significant effects of anger and delinquency in relation to paternal warmth.

Table 4. Estimated Model Parameters for Paternal Warmth Across Adolescence

Model Parameters	Unconditional Model		Main Effects Conditional Model		Interaction Effects Conditional Model	
	Estimate	SE	Estimate	SE	Estimate	SE
Fixed Effects						
Intercept	5.032**	0.026	5.202**	0.030	5.147**	0.026
Gender	--	--	-0.151	0.033	-0.113**	0.037
ExtAnger	--	--	-0.014*	0.007	--	--
Delinquency	--	--	-0.018**	0.002	--	--
Delinquency × Gender	--	--	--	--	-0.049**	0.009
Delinquency × ExtAnger	--	--	--	--	-0.002*	0.001
Del × ExtAnger × Gender	--	--	--	--	0.006*	0.002
Age	-0.004	.006	--	--	--	--
Age × Delinquency	--	--	--	--	-0.002*	0.001
Age × Del × Gender	--	--	--	--	0.005**	0.002
Fit Statistics						
Deviance	61,041.2		60,9050.4		60,941.1	
AIC	61,053.2		60,966.4		60,963.1	

Note: IntAnger = Internalized Anger; ExtAnger = Externalized Anger; Del = Delinquency; * $p < .05$. ** $p < .001$.

***Paternal Warmth:
Anger and Delinquency Main Effects Model***

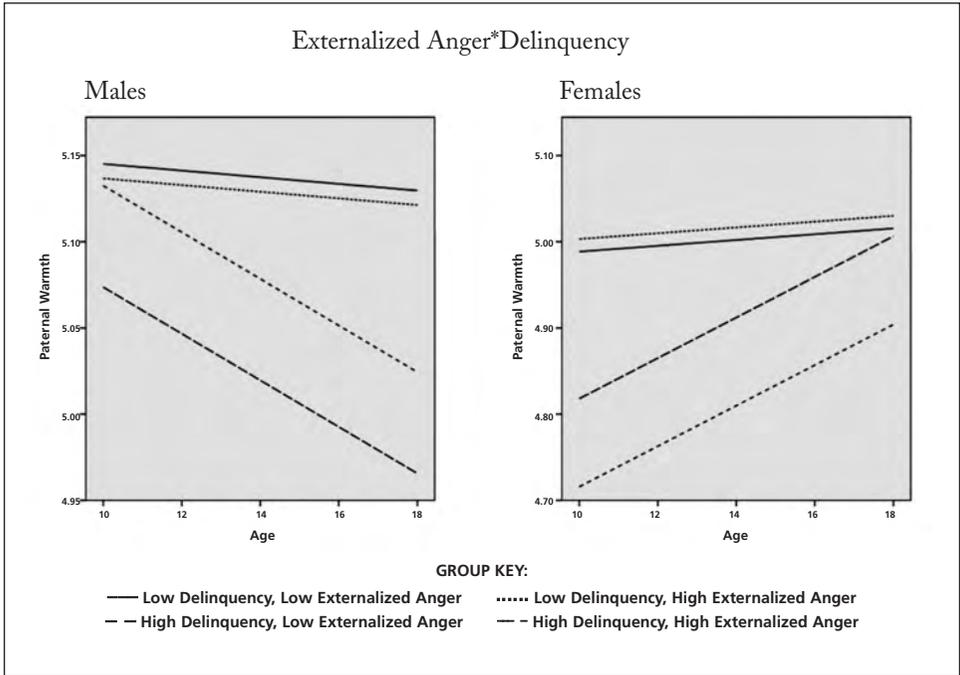
The conditional model for paternal warmth that included only the main effects of internalized anger, externalized anger, and delinquency in relation to paternal warmth was next estimated. Parameter estimates are displayed in Table 4. Because the final model was not nested within the unconditional growth model, AIC values were compared, with the conditional growth model indicating a better fit with a smaller AIC. In the final model, no growth parameters were

significant, indicating all significant effects were consistent over time. The mean level of paternal warmth for males with no delinquency and no externalized anger was 5.20, which was significantly greater than 0, $\gamma = 5.20$, $t(3884) = 170.85$, $p < .001$. Females overall exhibited lower levels of paternal warmth, $\gamma = -0.15$, $t(8807) = -4.52$, $p < .001$. For both genders, higher levels of externalized anger resulted in significantly lower levels of paternal warmth, $\gamma = -0.01$, $t(8807) = -1.97$, $p = .049$. Additionally, higher levels of delinquency resulted in significantly lower levels of paternal warmth for both genders, $\gamma = -0.02$, $t(8807) = -8.11$, $p < .001$. Across all ages of adolescence, expressing externalized anger and engaging in delinquency resulted in lower levels of paternal warmth.

Paternal Warmth: Anger and Delinquency Interaction Model

Finally, interaction effects between anger and delinquency were added to the previous model to create the interaction model for paternal warmth. The AIC was lower in this model as compared to the main effects model, indicating a better fit to the data. Parameter estimates are displayed in Table 4. Unlike the previous two models for paternal warmth, there were significant effects of delinquency over time once externalized anger had been accounted for. At age 10, males that engaged in no delinquency had relatively high levels of paternal warmth, $\gamma = 5.15$, $t(3884) = 195.72$, $p < .001$. Engagement in delinquency alone at age 10 had no effect on paternal warmth for males; however, the engagement in delinquency coupled with exhibiting higher levels of externalized anger resulted in significantly lower levels of paternal warmth, $\gamma = -0.002$, $t(8804) = -2.19$, $p = .029$. Independent of the level of externalized anger, when males continued to engage in delinquency across adolescence, their level of paternal warmth significantly increased, with greater increases as they engaged in more delinquency, $\gamma = -0.002$, $t(8804) = -2.61$, $p = .009$.

Figure 3. Trajectories of Paternal Warmth across Adolescence: Interaction Effects Model



Females engaging in no delinquency had significantly lower levels of paternal warmth at age 10, $\gamma = -0.11$, $t(8804) = -3.10$, $p = .002$, as compared to males with no delinquency. Females exhibiting higher levels of delinquency with no externalized anger experienced significantly lower levels of paternal warmth at age 10, $\gamma = -0.05$, $t(8804) = -5.48$, $p < .001$. However, when females also expressed externalized anger in addition to engaging in high levels of delinquency, the levels of paternal warmth were significantly higher than what would be expected, $\gamma = 0.006$, $t(8804) = 2.97$, $p = .003$. In contrast to the males, continued engagement in delinquency for females independent of the externalized anger level resulted in a significant increase in the level of paternal warmth, $\gamma = 0.005$, $t(8804) = 3.44$, $p < .001$.

Example trajectories of the externalized anger and delinquency interaction effect for both genders are plotted in Figure 3. For males, the expression of externalized anger had a negative relationship with paternal warmth. Delinquency resulted in a decreased level of paternal warmth when the adolescent males continued to engage in high levels of delinquency at older ages. In comparison, both the expression of externalized anger and engagement in delinquency had a negative effect on paternal warmth at age 10 for females. However, as the females aged, continued engagement in delinquency resulted in higher levels of paternal warmth.

Discussion

There was a clear relationship between the parental figure and the warmth the adolescent perceived from them in relation to their expressions of anger and delinquent behavior. Understanding this dynamic is an essential component for addressing delinquent behaviors, as many interventions employ some form of family therapy. The perceptions from both maternal and paternal figures differed substantially in relation to these behaviors, and the differences were more visible when addressing gender. These patterns, seen in other research as well (addressed below) are evident in how parents respond to youth in different circumstances with respect to warmth, anger, and family cohesion. Disentangling how parents respond to youth with social and emotional concerns is a critical component for addressing these behaviors.

Maternal Warmth

Maternal figures were more perceptive of both internalized and externalized anger, especially during later adolescence. Still, high levels of both internalized and externalized anger had negative effects on warmth, with one exception: adolescents engaging in high levels of delinquency. Males engaging in high levels of delinquency and who exhibited high levels of externalized anger actually had higher levels

of maternal warmth after age 14 than would be expected. It is likely that the combination of externalized anger and delinquency is easier to detect. Maternal figures are more readily able to respond to behaviors that are easily detected.

In contrast, females engaging in high levels of delinquency and who also exhibited high levels of externalized anger had higher levels of maternal warmth prior to age 14. That is, before age 14, females received a benefit from expressing their externalized anger. After age 14, males received a benefit from expressing externalized anger. These gender differences may arise from the disparities that exist in the expression of warmth. Parental warmth tends to be higher for adolescent females. Maternal figures may view early adolescence as a formative period for females, and respond in ways to meet social and familial expectations. Since adolescent females also engage in fewer and less severe delinquent activities, mothers are likely responding more strongly to female children. On the other hand, mothers seemingly respond to males later in adolescence. The mantra of “boys will be boys” is an expression of masculinity directed toward males transitioning into adulthood (Connolly, 2013). Even when demonstrating anger and engaging in delinquent activities, mothers may see these behaviors as ordinary for males during early adolescence. Writ large, the gendered response may be emblematic of a reactionary approach for males rather than a proactive approach that might be used for female children.

In contrast to externalized anger, youth with high levels of delinquency and internalized anger experienced significantly higher levels of maternal warmth. Still, increases in maternal warmth among children who exhibited both high levels of internalizing anger and delinquency experienced slower increases in warmth over time. Internalized anger is directed inward, with the individual having difficulty expressing emotions to deal with anger. The manifestation of internalized anger during early adolescence may not have a substantial influence over the parent-child relationship until it has persisted over time. This may also account for delinquent behavior as an outlet for emotional

stoicism. The increase in maternal warmth seems to support this conclusion since delinquent behavior increases as children age (Lipsey, & Derzon, 1998; Patterson & Yoerger, 1993; Nye, Short, & Olson, 1958). Increases in maternal warmth, albeit a slower increase compared to those not engaging in delinquent behaviors, is likely a response to the delinquent behavior itself. While mothers are concerned with these behaviors, delinquent acts seem to yield frustration and emotional distance from their child.

Paternal Warmth

Paternal figures responded to adolescents' externalized anger but not to their internalized anger. Internalized anger was not a significant factor in paternal warmth models. The effect of engaging in delinquency over time had a different effect on paternal warmth for males and females. While delinquency alone had no effect on parental warmth in early adolescence, males who continued to engage in delinquent behaviors experienced an overall decrease in paternal warmth. Irrespective of youth behavior, paternal warmth tends to decrease for males over time (Jaggers et al., 2015). This may represent a process of "growing apart" between male children and their father figure. The addition of anger that is projected outward and delinquent behavior likely adds to an already existing decrease in warmth. The lack of a paternal supervision contributes to further delinquency and is associated with adult criminality (Williams & Smalls, 2015). It is to be expected that delinquency likely contributes to continued criminality, which may be made worse by externalized anger.

Paternal warmth increases when females outwardly exhibit anger and continue to engage in delinquent behaviors. Prior research has shown that females tend to experience increases in warmth across adolescence (Jaggers et al., 2015). Increases in paternal warmth under circumstances of delinquency and anger may represent an intensified effort by fathers to maintain a normative relationship with their female

children. It may also be that fathers are asserting greater control over their daughters' behaviors in hopes of limiting or eliminating problematic activities.

Parenting Effects

Since these youths resided in two-parent households, a parental effect may also account for these results. Mothers are often stereotyped as the caregiver, responsible for cooking, cleaning, and child rearing. On the other hand, fathers are often typecast as the disciplinarian, although the often-described parental roles and responsibilities in family systems are frequently shared by female and male caregivers in Black American families. Acceptance of these roles by parents may partially explain the parent-child relationships found in the current study. While maternal warmth mostly increased, paternal warmth decreased. As fathers withdrew warmth, mothers seemed to fill a potential gap left by the father figure.

It is important to consider the consistency and directionality of such relationships. Certainly a reciprocal relationship exists between parenting and child behaviors. Work by Salihovic and colleagues (2012) showed that parent behaviors, especially in extreme cases such as psychopathy, can be a reactionary response rather than one that predicts deviant behavior. This too may be the case with delinquency. Parental behaviors likely function as a reaction to adolescent anger. Since adolescents are often mired in the development of their own identity, these parental responses may be seen as controlling or unwelcome.

Strengths and Limitations

There are a number of strengths to the current study. This study was conducted using eight years of longitudinal data providing greater depth to the results and implications for the parent-child relationship. This study examined individuals from low-income neighborhoods composed largely of Black American families. Research on this population

largely focuses on negative behavioral outcomes. In contrast, this study provides valuable information about how parents respond to difficult situations with their children. Finally, the current study revealed a gendered response to adolescent behaviors both for children and for parents.

There are also limitations to the current study. All adolescents in this sample reported both a male and female parental figure. The results demonstrate distinctions in parenting for two-parent households. Delinquency was measured using the frequency and recency of selected delinquent behaviors. While this approach is informative and provides insight into delinquent behaviors, all behaviors were treated equally. The reliability of the internalized anger construct ($\alpha = .50$) and externalized anger ($\alpha = .63$) were lower than expected; still the items used reflected the concepts measured in this study. Additionally, although the sample is composed of youth living in extreme poverty, we did not specifically focus on how the environmental context (e.g., neighborhood ecology) contributes to and interacts with adolescent and parent behaviors. Finally, participants with fewer than 3 data points were removed from the analysis. While this affords a more parsimonious model, systematically missing data limits how well the completed cases may accurately account for longitudinal trajectories.

Conclusion

There is a gendered effect in how parents respond to male and female children. Paternal figures tended to respond more strongly to their daughters, while mother figures demonstrated a more balanced response. Though not explicitly addressed in the current study, the manifestation of anger and delinquent behavior likely contribute to further social and legal problems for these youth. The nature of the parental response, especially for male children, could exacerbate these problems and increase entanglement with law enforcement.

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