

Adolescent Motherhood, Depression, and Delinquency

by

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ABSTRACT

Although recent studies have report that many stressors and strains (i.e., financial, educational and psychological) arise from being an adolescent mother, whether adolescent motherhood influences delinquency remains an unanswered empirical question. Using data from a nationally representative sample of adolescents (National Longitudinal Study of Adolescent Health), the current study examines the relationship between motherhood, depression, and delinquency (N = 676). The sample is comprised of solely females between ages 13 and 21-years-old. The female subjects were categorized either as an adolescent mothers, non-mother adolescents, or adult mothers. This study tests the following hypotheses: (1) adolescent mothers are prone to involvement in delinquent behavior; and, (2) adolescent mothers who experience depression are at greater risk of delinquent behavior. The results indicate that there is a decrease in delinquency among adolescent mothers who do not experience depression. However, there is an increase in delinquency among adolescent mothers who experience depression.

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Introduction

The United States has experienced what some call an epidemic of teen childbearing (McDonnell, Limber and Connor-Godbey, 2007). Although teen pregnancy rates have declined over time, the United States is still ranked first among industrialized nations (McDonnell et al., 2007; Sheftall, Schoppe-Sullivan and Futris, 2010). There are nearly one million teens between ages of 15 to 19 who become pregnant annually, however, only half of the pregnancies result in a live birth (Boonstra, 2002; Coley and Chase-Landsdale, 1998; McDonnell et al., 2007). It is estimated that 19 percent of Caucasians and 40 percent African American females will become pregnant by age 18 (Furstenberg, Brooks-Gunn, and Chase-Lansdale, 1989; Birkeland, Thompson, and Phares, 2005). The lives of adolescent mothers may be heavily impacted in many ways once they give birth to a child. For example, teen mothers experience an increase in stress associated with financial, academic, and psychological deficits (e.g., depression). Compared to males and non-parents, teen mothers are at greater risk for depression as a result of these strains (Barth and Schinke, 1984; Birkeland et al., 2005; Frustenberg et al., 1989; Futris and Schoppe-Sullivan, 2007; Sigfusdottir, Farkas, and Silver, 2004). Delinquency is one way in which individuals who experience negative emotional states like depression may cope with strain (Agnew, 1992).

A maladaptive coping mechanism (e.g., delinquent behavior) is one outlet for adolescents who experience depression (Beyers and Loeber, 2003; Scheier and Botvin, 1997; Sigfusdottir et al., 2004). Prior research suggests that there is a strong relationship between depression and delinquency among females (Dixon, Howie and Starling, 2004, Pulay et al., 2004; Vaske and Gehring, 2009). Compared to their male counterparts,

depression is more prevalent among female offenders (McClellan, Farabee and Crouch, 1997; Teplin et al., 2002; Vaske and Gehring, 2009). Vaske and Gehring (2009) found that substance use was more common among females who experience higher levels of depression. This finding implies that substance abuse is a maladaptive coping mechanism for depressed females.

To date, there have been few studies examining the relationship between adolescent mothering, depression, and delinquency. The current study addresses this void in the literature. Specifically, a sample of 676 females between 13 and 21-years-old from the National Longitudinal Study of Adolescent Health is used to address the study's research questions: (1) Is adolescent motherhood associated with delinquency? and, (2) Are adolescent mothers who are depressed at greater risk for delinquent behavior? The sample includes females who are adolescent mothers, non-mothering adolescents and adult mothers (18 years of age and older). The next section highlights the importance of these research questions by examining teenage pregnancy in the United States, the strains associated with adolescent motherhood, and the relationship between depression and delinquency.

Adolescent Childbearing and Strain

Despite a 30 percent decrease in adolescent pregnancies since the early 1990s, teen parenting has remained a consistent social problem in the United States (Futris and Schoppe-Sullivan, 2007; Klein, 2005; Sheftall et al., 2010). For example, nearly a million teens between the ages of 15 to 19 become pregnant annually (Birkeland et al., 2005; Hotz, McElroy and Sanders, 1997; McDonnell et al., 2007; Spivak and Weitzman, 1987). The Guttmacher Institute (2006) found that adolescent girls accounted for 414,000 live

births in 2003 (as noted in Sheftall et al., 2010). Prior to having a child, adolescent mothers are unlikely to be married. Singh and Darroch (2000) note that a significant number of female teens conceive out of wedlock, which may lead to negative experiences with the father and subsequent strain. Stressors such as decreased financial resources because motherhood is costly, physical exhaustion, task overload, role restriction and confusion, social isolation, and depressive symptoms are all consequences of being a teen mother (Birkeland et al., 2005; Uno, Florsheim and Uchino, 1998; Webster-Stratton, 1990). According to Furstenberg and colleagues (1989), serious educational, financial, and relationship problems of teenage girls are all associated with adolescent parenthood. Research has shown that the responsibilities of childbearing cause problems psychologically, socially, economically, and academically among adolescent mothers (Furstenberg et al., 1989; Futris and Schoppe-Sullivan, 2007; Uno et al., 1998; Webster-Stratton, 1990).

Adolescent childrearing goes beyond the birthing of a child to the roles and responsibilities that mothers have as primary caregivers of a newborn. Adolescent mothers may face many adversities, psychologically, economically, and physically in regards to their health, and the health of their child after conceiving (Brooks-Gunn and Frustenberg, 1986; Furstenberg et al., 1989; Miller-Johnson et al., 1999; Spivak and Weitzman, 1987). Compared to infants born to adult mothers, infants born to adolescent mothers are at higher risks for low birth weights, neurodevelopmental delay, and not surviving past the age of one (Rhein et al., 1998; Spivak and Weitzman, 1987). Each of these factors may act as a stressor or strain on adolescent mothers. Often times, these

mothers are faced with these issues during one of the most critical stages after delivering, the postpartum phase.

Postpartum depression may result, at least in part, from the hormonal changes that occur after giving birth to a child. This can be challenging for any mother to handle, but may be especially challenging for teen mothers (Birkeland et al., 2005). In fact, studies indicate that during the postpartum period, one out of every four women experiences some form of emotional distress (Alexander and Higgins, 1993; Birkeland et al., 2005; Hopkins, Marcus and Campbell, 1984; Pierce, Strauman and Vandell, 1999). The emotional distress among teenage mothers has the potential to be detrimental, especially since they have already engaged in risky sexual activity. Teenage mothers may be at risk for engaging in subsequent crime-analogous or delinquent behaviors as a means of coping with negative emotions.

In addition, childbearing can be an expensive responsibility that may place a financial strain on teen mothers. There are tremendous costs, both socially and economically, of early childbearing (McDonnell et al., 2007). Adolescent parents are more likely to have larger families and to receive welfare (Klepinger, Lundberg and Plotnick, 1995). Expenses associated with the care of a child such as toiletries (e.g., diapers, wipes, soap, etc.), food, and other costs are often difficult for adolescent mothers, resulting in an increased likelihood that they will rely on government assistance for support. According to Hotz and colleagues (1997), the number of childbearing teen women who receive support from Aid to Families with Dependent Children (AFDC) has increased. Problems arising from teen parenting extend further than the immediate financial responsibilities and into the social realm of these adolescent mothers.

It is assumed that once a teen gives birth to a child they will no longer be able to engage in the level of social activities they once enjoyed prior to childbirth. As a result, friendships may be hindered, causing teen mothers to rely on others (e.g., grandparents of the child) for support (Miller-Johnson et al., 1999). Adolescent mothers are more likely to become depressed or socially isolated, limiting their social sphere to other teenage mothers (Spivak and Weitzman, 1987). Intimate ties promote a sense of identity, emotional security, and act as a safeguard against the effects of stress (Zippay, 1995). Social isolation limits adolescent mothers' access to support to help them cope positively with the strains associated with parenting (McDonnell et al., 2007).

Many studies have found teen childbearing has a negative impact on a mother's education. In comparison to non-parenting teenagers, teen mothers typically perform poorly in school and are less likely to complete their education (McDonnell et al., 2007). It has been shown that prior to conceiving, pregnant adolescents tend to experience below average school performance and achievement test scores (Spivak and Weitzman, 1987). Klepinger and colleagues (1995) found that, irrespective of race or ethnicity, teen mothers were one to three years behind their peers in school. Data from the National Longitudinal Survey of Youth indicate that 35 percent of teen mothers graduated from high school compared to 85 percent of teens who did not have children (Hotz et al., 1997; Klepinger et al., 1995). This lack of education limits one's ability to work in certain positions, as well as receive adequate pay needed to achieve the "American Dream." Individuals who become parents as teens are more likely than their non-parenting counterparts to have their educational journey truncated (Card and Wise, 1979; Fletcher and Wolfe, 2012). It has been found that teenage fatherhood decreases years of schooling,

and increases the likelihood of general education development (GED) receipt (Fletcher and Wolfe, 2012). Younger mothers face greater educational deficits than young fathers, who do not participate in the pregnancy process and are not active in the early child rearing stages (Card and Wise, 1979).

Previous studies have examined the lack of involvement of teen fathers in the child rearing process, linking many challenges (i.e., poverty, unemployment, lack of education, and poor relationship skills) faced by teen fathers to their lack of involvement in their child's life (Futris and Schoppe-Sullivan 2007; Sheftall et al., 2010). Research shows that many teen fathers do not see their child regularly or provide consistent help for household expenses (Rhein et al., 1997). Given that co-parenting involves the mother's and father's ability to coordinate their shared responsibilities, the many obstacles faced by teenage fathers makes co-parenting difficult, which may serve as an explanation for why teen mothers tend to be responsible for parenting (Futris and Schoppe-Sullivan, 2007; Schoppe-Sullivan et al., 2004).

Thus far, research on teen parenting in the United States has highlighted many problems resulting from adolescent child rearing. In sum, financial, psychological, social, and academic deficits appear to negatively influence the lives of childrearing adolescent mothers and contribute to negative emotions in the form of depression. Such deficits also reduce access to positive social support and increase the likelihood that teen mothers will engage in delinquency to cope with negative emotions. The next section of this study examines the relationship between depression and delinquency.

Depression and Delinquency

Two of the most common problems experienced by adolescents are depression and delinquency (Wolff and Ollendick, 2006). According to Daigle and colleagues (2007) depression is correlated with a variety of negative outcomes, including delinquent and criminal behavior. Affective disorders are more prevalent among females than males (Hodgkinson and Prins, 2011). Furthermore, depression symptoms account for a significant amount of affective disorders experienced by females (Hodgkinson and Prins, 2011). For example, empirical studies have shown that females are twice as likely as males to experience symptoms of depression (e.g., Nolen-Hoeksema, 2001). Depression among women has been linked to biological vulnerability (Birkeland et al., 2005; Hodgkinson and Prins, 2011). For example, female hormones (e.g., estrogen, progesterone) have an effect on mood and negative emotions (Wisner, Parry, and Piontek, 2002; Hodgkinson and Prins, 2011).

Situational and socio-cultural factors may also account for gender differences in depression (Piccinelli and Wilkinson, 2000). Other factors that increase female vulnerability to depression include low income, unemployment or low employment status, low educational levels, larger family sizes, lack of a supporting relationship (Hodgkinson and Prins, 2011). Women may respond to these stressors via negative emotions like depression, as opposed to anger (Hodgkinson and Prins, 2011). Studies have shown that individuals use delinquency as a maladaptive way of coping with negative emotions (Agnew, 1992). Moreover, depression has been associated with higher levels of involvement in delinquent and criminal behavior, including violence (Aronen

and Soininen, 2000; Beyers and Loeber, 2003; Bjork, Dougherty and Moeller, 1997; Dixon, Howie and Starling, 2004; Pulay et al., 2008).

Within the criminal justice system there are many offenders who exhibit symptoms of depression (Hodgkinson and Prins, 2011). This suggests that depression may lead to involvement in crime. Scholars have provided four arguments to explain why depressed youth are more susceptible to engage in crime: (1) they fail to acknowledge the consequences of their behavior, (2) they withdraw from social activities and lack effective attachments, (3) they are rejected by their peers, and (4) they use drugs or alcohol to cope with their depression (Byrne and Howells, 2002; Vaske and Gehring, 2009). According to Agnew's (1992) general strain theory (GST), strain leads to an increase in negative emotions (i.e., anger, frustration, anxiety and depression) consequently leading to involvement in crime. The central assumption of GST is that delinquency arises as a response to noxious circumstances and situations (Mazerolle and Maahs, 2000). Such noxious circumstances and situations occur when individuals fail to achieve positively valued goals, when individuals are presented with unhealthy circumstances (e.g., abusive relationships, financial hardships, teen childbearing), or when individuals lose something to which they assign positive value (e.g., the loss of a job, romantic partner, or friend) (Agnew, 1992; Agnew, 2001; Broidy and Agnew, 1997; Mazerolle and Maahs, 2000; Paternoster and Mazerolle, 1994; Pratt, Gau and Franklin, 2010). Prior research suggest that adolescent mothers are faced with financial, educational, psychological and social adversities after giving birth to a child, which implies that adolescent mothers may be at an escalated risk for experiencing strain. Consequently, strain experienced by adolescent mothers may lead to the development of

negative emotions (i.e., depression). There are many factors that determine the way in which individuals respond to negative emotions such as depression.

Response to Negative Emotions

According to GST, negative affective states (e.g., anger, depression, and frustration) may arise within individuals who face strains (Mazerolle and Maahs, 2000). The chances of delinquent outcomes are increased when anger and frustration occur as a response to strain (Mazerolle and Maahs, 2000). Agnew (2001 p. 319) states, “Crime may be a method for reducing strain (e.g., stealing money one desires), seeking revenge, or alleviating negative emotions (e.g., through illicit drug use).” Coping is fundamental when handling strains and stressors. Prior research suggests that women tend to respond to strain with sadness and depression, while males turn outward (e.g., with anger and frustration) (Broidy and Agnew, 1997).

According to Mazerolle and Maahs (2000), GST recognizes that delinquent responses increase when certain conditioning influences are experienced. The conditioning role of self-esteem, social support, self-efficacy, prior deviant experiences, intelligence, moral beliefs, and affiliation with deviant peers have all been identified as causes of delinquent responses to negative emotions (Agnew, 1992). Delinquency is influenced by factors such as low self-control, impulsivity, and antisocial personality tendencies, which are related to criminal and analogous acts (e.g., smoking, excessive drinking, using drugs, driving too fast, having children out of wedlock, engaging in illicit sex, and gambling) (Chapple, 2005; Gottfredson and Hirschi, 1990; Hay, 2001; Mazerolle and Maahs, 2000; Moffitt, 1993; Patterson, DeBaryshe and Ramsey, 1989; Pratt and Cullen, 2000; Pratt, Turner and Piquero, 2004; Schoepfer and Piquero, 2006;

Unnever, Cullen and Pratt, 2003; Vazasonyi and Crosswhite, 2004). Individuals with these particular personality traits are seen to be more physical, more impulsive, and easily provoked, and according to general strain theory they are likely to cope with strain through delinquency (Mazerolle and Maahs, 2000). In short, an individual's levels of self-control may explain involvement in criminal or deviant behavior, as well as the response to strain (Gottfredson and Hirschi, 1990; Mazerolle and Maahs, 2000; Pratt and Cullen, 2000).

Current Focus

There has been a considerable amount of research on the consequences of teen parenting in fields of social work and psychology. However, many rely on limited samples (e.g., African American females only or a small number of participants). Within criminology, however, the effects of teen parenting on negative outcomes, such as depression and delinquency, have yet to be investigated. This study examines the consequences of adolescent motherhood addressing two research questions: (1) Is adolescent motherhood associated with an increase in delinquency? and, (2) Are adolescent mothers who are depressed at greater risk for delinquent behavior? These hypotheses are graphically displayed in Figure 1.

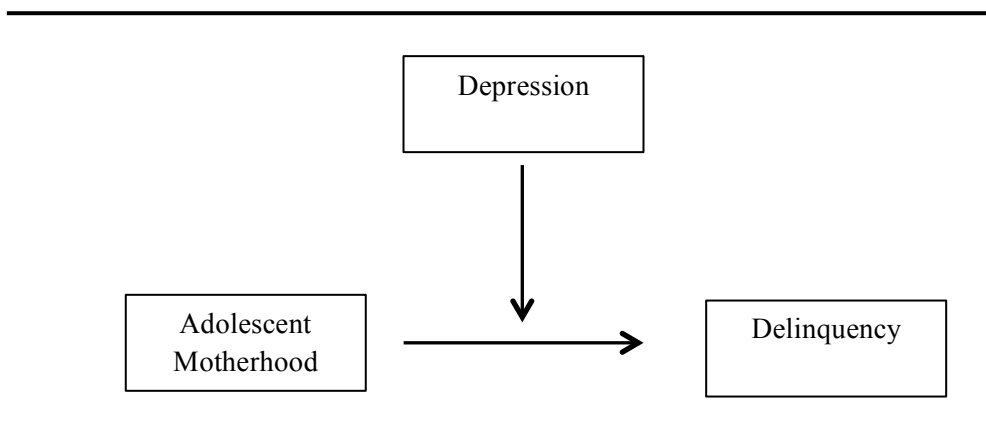


Figure 1. Research hypotheses tested.

Methods

Data

The data for this study were drawn from the first and second waves of the National Longitudinal Survey of Adolescent Health (Add Health). The Add Health data consists of a nationally representative sample of adolescents in 7th through 12th grades who were randomly selected from 80 high schools and 52 middle schools across the United States. In the recruitment process, researchers stratified schools by region of country, urbanicity, school size, school type, and ethnicity to ensure that the data were representative of the schools in the United States (Bearman, Jones and Undry, 1997).

The present study uses the publicly available version of the Add Health data. Wave one data were collected between 1994 and 1995 and consist of 6,504 respondents who participated in either the in-home interviews or an in-school questionnaire. Students who were not present when the in-school survey was administered were eligible for the in-home interviews. Wave two was conducted in 1996, which consisted of nearly 15,000 students who participated in a follow-up of the in-home interviews that were administered at wave one. Respondents who were in grade 12 in the first wave were not

included in wave two. The current sample ($N = 676$) is composed of females between the ages of 13 and 21 ($M = 16.11$, $SD = 1.19$). The data includes 37 (5.47 percent) adolescent mothers (≤ 17 years old), and two comparison groups comprised of 44 (6.51 percent) adult mothers (≥ 18 years old) and 595 (87.51 percent) non-mother adolescents. In regards to racial/ethnic background, approximately 44.1 percent of the sample was White, while the other 55.9 percent was made up of racial and ethnic minorities.

Dependent Variable

Delinquency. To measure adolescent mothers' involvement in delinquent behavior, the current study uses 13 items that range from relatively minor acts (e.g., stealing something less than \$50) to serious violent acts (e.g., shot or stabbed someone) (Dornbusch et al., 2001). Participants were asked how often they committed these particular acts over the past 12 months. Each item featured a 4 point scale: (0) *never*, (1) *1 or 2 times*, (2) *3 or 4 times*, and (3) *5 or more times*. The items were summed to create an additive scale ($\alpha = .76$; mean inter-item $r = .206$). Higher scores indicate more reported instances of delinquency. See the appendix for a complete list of the items used to construct the delinquency scale.

Independent Variables

Adolescent motherhood. Consistent with prior research, the current study defines an adolescent as an individual between the ages of 12 and 17 (Altman et al., 1996; Mersky, Topitzes and Reynolds, 2012; Robbins et al., 2008). Adolescent motherhood is defined as a female between the ages of 12 and 17 who gave birth to a child and who is actively involved in the child rearing process. Adolescent motherhood is operationalized using two survey items. First, pregnant females self-reported how their pregnancy ended.

Responses were coded dichotomously (0 = *no live birth* and 1 = *live birth*). The second item asked mothers, “Does the child live with you?” This item captures child rearing. The *adolescent motherhood* variable was constructed by summing the two dummy coded variables. Participants who scored a 2 (indicating childbearing and child rearing) were classified as adolescent mothers (coded 1), while all others were coded as otherwise (coded 0).

Depression. Depression is operationalized as an 11-item additive scale (see Peck, 2013). The scale includes items that asked adolescents, in the past seven days, how often: (1) you felt depressed, (2) thought your life had been a failure, (3) were bothered by things that usually don’t bother you, (4) did not feel like eating, (5) talked less than usual, (6) you felt lonely, (7) you felt sad, (8) thought people disliked you, (9) life was not worth living, (10) felt like you could not shake off the blues even with help from my family and friends, and (11) you enjoyed life (reverse coded). Responses were closed-ended: (0) *never/rarely*, (1) *sometimes*, (2) *a lot of times*, and (3) *most/all the time*. The scale was coded so that higher scores indicate higher levels of depression ($\alpha = .85$; mean inter-item $r = .347$).

Depressed adolescent mothers. To operationalize depressed adolescent mothers, an interaction term was created by multiplying two independent variables together: depression (mean centered) and adolescent motherhood. The depression scale was mean-centered to thwart concerns associated with collinearity (Aiken and West, 1991). As mentioned earlier, research has shown there are many stressors associated with adolescent motherhood, such as academic, emotional, physical, and psychological factors. Therefore, an interaction variable (i.e., depression X adolescent motherhood) is

essential for examining the effect of depression on delinquency among adolescent mothers.

Statistical controls. Variables shown to be correlated with delinquency in previous studies are controlled for statistically. These variables include: *white*, *age*, and *low self-control*. *White* was a dummy variable (1 = *yes*, 0 = *no*), while *age* was measured in years ($M = 16.11$, $SD = 1.19$). *Low self-control* was measured at wave one using a 4-item self-control scale adapted from Perrone et al. (2004). Self-control items asked individuals, how often each of the following happen to them: (1) you had trouble keeping your mind on what you were doing, (2) you had trouble getting your homework done, (3) you had trouble paying attention in school, and (4) you had trouble getting along with your teachers. The responses for the first item were coded as (0) *never*, (1) *sometimes*, (2) *a lot of times*, and (3) *most/all of the time*. Responses for the remaining items were coded as (0) *never*, (1) *just a few times*, (2) *about once a week*, (3) *almost every day*, and (4) *everyday*. The items were summed to create an additive scale. Higher scores indicate lower levels of self-control ($\alpha = .63$; mean inter-item $r = .289$).

Analytic Strategy

The data-analytic strategy consists of several steps. To conduct diagnostics and preliminary hypothesis testing, the analyses begin by presenting bivariate correlations for the dependent, independent (adolescent motherhood and depression), and control variables. Because the correlations between the independent variables did not exceed $|.25|$, harmful levels of collinearity did not appear to be a problem. This conclusion was supported after conducting model diagnostics (VIF range = 1.01 to 1.13, mean VIF = 1.06). Next, because there is evidence of over-dispersion in the delinquency scale (mean

= 3.29, variance = 14.96), the study estimates a series of negative binomial regression models. To check for heteroscedasticity, the Breusch-Pagan test was used. The results indicated the presence of heteroscedasticity ($\chi^2 = 93.55, p < .001$). Therefore, robust standard errors are estimated.

Results

Bivariate Correlations

The descriptive statistics and bivariate correlations for the variables used in the current study are presented in Table 1. At the bivariate level, several significant associations between variables of interest are observed. There is a significant and negative correlation between adolescent motherhood and delinquency. When compared to non-mother adolescents and older mothers (18 years or older), adolescent mothers are less likely to be involved in delinquent behavior. This finding suggests that being an adolescent mother is negatively associated with delinquent behavior. Next, as expected, depression is significantly and positively related to delinquency among the females in the current study. The relationship between depression and adolescent motherhood was not significant. Consistent with previous research (Gottfredson and Hirschi, 1990; Pratt and Cullen, 2000), low self-control is correlated with involvement in delinquency.

Table 1. Descriptive Statistics and Bivariate Correlation for Study Variables (N = 676)

Variable	Mean	SD	1	2	3	4	5	6
1 Delinquency	3.57	4.15	1.00					
2 Adolescent Motherhood	0.05	--	-0.09**	1.00				
3 Depression	7.00	5.37	0.19***	-0.02	1.00			
4 Low self-control	4.30	2.67	0.26***	-0.04	0.19***	1.00		
5 Age	16.11	1.19	-0.15***	0.04	-0.03	-0.07	1.00	
6 White	0.56	--	0.01	-0.04	-0.07	-0.05	0.02	1.00

* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$ (two-tailed test)

Mean Comparisons

Two one-way ANOVA models are estimated for both depression and delinquency using three groups: non-adolescent mothers, adolescent mothers, and adult mothers (see Table 2). The *F*-ratio did not reach statistical significance in the first model, thus indicating no difference in the level of depression experienced between the three groups. Next, results indicate that there are differences in delinquency in involvement across groups. Results from the Bonferonni multiple comparison test showed that non-mothers reported significantly higher levels of delinquency than adolescent mothers.

Table 2. One-way ANOVA models by Motherhood Status

	Depression			Delinquency		
	Mean	<i>SD</i>	<i>N</i>	Mean	<i>SD</i>	<i>N</i>
Non-Mothers	7.02	5.40	595	3.47	3.95	595
Adult Mothers	7.07	5.85	44	2.20	3.19	44
Adolescent Mothers	6.54	4.31	37	1.81	2.63	37
<i>F</i> -Ratio		0.14			5.12**	

** $p \leq .01$

Multiple Regression Analyses

As mentioned earlier, over-dispersion was detected in the dependent variable (i.e., delinquency), therefore a series of negative binomial regression models are estimated. The likelihood ratio test of alpha for the models in Table 3 indicate that these data are consistent with the model. In addition, the Wald χ^2 statistics are significant ($p \leq .001$),

indicating that there is more predictive power relative to constant-only models.

Table 3. Negative Binomial Models Regressing Delinquency on Adolescent Mothers and Depression (N = 676)

	Delinquency ^a								
	Model 1			Model 2			Model 3		
	<i>b</i>	SE	z-test	<i>b</i>	SE	z-test	<i>b</i>	SE	z-test
Low self-control	0.11	0.02	6.40***	0.10	0.02	5.62***	0.10	0.02	5.67***
Age	-0.14	0.04	-3.71***	-0.13	0.04	-3.64***	-0.13	0.04	-3.57***
White	-0.01	0.09	0.15	0.03	0.09	0.34	0.03	0.09	0.30
Adolescent Motherhood	-0.51	0.25	-2.02*	-0.53	0.25	-2.15*	-0.60	0.21	-2.22*
Depression	-	-	-	0.03	0.01	4.05***	0.03	0.01	3.64***
Depressed Adolescent Mothers	-	-	-	-	-	-	0.10	0.05	1.93*
LR test of $\alpha=0$	874.84***			828.38***			821.22***		
Wald χ^2	58.60***			88.70***			90.01***		
McFadden's R^2	0.02			0.03			0.03		

Note. Entries are unstandardized coefficients (*b*), and robust standard errors (SE).

^aNegative binomial regression model

* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq .001$ (two-tailed test)

Model 1 in Table 3 regresses delinquency onto adolescent motherhood and the control variables. There is a negative and statistically significant relationship between adolescent motherhood and delinquency ($z\text{-test} = -2.02, p \leq .05$). Put differently, adolescent mother's mean delinquency score is 51 percent lower than the reference group, while holding all other variables in the model constant. This suggests that having a child as an adolescent decrease the involvement in delinquent behavior of adolescent mothers. Also, age and low self-control reached statistical significance in this model.

Next, depression is added to the equation in Model 2. Adolescent motherhood, depression, low self-control, and age were all statistically significant. Regarding depression, the unstandardized regression estimate indicates that a one-unit increase in the depression scale increases a respondents mean delinquency score by approximately 3 percent. These findings suggest that being an adolescent mother decreases the likelihood of involvement in delinquent behaviors, while depression is associated with an increase in the involvement in delinquent behavior. Thus further analyses warrant the inclusion of

an interaction term to test whether depressed adolescent mothers are at greater risk for involvement in delinquent behavior.

Finally, Model 3 regresses delinquency on adolescent motherhood, depression, and the interaction term (i.e., depressed adolescent mothers). As mentioned earlier, the depression scale score was mean-centered to address concerns associated with collinearity. As a result, the average VIF decreased from 1.80 to 1.03. The depressed adolescent mothers variable was significant. Put differently, the effect of depression on delinquency is stronger among adolescent mothers relative to those in the reference group (i.e., adult mothers and non-mother adolescents) while holding all other variables in the model constant. This finding is notable because previous research has failed to consider the role of emotions among adolescent mothers when it comes to delinquent involvement (Hope et al., 2003).

Discussion

Building on prior research, the current study examined the relationship between adolescent motherhood on delinquency. Previous research (see Hope et al., 2000) examining this relationship failed to take into account negative emotions (i.e., depression) that may arise from the strains of teen parenting (e.g., financial, educational, psychological, etc.). Given that adolescent mothers are subjected to many adversities resulting from the childrearing processes and females are more likely than their counterparts to experience symptoms of depression, investigating the response to strain among adolescent mothers is salient. Two important findings from the current study warrant further discussion.

First, the analyses revealed a negative and statistically significant effect of adolescent motherhood and delinquency. In other words, adolescent mothers are less likely to engage in delinquent acts than non-mother adolescents and adult mothers. In addition to addressing the current study's first research question, this finding is also consistent with prior empirical evidence suggesting that peer relationships and social activities are disrupted for adolescent parents, thereby limiting opportunities for delinquency. Furthermore, adolescent motherhood can be viewed as a major life event (e.g., life course transition) for females, which may cause them to deviate from delinquent behavior. Sampson and Laub (1990) refer to this notion as a "turning point."

Secondly, the results also indicate that being depressed increases involvement in delinquency in the full female sample. Consistent with general strain theory, then, delinquency is a maladaptive coping mechanism for individuals who experience the negative emotional state of depression (Agnew, 1992, 2006). It should be noted, however, that the effect of depression is strongest among adolescent mothers. In sum, depression plays a more significant role in the lives of the adolescent mothers, suggesting some important directions for future research.

As in nearly all research, limitations are inevitable. The first limitation is that the analyses are conducted using a cross sectional research design. More specifically, depression and delinquency was measured at the same time which limits the ability to make causal inferences. Next, although we found that depression among adolescent mothers lead to an increase in delinquent involvement, the strains of adolescent motherhood are implied but remain unmeasured (e.g., financial, educational, etc.). It is also important to recognize that the current study did not take into account factors (e.g.,

social support, self-esteem, and self-efficacy) that may increase the potential for positive coping while examining the relationship between adolescent motherhood and delinquency. Therefore, in order to capture a more complete picture of that relationship, future studies should include these variables.

This study uses a female only sample. Males obviously play a role in teen parenting, albeit a lesser one in most cases. Future researchers should consider examining the effects of teen parenting on delinquency among males, especially with regard to the role that negative emotions may play and the extent to which both of these outcomes may be gendered. For example, males may respond to the strains of fatherhood with anger, as opposed to depression. Males may cope with anger in positive or maladaptive ways (e.g., delinquency). GST asserts that anger and frustration produce emotional reactions that increase the likelihood of a criminal response (e.g., aggressing others) (Broidy and Agnew, 1997).

Although teenage pregnancy rates may be on the decline, it is clear that teen motherhood remains an important social problem in the United States. A variety of institutions (e.g., the family, school, and health care) should continue to play a role in the prevention of teen pregnancy through education and prevention strategies. Despite such efforts, adolescents still account for a significant portion of births, presenting challenges for social services as well as public health. The current study suggests that service providers should be especially attuned to the mental health needs of adolescent mothers (e.g., depression) to help teens develop pro-social (as opposed to maladaptive) coping mechanisms. In addition, service providers should consider implementing risk

assessments for teenage mothers to detect signs of depression in order to better provide for the needs of this special population of youth.

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APPENDIX A

SCALE ITEMS FOR DELINQUENCY MEASURE

Delinquency scale was created by summing responses to the following items:

1. Paint graffiti or signs on someone else's property or in a public place.
 2. Deliberately damage property that didn't belong to you.
 3. Lie to your parents or guardians about where you had been or whom you were with.
 4. Take something from a store without paying for it.
 5. Run away from home.
 6. Drive a car without its owner's permission.
 7. Steal something worth more than \$50.
 8. Go into a house or building to steal something.
 9. Steal something worth less than \$50.
 10. Act loud, rowdy, or unruly in a public place.
 11. Get into a serious fight.
 12. Hurt someone badly enough that to need bandages or care from a doctor or nurse.
 13. Use or threaten to use a weapon to get something from someone.
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