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The Mediating Effects of Child Coping and Social Support on Child Adjustment in the Wake of
Hurricane Katrina

by

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Abstract

In the past, post-disaster research has focused on the factors contributing to child PTSD development and severity. Although understanding these variables is important, it is also crucial to determine the variables related to positive child adjustment post-disasters. This study examined the mediating effects of child coping styles and social support on the relationship between maternal psychopathology and positive child adjustment. Mother-child dyads affected by Hurricane Katrina completed questionnaire packets containing multiple measures, such as the HURTE, BASC-2, and SCL-90-R, at various time waves following the hurricane. After controlling for hurricane exposure, hierarchical regression analysis revealed no significant correlation between maternal psychopathology and child personal adjustment. Analysis was rerun using a measure of child internalizing problems rather than child adjustment; however, again, no significant correlation was detected between maternal psychopathology and child internalizing problems. The mediating effects of both positive and negative child coping styles as well as child-perceived peer support approached significance, but these results are dismissed due to lack of significance between maternal distress and child internalizing problems. This lack of significance may be due to the child's unawareness of maternal distress; therefore further research should be conducted on this topic.

Keywords: disaster exposure, maternal psychopathology, child adjustment, internalizing problems, coping, social support

The Mediating Effects of Child Coping and Social Support on Child Adjustment in the Wake of Hurricane Katrina

Natural disaster exposure has become a popular research topic in the years following Hurricane Katrina. Past studies have shown a link between disaster exposure and increased risk of child posttraumatic stress disorder (PTSD); however most of these symptoms subside of their own accord after a few months (Norris et al., 2002; Vernberg, La Greca, Silverman, & Prinstein, 1996). In contrast, some of these symptoms persist and manifest into chronic distress (Norris et al., 2002). Following Hurricane Katrina, Weems and colleagues (2010) discovered that PTSD symptomology had not declined even 24 to 30 months post-hurricane. As a result of such findings, research has shifted to discovering the main factors causing PTSD to persist as well as actions that can be taken to reduce the risk of PTSD development.

Research studying the post-disaster reactions of children has dated back to the 1950's (Vogel and Vernberg, 1993). Factors found to affect the severity of child PTSD include community violence exposure (Martin, Revington, & Seedat, 2012), proximity to the disaster (Goenjian, et al., 2001), and time since disaster exposure (La Greca, Silverman, Vernberg, & Prinstein, 1996). In regards to hurricane disaster exposure, research has been fairly limited due to the unpredictable nature of hurricanes. In other words, it is impossible to determine the impact of a hurricane until it has made landfall, and the time frame between destructive hurricanes can range from months to years. Despite this unpredictability, psychologists have had the opportunity to study the effects of Hurricane Hugo, Hurricane Andrew, Hurricane Mitch, Hurricane Katrina, and Hurricane Sandy in recent years.

Following Hurricane Andrew, La Greca and colleagues (1996) developed a model linking traumatic exposure, pre-existing traits of the child, child coping, and social environment with post-disaster child PTSD development. The variable of traumatic exposure was broken into two aspects – perceived life threat and perceived loss and disruption, and consistent with previous research, it was found to be one of the most important factors in predicting child PTSD development. (La Greca et al., 1996; Vernberg et al., 1996; Lonigan, Shannon, Finch, Daugherty, and Taylor, 1991). Pre-existing traits of the children included age, gender, and ethnicity. Age and gender did not yield differences in PTSD symptomology; however, ethnic minorities continued to have higher PTSD symptomology regardless of the stage of the study. Child coping was categorized into positive and negative coping styles (i.e. wishful thinking, blame-anger, social withdrawal), and the study revealed that negative coping styles, especially blame-anger, were predictive of symptom severity. Surprisingly, positive coping styles were linked to higher symptomology as well, which was believed to be due to the fact that the children were actively reviewing the traumatic events, causing negative emotions to resurface. The last variable, social environment, was studied via social support (parents, friends, classmates, and teachers) and the number of traumatic life events (i.e. death or hospitalization of family) that occurred post-hurricane. Higher numbers of major life events were linked to higher PTSD symptomology and lower reports of social support. On the other hand, higher reports of social support were linked to decreased child PTSD severity, demonstrating its importance as a recovery mechanism. Around the same time, Vernberg and colleagues (1996) published a similar model, adding strength to the findings of La Greca et al. (1996).

Another variable that has commonly been studied in relation to child PTSD development is parental psychopathology. Like post-disaster reaction research, the effects of parental psychopathology were first studied in the 1950's. Perry and colleagues (1956) discovered that as parent mental health declined, child emotional problems increased. Years later, as reported by Wingate (2007), Green and colleagues (1991) used multiple regression analysis to show that parent psychopathology, specifically parental PTSD symptomology, was significantly related to child PTSD symptomology. In addition, parental PTSD severity was found to be the strongest predictor of child PTSD development. More recently, research has revealed a significant relationship between the number of parental PTSD symptoms and the number of child PTSD symptoms (Jones, Ribbe, Cunningham, Weddle, and Langley, 2002). Some psychologists propose that as parental psychopathology increases, child adjustment decreases due to the decrease in social support provided by the parents (Franks).

In order to further explore this relationship, Kelley and colleagues (2010) studied the effects of parental psychopathology and parenting practices on child PTSD following Hurricane Katrina. The study revealed that families who experienced greater hurricane loss and disruption had greater parent PTSD symptomology. Parents with higher distress levels reported using more child routines, and their children reported having more persistent PTSD symptoms. This finding indicates a significant relationship between child routine implementation and risk of chronic PTSD in the children. This finding came as a surprise; however, it is believed that parents under distress implemented child routines in a harsh and controlling manner, which then led to increased child anxiety. In addition, negative parental coping and low parental social support were linked to increased parental psychopathology, which were in turn linked to higher levels of

child routines and child PTSD across time. Although this study examined variables related to parental psychopathology and child PTSD severity over time, it did not examine variables related to child adjustment.

Long-term examination of post-hurricane child adjustment has been fairly limited; however Spell (2007) studied the relationship between hurricane exposure and child adjustment following Hurricane Katrina. After collecting questionnaire packets from mother-child dyads 3-7 post-hurricane, Spell discovered that maternal psychopathology moderates the link between hurricane exposure and mother-reported child adjustment. The present study is an extension of Spell's research by lengthening the time frame to 14-17 months post-Katrina. Additionally, the current investigation aims to study child adjustment by combining the model of La Greca and colleagues (1996) with the model of Kelley and colleagues (2010). In doing so, the relationship between maternal psychopathology and child adjustment is being examined via the proposed mediating variables of child coping and social support.

Both child coping and social support have been linked to long-term child adjustment. As shown by La Greca and colleagues (1996), all styles of coping, including both positive and negative, were linked to increased child distress. The present study wishes to investigate the change that may occur as the post-hurricane timeframe expands. Although positive coping had a negative impact on child outcome a few months after Katrina, it is expected that this type of coping will eventually lead to benefits rather than deficits in long-term child adjustment. Additionally, parental and peer support have been linked to lower levels of child distress in several post-hurricane studies (La Greca et al., 1996, 2013). Because child coping and social

support are being studied in order to explain the relationship between maternal psychopathology and child adjustment, they are classified as mediators.

It is proposed that if variables such as child coping and child social support play a role in child PTSD development as previously discussed (La Greca et al., 1996; Vernberg et al., 1996), then these variables will also play a role in child adjustment post-hurricane. The variable of child coping will be divided into positive and negative coping styles, while child social support will be broken into parent-provided and peer-provided. It is hypothesized that maternal psychopathology will be a predictor of child adjustment. In addition, it is proposed that both positive and negative child coping will serve as mediators between maternal psychopathology and positive child adjustment. It is predicted that as maternal psychopathology increases, child usage of positive coping will decrease; therefore positive child adjustment will also decrease. On the flip side, it is predicted that as maternal psychopathology increases, the child will use more negative styles of coping, leading to decreased child adjustment. It is also hypothesized that both parent and peer-provided social support will serve as mediators between maternal psychopathology and positive child adjustment. For both types of social support, it is predicted that higher maternal psychopathology will be correlated with lower social support and lower positive child adjustment. Through running a regression analysis of these variables, correlational relationships between aforementioned variables will be revealed.

Method

Participants

Participants were grouped as mother-child dyads. Two hundred seventy-two dyads from New Orleans and surrounding parishes participated in the study, and all were displaced by

Hurricane Katrina. Child participants were recruited from schools located throughout the Orleans, Jefferson, and East Baton Rouge parishes. Based on the scales selected, early adolescents were chosen for this study; therefore the child participants ranged from 11 to 16 years old, ($M = 12.37$, $SD = 1.12$). Most of the dyads were comprised of African American participants, followed by Caucasian, Hispanic, Asian, and Native American participants. Over half of the parents graduated high school, while the family income average was below \$25,000. See Table 1 for further information.

Participants were selected based on the completion of the SCL-90-R and BASC-2-SRP scales; therefore not all dyads completed each of the six measures described below.

Measures

Demographics

Mothers first completed a demographics questionnaire, which included questions pertaining to the mother's age, race, marital status, education, and occupation as well as the child's age, race, and education. Questions regarding family income and number of individuals living in the home were also included.

Hurricane-Related Traumatic Exposure Experiences (HURTE; Vernberg et al., 1996)

In the wake of Hurricane Andrew, the Hurricane-Related Traumatic Exposure Experiences (HURTE) was developed as a measure of trauma due to hurricane exposure. Vernberg and colleagues (1996) created a questionnaire comprised of "yes/no" items, which yielded two factor scales – Life Threat and Loss-Disruption. The HURTE has shown sufficient levels of test-retest reliability and predictive validity (La Greca et al., 1996; Vernberg et al.,

1996). Mothers completed the HURTE as a parent-reported measure of child exposure to hurricane-related traumatic experiences.

Behavior Assessment System for Children, Second Edition (BASC-2; Reynolds & Kamphaus, 2004)

As a child-reported measure of personal adjustment, child participants completed the BASC-2 Self Report of Personality (SRP). It is written at a third-grade reading level and has three different versions corresponding to the age of the child: child (8-11), adolescent (12-21), and young adults (18-25). In this study, the adolescent version was used. The BASC-2 SRP consists of five composite scales: School Problems, Internalizing Problems, Inattention/Hyperactivity, Personal Adjustment, and the Emotional Symptoms Index. In addition, 18 primary scales and 4 content scales are included to broaden the depth of the self-report. Both BASC-2 measures have shown high internal consistency, test-retest reliability, and validity (Reynolds and Kamphaus, 2004). The Personal Adjustment composite scale was selected as the measure of child-reported personal adjustment.

Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1994)

The Symptom Checklist-90-Revised (SCL-90-R) was studied as a measure of general maternal psychopathology. The SCL-90-R consists of 90 items that give a broad overview of adult psychopathology. The test is comprised of nine symptom dimensions: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism, and three global indices: Global Severity Index, Positive Symptom Distress Index, and Positive Symptom Total. It has yielded high test-retest reliability as well as high internal consistency and high concurrent, convergent, discriminant, and

construct validity (Derogatis & Cleary, 1977; Derogatis, Rickels, & Rock, 1976). Overall, the Global Severity Index was studied as the indicator of maternal psychopathology.

KidCope (Spirito, Stark, and Williams, 1988)

As a measure of how well the children coped with the hurricane, child participants completed the KidCope, a short questionnaire designed to assess coping techniques. The KidCope is divided into 10 questions that cover the following subscales: distraction, social withdrawal, cognitive restructuring, self-criticism, blaming others, problem solving, emotional regulation, wishful thinking, social support, and resignation. Two different versions of the test are available – a “yes/no” question format for children 5-13 years old and a 4-point Likert response format for children 13-16. The test has displayed adequate test-reliability and validity (Spirito et al., 1992; Spirito et al., 1988).

Social Support Scale for Children (SSSC; Harter, 1985)

Children completed the Social Support Scale for Children (SSSC) as a measure of perceived social support. The SSSC is a self-report questionnaire comprised of four subscales – parents, classmates, teachers, and close friends. Each subscale consists of six questions, which are answered on a four-point response scale. The measure has shown high reliability and validity (Spirito, Stark, & Williams, 1988). The parent subscale was used as a measure of parent-provided support, while the close friends and classmates subscales were combined to serve as a measure of peer-provided support.

Procedure

After receiving Institutional Review Board (IRB) approval, schools in Orleans, Jefferson, and East Baton Rouge parishes were contacted about participating in the research study.

Following school board approval, children carried flyers and questionnaire packets home to their mothers as the main recruitment tactic. The packets included parental consent forms as well as the parent-reported measures previously described (Demographics, HURTE, and SCL-90-R). Child participants returned mother-completed packets to their classroom teachers in sealed envelopes. After assenting to participation, children of consenting parents completed the child-reported measures previously described (BASC-2 SRP, KidCope, and SSSC) at their respective schools. All children were supervised by the research team while completing the questionnaire packet, and those with reading disabilities were read the packet aloud. Mothers were supplied with references to mental health services after child participation if warranted. This procedure was followed at both time wave 1 (3-7 months post-Katrina) and time 2 (14-17 months post-Katrina).

At time wave 1 (T1), children either received \$5 in cash or a class pizza party as determined by the school. Mothers were either paid \$20 or were entered in a cash prize drawing. At time 2 (T2), mother-child dyads received \$25 for participating. In the current study, all measures from T1 were used, while only the BASC-2 SRP was used from T2. Eighty-five percent of mother-child dyads from T1 participated in the study at T2.

Results 1

Initially, bivariate correlations between all variables were run, and these correlations can be found in Table 2. Maternal psychopathology was positively correlated with hurricane exposure, negative coping styles, and positive coping styles. Hurricane exposure was also positively correlated with both positive and negative coping styles. Positive adjustment was positively correlated with both parent and peer support, while parent and peer support were

positively correlated to one another. In addition, negative coping styles were positively correlated to positive coping styles.

A hierarchical regression analysis was completed to analyze the data (see Table 3). Hurricane exposure was entered in step one so that it could be controlled for in the subsequent steps. As shown in the table, neither hurricane exposure nor maternal psychopathology was significantly correlated with child personal adjustment; therefore the overall model remained insignificant. Because of this, mediating analyses of coping styles and perceived support were not run.

Discussion 1

These findings were unexpected. Multiple studies found a significant link between hurricane exposure and child PTSD symptomology (La Greca et al., 1996; Spell, 2007; Vernberg et al., 1996); therefore it was predicted that hurricane exposure would also be related to child adjustment. Additionally, parental psychopathology was linked to child distress in previous research (Kelley et al., 2010), so a significant correlation between maternal psychopathology and child adjustment should have been detected.

Because the findings were contrary to a multitude of past research, it was hypothesized that using the Personal Adjustment composite scale was not the most appropriate measure due to lack of construct validity. As explained by Hartung and Widiger (1998), problems that persist into adulthood are generally rooted in internalizing problems, so the decision was made to rerun the regression analysis using the Internalizing Problems composite scale as the measure of child adjustment.

Results 2

Again, bivariate correlations were run between all of the variables as can be found in Table 2. In addition to the correlations mentioned previously, the internalizing problems scale was positively correlated with hurricane exposure, negative coping, and positive coping, and negatively correlated with the positive adjustment scale, parent support, and peer support.

The hierarchical analysis results are displayed in Table 4. As shown, hurricane exposure was found to be predictive of child internalizing problems, $\beta = .22$, $t(248) = 3.57$, $p < .05$, and it explained 4.9% of variance in the model. After controlling for hurricane exposure, maternal psychopathology was not predictive of internalizing problems; however, because the overall model remained significant due to the hurricane exposure link, mediating analysis was conducted.

The mediating analyses were completed through a series of steps, and hurricane exposure was controlled for throughout. The mediating analyses of positive and negative coping styles are displayed in Figure 1. The mediational hypothesis regarding positive coping was supported. The correlation between maternal psychopathology and positive coping styles was marginally significant, $\beta = .13$, $t(172) = 1.68$, $p = .09$, which added an explanation of 1.5% of the variance in child internalizing problems. In addition, the correlation between positive coping styles and internalizing problems was significant, $\beta = .48$, $t(136) = 6.52$, $p < .05$, which explained 22.6% of variance in the model. The mediational hypothesis regarding negative coping styles was also supported. The correlation between maternal psychopathology and negative coping styles was marginally significant, $\beta = .14$, $t(172) = 1.93$, $p = .056$, which explained 1.9% of variance in child internalizing problems. The correlation between negative coping styles and internalizing

problems was significant, $\beta = .44$, $t(136) = 5.74$, $p < .05$, accounting for 18.2% of variance in the model.

The meditational analyses of perceived parental support and perceived peer support are shown in Figure 2. In regards to perceived social support, maternal psychopathology was not predictive of perceived parental support; therefore the meditational hypothesis was not supported. On the other hand, the correlation between perceived parent support and internalizing problems was significantly correlated, $\beta = -.34$, $t(230) = -5.64$, $p < .05$, which explained 11.5% of the variance in child internalizing problems. Finally, the hypothesis regarding perceived peer support was supported by the analysis. The correlation between maternal psychopathology and perceived peer support was marginally significant, $\beta = -.12$, $t(269) = -1.94$, $p = .053$, and accounted for 1.4% of variance in internalizing problems. Furthermore, perceived peer support was significantly correlated to internalizing problems, $\beta = -.37$, $t(229) = -6.09$, $p < .05$, which added an explanation of 13.2% of the variance in the model.

General Discussion

Although there was not a significant correlation between maternal psychopathology and child adjustment, the overall model was still significant because hurricane exposure served as a significant predictor of internalizing problems. Contrary to predictions, there was a negative correlation between maternal psychopathology and positive coping styles used by the child. Although the link between maternal psychopathology and positive coping styles was only marginally significant, the relationship would most likely be strengthened with a larger sample size. In addition, as the usage of positive coping styles increased, the level of child internalizing problems increased, which coincides with previous research. As discovered by La Greca and

colleagues (1996), thinking about traumatic events, even in a healthy way, causes negative emotions to resurface, which in turn leads to distress. It was predicted that the initial distress caused by thinking of the hurricane would subside by time wave 2, or 14-17 months post-Katrina; however, these results suggests that it takes longer for positive coping styles to benefit child adjustment than originally expected. Overall, positive coping can be considered a mediator of maternal psychopathology and internalizing problems based off of these results.

Additionally, the pathway between maternal psychopathology and internalizing problems was mediated by the child's usage of negative coping styles. As predicted, as maternal psychopathology increased, the child's usage of negative coping styles increased, leading to an increase in internalizing problems. Like with positive coping styles, the relationship would most likely be strengthened if the sample size were larger because the expected pattern is prevalent. Again, this ties directly into previous research (La Greca et al., 1996; Vernberg et al., 1996). Maternal distress may lead to negative coping use because the child does not know the best way to handle the situation. In turn, negative coping styles lead to more internalizing problems in the long run.

In contrast, perceived parental support did not mediate the link between maternal psychopathology and internalizing problems. Increased parental support did decrease internalizing problems as predicted, however. On the other hand, perceived peer support appeared to mediate the relationship between maternal psychopathology and internalizing problems. Although the correlation between maternal psychopathology and perceived peer support was only marginally significant, like with positive and negative coping, the strength of the correlation would increase with more participants. Because adolescents were used in this

study, these findings are not surprising. During the adolescent period, children begin distancing themselves from their parents, and peers take over a more prominent position in their lives (Helsen, Vollebergh, & Meeus, 2000). As the need for peer support increases, the importance of parental support decreases, which explains why only peer support mediated the relationship. Parental support is still important as shown by the correlation between increased parental support and decreased internalizing problems, so perhaps parental support plays a different role, such as a moderating role, in the link between maternal psychopathology and child internalizing problems.

Despite the patterns that were discovered, mediating abilities of positive coping, negative coping and peer support are dismissed by the lack of correlation between maternal psychopathology and child internalizing problems. As discussed previously, this is a surprising finding; however it can be backed by other research. Gil-Rivas and Klimer (2013) performed a similar correlational study a year after Hurricane Katrina, and they also found no significant correlation between caregiver psychopathology and child adjustment. It is believed that the children were unaware of their caregiver's distress; therefore it did not affect them in the long run. Additionally, because maternal psychopathology in this study was based off of internalizing factors such as depression and sadness, the mothers may have been able to hide their distress from their children. If maternal distress were undetectable to the child, it would not affect the child's own distress and development.

In conclusion, this study attempts to combine previously existing models to investigate child adjustment following hurricanes. Due to the insignificant link between maternal psychopathology and internalizing problems, all mediating patterns are dismissed. The lack of

significance may be due to the limited sample size. As with any longitudinal study, participation decreases with each subsequent stage; therefore it is out of the researchers control. Additionally, there may be a lack of significance between maternal psychopathology and child internalizing problems due to the display of maternal distress at time wave 1. If maternal psychopathology were easily hid from the child, it would not play into the child's future adjustment. Finally, the results may be skewed because some participant dyads did not complete all of the studied measures. The dyads only needed to complete the SCL-90-R and BASC-2-SRP to be included; therefore, the study would be improved by only selecting dyads that have completed all of the measures.

Further research should be conducted to evaluate the link between child-perceived maternal psychopathology and child adjustment, as well as child internalizing problems, to see if perceived distress is the more appropriate variable to place in the model. Once this has been investigated, the current model could be updated to retest the mediating effects of both coping styles and social support. In addition, the present study could be expanded to a longer time frame to see if these results change over time.

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Tables

Table 1

Demographic Information about Participants

Variable	N	%
Age (in years)	272	100
11	78	28.7
12	72	26.5
13	73	26.8
14	43	15.8
15	5	1.8
16	1	0.4
Sex	272	100
Male	130	47.8
Female	142	52.2
Race/Ethnicity	272	100
African-American/Black	167	62.8
White	75	28.2
Asian/Pacific Islander	15	5.6
Latina/Hispanic	7	2.6
American Indian	1	0.4
Other	1	0.4

Note: $N = 272$

Table 2

Pearson's Correlation Matrix – Child Adjustment Factors

	Maternal Psych	Intern. Problems	Positive Adjustment	Hurricane Exposure	Parent Support	Peer Support	Negative Coping	Positive Coping
Maternal Psych	--							
Internalizing Problems	.06	--						
Positive Adjustment	.03	-.42**	--					
Hurricane Exposure	.19**	.19*	.05	--				
Parent Support	-.00	-.42**	.51**	-.04	--			
Peer Support	-.10	-.34**	.49**	-.02	.42**	--		
Negative Coping	.20*	.46**	-.05	.29**	-.09	-.12	--	
Positive Coping	.17*	.50**	.02	.25**	-.06	.04	.63**	--

Note: * $p < 0.05$, ** $p < 0.01$, $N = 272$

Table 3

Regression analyses predicting child personal adjustment

	R^2	ΔR^2	F change	B	$SE\ B$	β	t
Step 1	.00		.34				
Hurricane Exposure				.21	.36	.36	.58
Step 2	.02	.01	1.11				
Maternal Psychopathology				1.52	1.44	1.44	1.05
Step 3	.35	.34	12.87**				
Positive Coping				.00	.25	.00	.01
Negative Coping				.09	.34	.03	.27
Parent Support				6.12	1.38	.42	4.44**
Peer Support				5.16	1.90	.26	2.72**

Note: [†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 4

Regression analyses predicting child internalizing problems

	R^2	ΔR^2	F change	B	$SE\ B$	β	t
Step 1	.05		12.74**				
Hurricane Exposure				.76	.21	.22	3.57**
Step 2	.05	.00	.61				
Maternal Psychopathology				.67	.86	.05	.78
Step 3	.50	.46	22.53**				
Positive Coping				1.02	.22	.41	4.61**
Negative Coping				.53	.29	.16	1.81 [†]
Parent Support				-5.62	1.22	-.38	-4.62**
Peer Support				-2.30	1.67	-.12	-1.38

Note: [†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

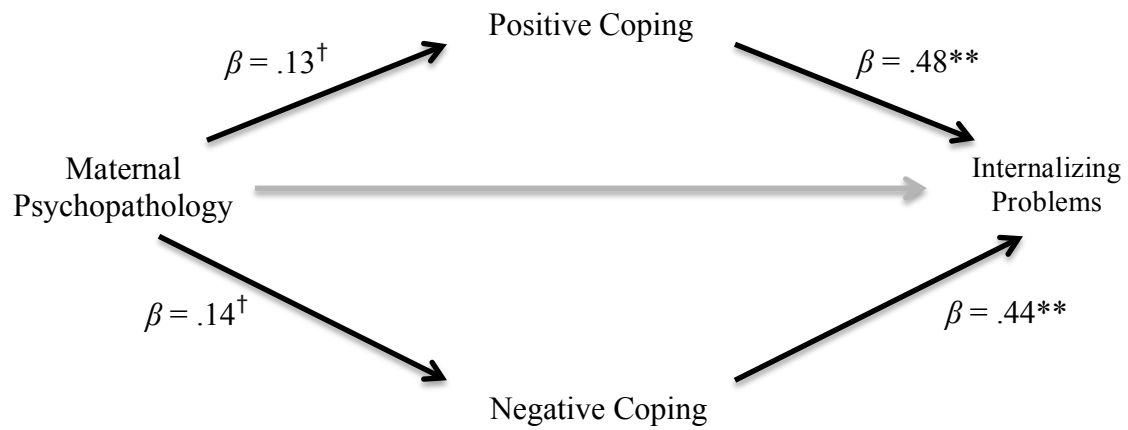
Figures

Figure 1. Model testing the hypotheses that positive and negative coping mediate the relationship between maternal psychopathology and child personal adjustment. $^{\dagger}p < 0.10$, $*p < 0.05$, $**p < 0.01$

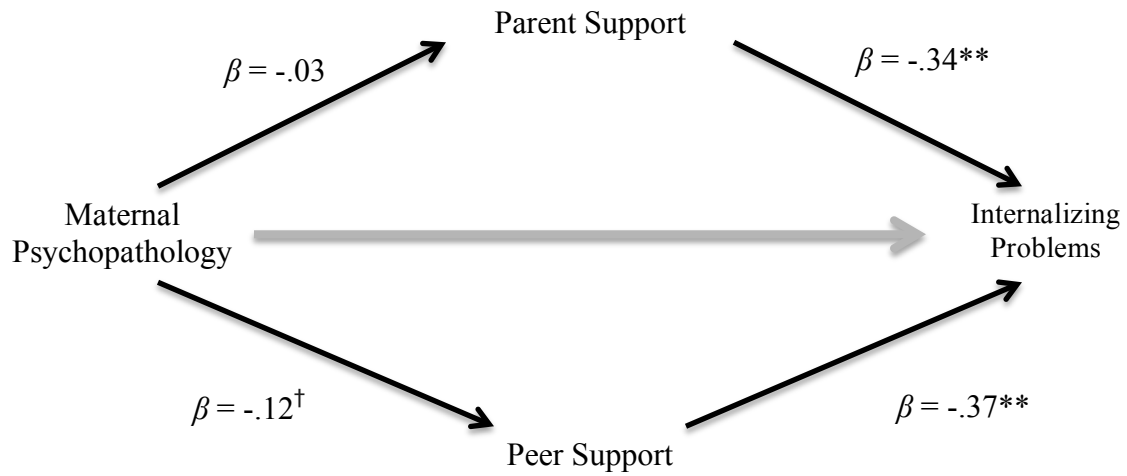


Figure 2. Model testing the hypotheses that perceived parent and peer support mediate the relationship between maternal psychopathology and child personal adjustment. $^{\dagger}p < 0.10$, $*p < 0.05$, $**p < 0.01$