Identifying Factors Contributing to Child and Adolescent Resiliency Following a Residential Fire: The Role of Social Support, Coping and Ethnicity

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(ABSTRACT)

Although some children develop Posttraumatic Stress Disorder (PTSD) following a traumatic event, such as a residential fire, many children continue to function normally. The link between trauma and posttraumatic stress has been well-established; however, less is known about the relationship between trauma and resiliency. Traditionally, resilience has been defined as behavioral competence and external adaptation, although the role of internalizing disorders in resilience is now being recognized. The purpose of this study was to examine resiliency, as conceptualized by both internal and external competence, following a residential fire. This study also sought to examine the roles of social support, coping and ethnicity in moderating the relationship between resource loss and resiliency. Results indicated there was a significant relationship between loss and resiliency. Specifically, resource loss was found to negatively predict resiliency. None of the proposed moderators were found to be significant. Implications for these findings will then be discussed.

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Introduction

At some point in their lifetime, one in every five families will experience a residential fire and a significant amount of these families will experience more than one fire (Jones & Ollendick, 2005). In the United States alone, it has been reported that 500,000 residential fires occur each year resulting in approximately 5,000 deaths and 21,000 injuries (Greenberg & Keane, 2001). In fact, deaths from fires and related injuries constitute the fifth most common cause of unintentional death in the United States (CDC, 2005). In addition to injuries and death, fire victims also experience a large scale loss of resources, including personal characteristics (i.e., free time, energy), and property. Although there is an abundance of literature on trauma experiences in general (i.e. war veterans, abuse, natural disasters), little is known about the impact of residential fires, despite their common occurrence.

In recent years, there has been an increase in the prevalence of research examining the psychological impact of traumatic experiences on children. This increase in focus has followed the recognition that children's reactions to disasters were similar to those of adults (Vernberg & Vogel, 1993). It was initially believed that only adults suffered post-traumatic stress reactions although it is now apparent that children are also at risk (Giaconia, Reinherz, Silverman, & Pakiz, 1995). As a result, it is increasingly important to understand the specific factors that increase the likelihood that some children will develop a post-traumatic stress reaction in contrast to those factors that increase the likelihood that children will continue to function normally. Although many individual factors that contribute to positive adaptation following chronic risk have been identified, factors contributing to resiliency following specific traumas have not yet been fully explored.

Theoretical Framework

By definition, resilience refers to positive patterns of functioning during or following an adversity (Masten, 2006). According to this definition, two main criteria must be considered when determining if an individual has displayed resilience. The first criterion is that the individual must be functioning at an adaptive level at which they are meeting a specific set of standards deemed appropriate for one's age and developmental level. The exact determination of this criterion is subjective; however, and must be defined clearly in each instance. For example, in one situation, positive functioning may involve an absence of psychopathology, but in a

separate circumstance it may be conceptualized as superior functioning in comparison to a peer group.

In addition to an individual's level of general functioning, the second criterion used in determining resilience is whether or not the individual has been exposed to a threat or adversity. Individuals who are functioning at an acceptable or superior level but who have not faced adversity are not considered resilient but rather are referred to as competent or successful. The term adversity refers to a subset of overall risk factors including a direct negative event. This can range from a single event such as a residential fire, to ongoing stressors, including abuse or deficient parenting. In addition, since these stressors often occur in combinations, youth may experience an increased risk due to these cumulative stressors. Lastly, when studying resilience and risk, it is important to examine individuals in specific contexts, such as the context of one's peers or community (Buckner, Mezzacappa, & Beardslee, 2003). What is considered resilient or competent in one situation may differ from another.

Model of Resilience

There are two main approaches to studying resilience. The first approach involves a person-focused model of resilience. Initially, this approach consisted of single-case studies involving individuals that had endured unique circumstances and who had displayed positive adaptation. More recently, a person-focused approach engages complex statistical models of growth and developmental trajectories, rather than earlier single-case studies. In order to accomplish this, multiple individual cases are aggregated to establish repeated life patterns in groups of children. To perform these analyses, samples are often broken into four groups: high risk/high resilience, high risk/low resilience, low risk/high resilience, and low risk/low resilience. It is important to note, however, that there is often an "empty group" in these studies, as few children fall into the low risk category and experience negative outcomes. This method is useful as it allows one to examine differences between these groups and to help detect possible protective factors. One disadvantage of this approach is that the study of low risk individuals is neglected and therefore it is not possible to discern whether a factor is protective in all situations or whether it is mobilized under stress.

The second method of studying resilience, referred to as a variable-focused model, involves the use of multivariate statistics to study the multidimensional nature of resilience

(Masten & Obradovic, 2007). This method seeks to understand the role of both individual and combined predictors, mediators, and moderators on development in the face of adversity. In addition, this model allows for the comparison of variables over time and the examination of interactions across multiple levels of analysis. One advantage of this model is that it allows for the examination of large groups of individuals, environments and experiences, and produces knowledge on what factors lead to positive outcomes. It also allows for the inclusion of individuals who may not meet criteria for the groupings included in the person-focused model (Buckner, et al., 2003). This method is preferred when one is looking for particular protective factors for specific aspects of adaptation. The main disadvantage of the model is that unique individual features and circumstances are lost in the statistical analyses. This approach will be used in the present investigation.

Conceptualization of Resilience:

Past research has mainly focused on conceptualizing resilience as positive external adaptation following adversity. According to several authors (Garmezy, Masten, & Tellegen, 1984; Werner & Smith, 1982), it typically involves competence along three dimensions, social, rule abiding behavior and academic. In these studies, to be considered resilient, one had to be performing at a level superior to their peers (i.e. one standard deviation above the mean) (Luthar, 1991).

This conceptualization of resilience (as defined by external adaptation) ignores one's internal adaption or emotional functioning. That is, individuals who had been identified as resilient by behavioral measures only, have been found to experience increased levels of anxiety and depression (D'Imperio, Dubow, & Ippolito, 2000; Luthar & Zigler, 1991). Consequently, there has been an ongoing debate within the developmental literature about whether resilience should also include positive internal adaptation (i.e., lack of psychopathology; positive psychological well-being), or whether external adaptation (i.e., behavioral competence) is sufficient to constitute resilience (Masten, Cutuli, Herbers, & Reed, in press). This lack of agreement has lead to disparate findings in research on resilience and vastly different conclusions have been drawn depending on the specific criteria used (Kumpfer, Glantz, & Johnson, 1999). Evidence to support the need to include internal adaptation or emotional functioning in conceptualizations of resilience and competence can be garnered from several

studies below where individuals who are reported to resilient and/or competent do indeed experience emotional consequences.

In a pioneering study examining the relationship between competence and internalizing symptoms, Luthar (1991) sought to determine if competent youth also exhibited a lack of psychopathology. For this study, 144 adolescents, ages 14-17, enrolled in ninth grade in a Connecticut inner-city public school were examined for both competence behaviors as well as anxious and depressive symptoms. In order to be classified as resilient, individuals had to be competent in addition to being exposed to adversity. Competence was defined as being on the upper extreme of scores on one of the following measures: teacher ratings, peer ratings or school grades. Specifically, adversity was conceptualized as exposure to high levels of negative life events.

Results of this study did indeed find that "resilient" children reported emotional symptoms. Specifically, those in the resilient group had similar rates of psychopathology as those in the high stress (but not competent) group and had significantly higher rates of psychopathology than the low stress group. Luthar hypothesized that this relationship was present because although children at higher developmental levels were more likely to be resilient, they were also more likely to internalize their problems. This finding also highlighted the importance of examining internal adaptation when conceptualizing resilience in addition to the examination of competence.

The impact of adversity on one's internal functioning was also examined in a group of high-risk adolescents in a northeastern US city. D'Imperio, Dubow and Ippolito (2000) studied 185 seventh and eighth graders from an urban middle school who had been identified as "high-risk" due to a variety of factors including minority status (57% were African American, 15% were Hispanic) and socioeconomic status (50% of the sample was below the poverty line). Consistent with Luthar (1991), resilience was conceptualized as competence in two of the following areas: lack of reported antisocial behavior, teacher ratings of academic performance and behavior and school archival records (i.e. grades, standardized testing scores, suspension). In addition, to be resilient, one had to have experienced adversity, as measured by cumulative life stress.

Consistent with Luthar (1991), resilience was found to be associated with increased levels of internalizing symptoms. That is, those who were resilient had similar levels of

internalizing problems (i.e., depression and anxiety) as those who were not resilient (high stress only). Both of these groups were found to have more internalizing problems than those who were not exposed to adversity or high levels of life stress. The authors hypothesized that this relationship may exist because at extreme levels of stress, protective factors may lose their value or become less powerful. Additionally, contrary to the researcher's hypothesis, those who were resilient (high stress/competent) did not have more protective factors (i.e., social support, coping) than those who were not competent (high stress only) (D'Imperio, Dubow, & Ippolito, 2000).

In a further investigation of the role of internal adaption in competence, Carle and Chassin (2004) indeed found that competence predicted lower levels of internalizing symptoms. This study consisted of a sample of 216 children of alcoholics and 201 children of non-alcoholics from a larger, longitudinal study of children and their families (Chassin, Rogosch, & Barrera, 1991). In order to assess competence, adolescents were asked to report on various items from the Child Behavior Checklist (CBCL; Achenbach, 2001). These items were divided into social competence, and rule abiding behavior. In order to assess for academic competence, school records were reviewed. Lastly, items from the CBCL were used to examine internalizing symptoms. Based on these reports, adolescents were classified as either low competent, competent, or highly competent.

Results of this study indicated that those who exhibited resilience were not experiencing increased levels of internalizing symptoms. In fact, it was found that overall competence and rule-abiding competence predicted significantly lower levels of internalizing symptoms in both children of alcoholics and children of non-alcoholics. Those classified as resilient endorsed both the lowest levels of internalizing symptoms as well as the highest levels of positive affect indicating that not only was there a lack of psychopathology, but that these individuals were functioning at a level higher than their peers. It is also important to note that competency not only predicted current mental health, but also future psychopathology. Specifically it was found that competence at Time 2 strongly predicted internalizing symptoms at Time 3, above and beyond the contribution of internalizing symptoms at Time 2. Therefore, this suggests that the protective nature of competency may be long lasting. In summary, the aforementioned studies point to the importance of examining internal adaptation within the resilience framework.

It was hypothesized that differences in findings between this study and previous research may be due to methodological differences. For example, Luthar (1991) studied a sample of

inner-city youth, in contrast to this sample based on parental alcoholism. For inner-city youth, competence may be seen as "different" or "un-cool" and hence inadvertently increase one's stress level. In contrast, for the current sample, competence may be perceived as a virtue, therefore leading to lower levels of internalizing symptoms In addition, inner-city youth may be experiencing greater levels of overall trauma and stress, therefore increasing overall levels of internalizing symptoms. Nonetheless, aforementioned studies point to the importance of examining internal adaptation within the resilience framework.

The resilience literature has only recently begun to recognize the importance of including mental health outcomes in the conceptualization of resilience. Although past researchers included mental health measures in addition to behavioral competence in studies of resilience (Carle & Chassin, 2004; D'Imperio, et al., 2000; Luthar, 1991; Luthar & Zigler, 1991) only recently have studies conceptualized the lack of psychopathlogy as an essential component of resilience. One of the first studies to include this component involved the examination of global resilience in a group of impoverished youth in Massachusetts (Buckner, et al., 2003). This study included youth from the Worcester Family Project who were either homeless or were of similar economic status at the time of the initial assessment. Resilience information was gathered following this initial assessment, and found that the entire sample consisted of youth who had experienced significant economic stress, some of whom were homeless at some point. These 155 youth (ages 8-17; 53% girls; 35% Caucasian, 21% African American, 44% Latino) were part of a larger study examining risk and protective factors for low-income families. Although not all of the youth had experienced a specific trauma, all had experienced severe economic strain as well as multiple other negative life events.

Buckner et al. (2003) conceptualized resilience as encompassing external adaptation (i.e., total competence, lack of externalizing behaviors), internal adaptation (i.e., lack of psychopathology), and overall adaptive functioning. Initially, a variable-focused method of conceptualization was used. In order to be classified as resilient, one had to have good overall adaptive functioning, an absence of psychiatric symptoms and, a lack of behavior problems (i.e., externalizing problems and poor competence).To be classified as non-resilient, children had to have one or more psychiatric symptoms, clinical levels of externalizing symptoms and a global functioning score below 80.

Results of this study indicate that resilient individuals were comparable in terms of age, gender, ethnicity, housing status (i.e., homeless versus housed), family composition and income. Those who were classified as resilient reported lower levels of negative, uncontrollable, stressful life events, as well as lower levels of chronic strain. Specifically, those in the resilient group had a mean of 3.5 negative life events as compared to 5 events in the non-resilient group. This finding highlights the importance of exposure and loss in the prediction of resiliency. The authors also included an important, yet often neglected, aspect of adaptation in their conceptualization of resilience. Specifically, one could not be conceptualized as resilient without demonstrating a lack of psychopathology. Therefore, it was no longer sufficient to be displaying external adaptation, but one also was required to exhibit internal adaptation.

In addition to categorical analyses of resilience, the authors computed an overall resilience measure in order to examine the results using a person-focused method of investigation. These analyses showed that negative life events were the largest contributor to variance in resilience. Interestingly, results also showed that emotional support did not significantly correlate with resiliency. Although the authors noted this counter-intuitive finding, there were unable to generate any likely reasons for this finding.

Resilience has also been conceptualized as a combination of both psychological well-being and adaptation in the social, academic and personal-emotional domains. In a study of resilience in 367 first semester college students, it was found that 53.7% had experienced at least one significant trauma (M=1.90, SD=1.15) (Banyard & Cantor, 2004). These traumas ranged from life threatening illnesses to various types of abuse to witnessing violence. In order to assess resilience following these traumas, a combination of measures of adaptation to college, scales of psychological well-being and ways of coping were assessed. To be classified as resilient, one had to display adaptation, psychological well being (i.e. autonomy, positive relationships with others, self-acceptance) and a lack of avoidant coping.

Consistent with previous research, it was found that those with higher levels of exposure to trauma, along with lower levels of social support, exhibited lower levels of resilience. In addition, those who exhibited an internal locus of control were more likely to be successful in their adjustment to college following a trauma. Those who believe they have control over their environments, as well as their ability to preserve in the face of adversity, may be more likely to seek out social support and engage in active coping strategies—both of which have been shown

to promote resilience. Again, this study highlights the importance of including both positive adaptation as well as psychological well-being in the conceptualization of resilience.

In summary, a significant body of research has been conducted with regards to the developmental processes involved in resilience, however, much less has been conducted in terms of reactions to specific traumas. Lastly, in traditional resilience research, mental health outcomes have been neglected. This paper hopes to further examine the relationship of psychopathology to behavioral competence and address the question of whether it is beneficial to include components of internal adaptation in examinations of resilience.

Potential Moderators of Resilience

In a comprehensive review of resilience research, Kumpfer (1999) described a vast amount of both internal and external factors that have been found to contribute to resiliency. Among those identified were high levels of social support in a high-risk environment (Vernberg, La Greca, Silverman, & Prinstein, 1996) and effective coping skills (Anthony, Anthony, & Cohler, 1987; Kaplan, 1999). In the present investigation, the potential moderational roles of social support, coping, and ethnicity will be examined. Justification for each of these constructs is provided below.

Social Support

Social support has been defined as, "those social interactions or relationships that provide individuals with actual assistance or that embed individuals within a social system believed to provide love, caring, or sense of attachment to a valued social group or dyad (Hobfoll, et al., 1988). Implicit within this definition are the two major components of social support, received social support and perceived social support. Received social support can be defined as, "the naturally occurring helping behaviors that are being provided" while perceived social support can be defined as "the belief that such helping behaviors would be provided when needed" (Norris & Kaniasty, 1996, pg 498). Following a stressful event, an individual's ability to cope is determined by both the type and degree of trauma, as well as the availability of social support (Bal, Crombez, Oost, & Debourdeaudhuij, 2003).

Social support is believed to operate through the support mobilization model. This model states that there are positive relations between life stress and support mobilization. Therefore, in times of stress, social support is called upon to protect individuals from experiencing the full negative effects of the stressor. The effects of the stressor are then suppressed by social support.

However, in some circumstances, especially when there is a stigma or uncertainty attached to the stressor, the victims may feel isolated and unable to ask for support. In addition, some stressors directly affect the availability of social support such as a death, divorce, imprisonment or graduation (Norris & Kaniasty, 1996).

Social support is one of the most important external variables affecting a child's ability to display resilience. In fact, in a recent meta-analysis borrowed from the adult literature, social support was found to have the strongest effect on later PTSD symptoms of the 14 variables examined (Brewin, Andrews, & Valentine, 2000). This suggests that following an adversity, social support is a significant predictor of a positive outcome.

The child literature has also emphasized the importance of social support following a disaster. Overall, it has been found that the higher the level of social support, the lower the levels of PTSD symptoms. In particular, in a study of 589 children following Hurricane Andrew, Vernberg et al.(1996) found that social support variables (i.e. support from parents, friends, teacher and classmates) each accounted for small but significant amounts of variance in symptoms. Specifically, the higher the perceived levels of support, the less distress the children experienced following the hurricane.

Higher levels of social support also led to better outcomes in a study of 50 children who had all experienced motor vehicle accidents. Involvement in these accidents ranged from being a vehicular passenger, to being hit by a car while on a bike or while walking. For these individuals, social support was found to be a significant predictor of decreased levels of PTSD symptoms (Keppel-Benson, Ollendick, & Benson, 2002).

Social support has also been found to contribute to positive experiences post-disaster. Following a trauma, children may not only experience a lack of psychological distress, but may actually undergo a positive transformation. In a study of 46 children following Hurricane Floyd, social support was found to be a significant contributor to positive outcomes (Cryder, Kilmer, Tedeschi, & Calhoun, 2006).

With reference to the role of this construct, social support has been found to moderate the relationship between exposure and mental health outcomes (Hammack, Richards, Luo, Edlynn, & Roy, 2004; Pengilly & Dowd, 2000). Hammack et al (2004) found that in cases of high exposure to violence and victimization, social support was found to operate as a protective-stabilizing factor. Therefore, despite increasing exposure, there were no changes in mental health

outcomes in the presence of support. This relationship may occur because those individuals with strong, pre-existing support networks may use these resources to help them cope with high levels of traumatic exposure and loss, leading to a reduced level of psychological distress.

Social support was also found to moderate the relationship between stress, as measured by life events, and mental health outcomes (Pengilly & Dowd, 2000). In particular, high stress-low support individuals were found to be more depressed than low-stress-low support individuals. Social support was also found to moderate the relationship between PTSD symptoms and psychological distress. In a sample of children who had experienced significant levels of trauma during the Kuwait crisis, social support was found to moderate the relationship between trauma and PTSD, particularly for girls (Llabre & Hadi, 1997). In fact, those with high levels of both exposure and social support had comparable levels of PTSD to those in the control group, who did not experience such trauma. Lastly, borrowing from the adult literature, it was shown that those who had experienced lower levels of resource loss, along with higher levels of social support, exhibited higher levels of resilience following the terrorist attacks on September 11, 2001 (Bonanno, Galea, Bucciarelli, & Vlahov, 2007). Therefore, the potential role of social support on children and adolescents' functioning following a residential fire will be examined.

Coping

Coping can be defined as cognitive and behavioral efforts to manage environmental and internal demands that are appraised as taxing or exceeding personal resources (Folkman, Lazarus, Gruen, & DeLongis, 1986). Coping has two main functions, helping the individual deal with the problem that is causing the distress (i.e., emotion-focused coping) as well as regulating the accompanying negative emotions that arise (i.e., problem-focused coping) (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001). Some examples of problem- focused coping include problem solving efforts, while examples of emotion-focused efforts include seeking social support, accepting responsibility, and avoiding the situation.

This model of coping led to individuals being categorized as engaging in either problem-focused or emotion-focused coping, not both. This is problematic, however, because certain coping strategies, such as seeking social support, appear to fit into both categories. In addition, this categorization leads to the belief that problem-focused coping is an active form of coping which then leads to positive adaption or resilience whereas emotion-focused coping leads to negative outcomes (Quittner, et al., 1996).

Based on the difficulties with this conceptualization, it may be more helpful to view coping as either active (i.e., seeking social support, problem-solving) or avoidant (i.e., efforts to avoid the emotions associated with a stressor). In particular, it can be asserted that engaging in avoidance coping behaviors (i.e. efforts to avoid the stressor) is a major predictor of post-traumatic stress (Foa, Steketee, & Rothbaum, 1989) whereas active coping (i.e., engaged efforts to deal with the stressor) predicts less symptomotology (Wadsworth, et al., 2004) and therefore greater resilience (Walsh, Blaustein, Knight, Spinazzola, & van der Kolk, 2007). In addition, it has been found that those who have access active coping strategies (i.e. social support, problem-solving) are more resilient (Armstrong, Birnie-Lefcovitch, & Ungar, 2005).

Following the September 11, 2001 terrorist attacks, 143 children and parents were assessed for coping behaviors and PSTD symptoms (Lengua, Long, & Meltzoff, 2006). It was found that avoidant coping behaviors, specifically those related directly to the trauma, predicted greater post-traumatic stress. Although avoidant coping behaviors are most strongly related to PTSD symptoms, they are often used the least (Russoniello, et al., 2002). In fact, Russoniello et al., found that children tended to use the coping strategies of "social withdrawal," "resignation," "blaming others," and "self-criticism," the least after Hurricane Floyd, however these behaviors were most related to PTSD symptoms. In contrast, coping strategies such as "wishful thinking." "cognitive restructuring," and "social support," were less likely to lead to PTSD.

Positive coping behaviors have also been found to lead to the development of PTSD. La Greca et. al. (1996) found that higher levels of positive coping, blame/anger, and social withdrawal were associated with higher levels of PTSD symptomatology. Although blame/anger contributed the greatest amount of variance, positive coping did have a strong relationship with PTSD symptoms. This relationship may exist because those children who must mobilize the greatest amount of coping behaviors have likely experienced more severe loss or greater exposure to the disaster. Therefore, despite the engagement in positive coping behaviors, the degree of the trauma overwhelms the child's ability to cope.

Coping has also been found to moderate the relationship between exposure and distress. It is believed that active coping strategies, particularly interpersonal strategies, moderate the relationship between injury (i.e. perceived injury severity) and the development of PTSD (Haden, Scarpa, Jones, & Ollendick, 2007). In a study of 150 undergraduate students who had all experienced a traumatic event, the relationship between perceived severity of the trauma and

PTSD was found to be stronger for those who utilized few interpersonal coping strategies than those who utilized multiple interpersonal coping skills. Therefore individuals were particularly likely to develop PTSD if they perceived a severe injury and utilized few interpersonal coping strategies.

Similarly, coping has also been demonstrated to moderate the relationship between involuntary health responses such as arousal from adjustment (i.e., internalizing problems) (Connor-Smith & Compas, 2004). In sum, given the above findings, the potential moderating role of active and avoidance coping will be examined in the present study.

The Role of Ethnicity

Although ethnicity is often measured as a proximal variable, directly affecting outcomes, it can be better conceptualized as a distal variable which works through a variety of proximal variables (i.e., minority status, SES) to affect outcomes (Alvidrez, Azocar, & Miranda, 1996). However, it is interesting to note that following disasters, ethnic differences have emerged. For example, following Hurricane Hugo, African American youth reported more psychological distress, as measured by PTSD symptoms, than other minority youth or Caucasian youth (Lonigan, Shannon, Finch, & Daugherty, 1991; Shannon, Lonigan, Finch, & Taylor, 1994). In addition, following Hurricane Andrew, it was found that minority youth were less likely to experience declines in levels of PTSD (La Greca, Silverman, Vernberg, & Prinstein, 1996).

Although African American youth are exposed to more violence and psychological distress than their white counterparts, it has been hypothesized that they exhibit greater resilience in the face of stress (McLeod & Nonnemaker, 2000). In fact, it has been found that the stress experienced by youth has a differential effect on Caucasian and African American youth resulting in poorer outcomes for Caucasian youth. This relationship is hypothesized to exist because African American youth may be better able to take advantage of close-knit support systems, therefore leading to greater resilience (Wickrama, Noh, & Bryant, 2005). In addition, it is thought that one strength of African American families is to protect its members from the effects of outside stressors (Wadsworth & Santiago, 2008). Because of these interesting, yet at times contradictory findings, ethnicity will be explored as a potential moderator between dose of the trauma experienced by individuals during and following residential fire as well as the outcomes.

Exposure and Resource Loss

Two constructs will be used as a measure of "dose", namely exposure and resource loss. Each will be discussed in turn below. In order to be considered resilient, an individual must first be exposed to a traumatic event. Exposure to a disaster has been operationalized in two distinct ways. These definitions including the number of stressors as an index to exposure as well as the relative severity and comparitability of different aspects of exposure (Norris & Elrod, 2006). Overall, it has been found that as the number of stressors increases, so do individual's symptoms of psychopathology. In addition, factors such as bereavement, injury to self or family member, life threat, and panic during the disaster have all been associated with greater psychological distress (Norris & Elrod, 2006).

Exposure has also been defined as the presence of certain factors during a fire or other trauma such as thoughts that one might die, thoughts that another might die, or physical proximity to the fire. Following Hurricane Hugo, La Greca et al (1996) followed 442 children at three elementary schools located in Dade County, Florida, where the greatest levels of destruction from the Hurricane occurred. It was found that exposure to the hurricane (i.e. perceived life threat, life threatening events occurring during the hurricane) accounted for the greatest percentage of variance in PTSD symptoms (15%). In particular, the highest levels of distress were found in children who reported that they believed that their life was in danger and who experienced higher numbers of life threatening events during the hurricane.

Similarly, in a study of children following Hurricane Andrew, exposure was found to be the strongest predictor of PTSD symptoms (Vernberg et al, 1996). This study examined the PTSD levels of 568 children in third through fifth grade. These children were ethnically diverse and their families being educationally and occupationally diverse. It was found that exposure variables (i.e. perceived life threat, number of life-threatening experiences, number of loss-disruption experiences) accounted for 35% of the variation in children's PTSD symptoms. In particular, loss-disruption variables accounted for the most unique variance (9%) and were related to greater numbers of symptoms.

Level of exposure was also found to be a major predictor of distress in a study of 222 children, ages 8 to 18 that had been exposed to a wildfire. The highest levels of distress were observed in those who thought they or a family member might die, who were within 50m of the fire, who saw flames, or who were home alone during the fire (McDermott, 2005). In particular, those who believed that they might die experienced the highest levels of distressed, followed by

believing that a family member might die. In addition, there was a significant positive correlation (r=.42) between a measure of how frightening the day had been for the child and PTSD symptoms.

Resource loss can be defined as the loss of personal and social resources which results in diminished coping capacity and psychological distress (Freedy, Shaw, Jarrell, & Masters, 1992). According to the Conservation of Resources theory (Hobfoll, 1989), resources include objects (i.e. homes, physical possessions), conditions (i.e. health, employment, social support), personal characteristics (i.e. skills and personal traits), and energies (i.e. money, knowledge) that are valued for survival, either directly or indirectly. These resources allow individuals to achieve a sense of competence and mastery as well as fulfill their psychological and physical needs. It is suggested that any event that results in actual or perceived loss of resources (i.e., disaster) will produce psychological stress. Following a natural disaster, resource loss from all four categories of resources frequently occurs, therefore resulting in difficulties in post-disaster psychological adjustment. In addition, since resources allow individuals to have a sense of competency, it can be expected that resource loss would predict a loss of competency.

Overall, the literature has continued to support the influence of resource loss on psychological distress and development of PTSD following a disaster (e.g., (Burke, Moccia, Borus, & Burns, 1986; Green, Korol, Grace, & Vary, 1991; Lonigan, et al., 1991).

Borrowing from the adult literature has shown that, in fact, resource loss has been found to be one of the strongest predictors of PTSD following a disaster (Freedy, et al., 1992). Specifically, a loss of resources following a natural disaster has been found to be a major predictor of psychological distress and PTSD. For example, following Hurricane Hugo, resource loss was found to have a strong, positive correlation with psychological distress (r = .64) (Freedy et al, 1992). This study involved a survey of 418 faculty and staff at the Medical University of South Carolina in Charleston, South Carolina who were mailed questionnaires regarding their resource loss, coping behavior, and psychological distress after the hurricane. After accounting for gender, age, ethnicity, income, previous trauma history, other life events and life threat, resource loss alone was found to contribute to 11% of the variance in psychological distress following the hurricane (Freedy, Saladin, Kilpatrick, & Resnick, 1994).

Resource loss has repeatedly been found to be the strongest predictor of post-disaster adjustment for children as well. Following a wildfire in California, it was found that there were

significant differences between those classified as experiencing low loss versus high loss (Jones, Ribbe, Cunningham, Weddle, & Langley, 2002). The study included 21 children ages 7 to 12 years of age who had been affected by the wildfire. The high loss (HL) and low loss (LL) groups were comparable on all major demographic variables such as gender, income level, fire insurance, and age. PTSD symptoms were much more prevalent in the HL group as compared to the LL. In the HL group, 92% of the children were classified as having high PTSD symptom levels as compared to 56% of the LL group. In addition, there was a .51 correlation between PTSD symptoms and scores on a resource loss index. Further supporting the importance of resource loss, following Hurricane Floyd, the variable that was found to be most related to severe symptomatology was exposure and loss, operationalized as flooding in the home (Russoniello, et al., 2002) .

Resource loss was also observed to be a significant contributor to PTSD symptoms in children following a severe earthquake in Southern California (Asarnow, et al., 1999). In fact, loss was found to be a stronger predictor of distress than exposure, highlighting the importance of both loss and subjective evaluations of loss following a natural disaster.

Although the literature has not yet examined the role of resource loss in the development of resiliency, it can be hypothesized that resource loss would negatively impact an individual's ability to display external competence. As personal resources provide individuals with the opportunity to develop competencies, it would be expected that a decrease in resources would prevent this development. In addition, the trauma literature has supported the notion that resource loss predicts internalizing symptoms such as anxiety, depression and PTSD. In summary, it can be expected that that exposure and resource loss will impact levels of resilience.

Age, Gender and Resiliency

Although it has been reported that those who are older are more likely to develop PTSD (Khamis, 2005) the majority of studies have found that being younger increases the risk of developing PTSD symptoms following a disaster (Lonigan, et al., 1991; Lonigan, Shannon, Taylor, & Finch, 1994; McDermott, 2005; Stoppelbein & Greening, 2000). In addition, a few studies have failed to find a relationship between age and PTSD (Evans & Oehler-Stinnett, 2006; Green, et al., 1991). Trauma research must continue to explore the relationship between age and psychological distress, as no clear relationship has emerged.

Although the research regarding age and PTSD is inconclusive, the resilience literature cites multiple reasons why adolescents are at an advantage for displaying resilience. Specifically, it has been noted that younger children struggle to cope with their frustrations appropriately, leading to increased levels of both internalizing behaviors and externalizing behaviors (Lynch, 2003). It has been hypothesized that adolescents are better able to cope as they have had more life experiences and as a result, their coping mechanisms are more developed (Shacham & Lahad, 2004). In addition, adolescents possess higher levels of cognitive flexibility and reasoning abilities, leading to fewer difficulties coping with stress (Vasey, Crnic & Carter, 1994). It should be noted, however, that the majority of resiliency research has examined both children and adolescents together. As a result, limited information is available regarding developmental differences in resiliency.

Although studies examining the role of gender in the development of PTSD have been inconclusive, it has been found that being female leads to increased resiliency (Kumpfer, Glantz, & Johnson, 1999). Interesting, although it has been argued that boys may experience more traumatic events, leading to a greater incidence of PTSD (Khamis, 2005), the vast majority of studies find that girls are more likely to develop PTSD or that no gender differences exist. For example, following Hurricane Hugo, it was found that girls were more likely subsequently develop PTSD (Freedy, et al., 1992; Russoniello, et al., 2002). In one study, being female was the strongest predictor of later development of PTSD, followed by the extent of flooding in the home (Russoniello, et al., 2002). Girls were also more likely to develop PTSD symptoms following the sinking of the cruise ship "Juniper" (Udwin, Boyle, Yule, Bolton, & O'Ryan, 2000).

Studies have also found that gender differences in PSTD symptoms are not present following a disaster. La Greca et al. (1996) found no gender differences at any point in PTSD symptoms following Hurricane Andrew. Following a severe tornado in rural Oklahoma, PTSD symptoms of 152 children from two elementary schools were examined. In this study, no gender differences were found for levels of PTSD one-year post-tornado (Evans & Oehler-Stinnett, 2006). Given these inconclusive findings rewarding age and gender, both will be controlled for in the present study.

Rationale for Thesis

Although the relationship between trauma and posttraumatic stress has been well-established, much less is known about individuals who continue to function normally following a trauma. Resilience has been conceptualized as positive external adaptation including both behavioral competence (i.e. involvement in groups, good performance in school) and a low incidence of externalizing symptoms. More recently, however, the importance of examining internal adaptation has been recognized. Specifically, it is now important to examine the prevalence of internalizing symptoms when conceptualizing resilience.

The purpose of this study is to examine resiliency, as conceptualized by both internal and external competence, following a residential fire. In addition, this study seeks to explore the role of three possible moderators of the relationship between exposure/resource loss and resiliency, social support, coping and ethnicity. By examining the role of these moderators, it is hoped that the factors that allow children to be resilient will be better understood.

Hypotheses:

1) It is hypothesized that there will be a relationship between resource loss and resiliency. Specifically, those with higher levels of loss will experience lower levels of resiliency while those with lower levels of resource loss will display higher levels of resiliency.
2) It is also hypothesized that social support will moderate the relationship between total resource loss and resiliency. That is those with higher levels of social support will exhibit higher levels of resiliency, while those with lower levels of social support will exhibit lower levels of resiliency. In addition, for those with low levels of social support, there will be a strong negative relationship between resource loss and resiliency; For those with higher levels of social support, this negative link between loss and resiliency will be significantly weaker.
3) It is hypothesized that coping will moderate the relationship between total resource loss and resiliency. Specifically, it is hypothesized that individuals who engage in active methods of coping will display higher levels of resiliency, while the utilization of avoidant methods of coping will result in lower levels of resiliency. Specifically, for those with who engage in active coping, there will be a weaker negative relationship between resource loss and resiliency; For those with low levels of active coping, this negative link between loss and resiliency will be significantly stronger. There will also be

a strong negative relationship between resource and resiliency for those who engage in avoidant coping as compared to those who engage in low levels of avoidant coping.

4) Lastly, it is hypothesized that ethnicity will moderate the relationship between resource loss and resiliency. In particular, it is hypothesized that African Americans will demonstrate higher levels of resiliency, whereas Caucasians will demonstrate lower levels of resiliency. Due to the lack of previous research regarding the moderation role of ethnicity, no prediction will be made regarding the direction of this proposed moderation.

Methods

Participants:

The participants for this study included children and adolescents (ages 8-18) and their families who participated in an investigation sponsored by NIMH assessing the impact of residential fires on children and their families (Jones & Ollendick, 2002). Families were recruited for this study from areas in and surrounding Atlanta, Georgia; Blacksburg, Virginia; Richmond, Virginia; Charlotte, North Carolina; and Charleston, South Carolina. In order to be eligible for participation in the study, participants had to meet the following criteria: 1) the residential fire had to be severe enough that at least 15% of the families' personal belongings or home was lost; 2) the family had a child between the ages of 8 and 18 years. In cases where there was more than once child between these ages, the child whose birthday was closest to the date of the fire was recruited for participation.

Procedure

For each family recruited, one child and one primary caregiver (i.e., parent) were assessed approximately four months following the residential fire. In addition to the initial assessment, two follow-up interviews were conducted approximately 11 months and 18 months after the fire. Each family member was interviewed independently by advanced graduate students in an APA-approved clinical psychology training program. Assessments were conducted in either the participant's homes or in public places such as Red Cross clinics, churches, libraries or mental health clinics. The measures utilized in the current study were administered as part of a larger interview that lasted approximately three hours for parents and one and a half hours for children. Informed consent was obtained from the parent as well as

assent from the child. Each measure was self-administered following directions from the graduate student. Each family was provided with $75 for their participation.

Measures:

Demographic information: Demographic information (i.e. child's age, gender, ethnicity) was obtained via parent report.

Dubow Social Support Scale (Dubow & Ullman, 1989). This measure contains the 9 items with the highest factor loadings from the original 41-question version of this scale which was created to measure participants' subjective appraisals of family, teacher and peer social support. Each item was rated on a 5-point Likert scale with lower scores indicating a low level of perceived support from family, teachers or peers. In contrast, high scores indicate a high level of perceived availability of support. Dubow & Ullman (1989) have reported the internal consistency to be .88, while the test-retest reliability was found to be .75 for a 3-4 week period. For the present study, three newly developed items were added to this instrument in order to obtain a measure of fire-related social support (i.e. "Some kids feel that they are free to talk with their family about a number of things, but other kids don't feel this way;" "Some kids feel that they are free to talk with their teachers about a number of things, but other kids don't feel this way;" "Some kids feel that they are free to talk with their friends about a number of things, but other kids don't feel this way",). For the current sample, the internal consistency was .70.

The Child Behavior Checklist (CBCL) (Achenbach, 1991). The CBCL obtains reports from caregivers regarding children's competencies as well as behavioral/emotional problems for children ages 4-18 year olds. Caregivers are asked to answer 20 competence items assessing their child's activities, social relations and social performance. In addition, caregivers are asked to answer 118 items regarding specific behavioral and emotional problems (i.e. demands a lot of attention; cries a lot). For each item, caregivers rate their child for how true each item is currently or within the past 6 months on a scale from 0-3 (0=not true, 1= somewhat or sometimes true, 2= very true or often true). T-scores can be derived for both internalizing problems, externalizing problems and total behavior problems as well as for competencies. T-scores of 60-63 (84^{th} to 90^{th} percentile), and 64 or above (greater than the 90^{th} percentile) for Total Internalizing and Total Externalizing are considered to be in the borderline to clinically significant range of functioning. For the Total Competency scale, scores of 20-29 are in the clinical range whereas scores from 30-33 denote the borderline clinical range. The reliability and

validity of the study has been established by numerous studies. In particular, it was reported that the CBCL has good test-retest reliabilities (range from .95 to 1.00), inter-rater reliabilities (range from .93 to .96), and adequate internal consistencies (range from .78 to .97) (Achenbach, 1991). For the current sample, internal consistencies were .80 for Total Internalizing, .91 for Total Externalizing and .557 for Total Competencies. Although the Cronbach's alpha for Total Competencies is significantly lower than the other scales, it should be noted that due to the nested design of the competency scales, the alpha level is calculated using only three items (Total Activities, Total School and Total Social). Alpha levels are dependent on the number of items for the scale, therefore as the length of the scale increases, the higher the alpha level (Tryon, Bernstein, Thomas, & Hersen, 2003). Although the competency scales of the CBCL include multiple items, the Cronbach's alpha for this scale only uses the totals for each sub-scale, leading to an artificially deflated alpha level.

Resource Loss Scale for Children (RLSC; Jones & Ollendick, 1994) was modified from an adult measure developed by Freedy et al. (Resources Questionnaire; 1992). This revised self-report measure consists of 22 items which assess for loss following a residential fire. These items constitute four factors of loss, object loss (i.e. tangible possessions lost due to the fire such as toys or clothing), energy loss (i.e. free time), condition loss (i.e. a good relationship with peers or parents) and personal characteristics loss (i.e. sense of humor). In order to assess loss, children first responded "yes" or "no" to whether or not they experienced a loss of each item. If they reported a loss, further questioning occurred regarding the extent of the loss. A 3-point scale was used (1= a little, 2= some, 3= a lot). The sum of impact of loss across all 22 items yields the total loss score (Jones & Ollendick, 1994). For the present sample, internal consistency was .85.

How I Coped Under Pressure Scale (HICUPS)(Ayers, Sandler, West, & Roosa, 1996) . The HICUPS is a 45-item self-report measure which assesses the extent to which children have used various coping strategies to deal with a specific event (i.e. residential fire). Items are rated on a 4-point Likert-type scale (1=Never, 2=Sometimes, 3=Often, 4=Most of the time). The items are then grouped into the four factors of coping (active, avoidant, distraction and support seeking). This scale has been shown to have acceptable internal consistencies, with coefficient alphas ranging from .57 to 74 for the 11 subscales (Ayers et al, 1996). For the current sample, internal consistency was .87.

Resiliency Composite Score:

Resiliency scores were computed for each participant. Specifically, a z-score was created for the following three variables: Total Competence, Total Internalizing and Total Externalizing. Total Internalizing and Total Externalizing were reversed scored so that higher scores on these measures indicated higher levels of distress. A composite score was then created by summing each of the z-scores. As Total Internalizing and Total Externalizing are negatively scored, a higher positive score equaled higher resiliency.

Results

Measure Descriptions

A summary of all demographic variables is presented followed by their means and standard deviations (see Tables 1 & 2). Internal consistency coefficients were obtained for each measure used in this study (see Table 3). Mean scores and standard deviations were found to be consistent with their previously established norms. Acceptable internal consistency coefficients were obtained for each scale with the exception of the Competence Scale of the CBCL. As previously noted, this low value is likely due to the small number of items included in this calculation.

A series of two-tailed independent t-tests were calculated to examine potential differences across the demographic variables of gender, ethnicity, and age in the measures employed. Ethnicity differences were found on total competence, $t(88) = -1.212$, $p = .015$. Ethnic differences approached significance on one measure. Specifically, Caucasians' reported greater levels of total loss, $t(84) = -1.674$, $p = .098$. (see Table 4) With respect to age, adolescents were rated as exhibiting higher levels of resiliency as compared to their younger peers, $t(86) = -1.27$, p -.01. (see Table 5) Lastly, no gender differences emerged on any of the measures used. (see Table 6) SES was not examined as a demographic variable in that many parents chose to abstain from reporting their income level. When determining whether to analyze the data for those who did report SES, it was determined that the sample size ($n = 28$) was too small to conduct any meaningful analyses.

Relationships among Self-Report Measures

Correlations were calculated among the total scores of the Total Loss, Total Social Support, Active Coping, Avoidant Coping and Resiliency measures, as well as demographic factors. In addition, correlations were calculated between the three scales comprising the

resiliency variable. All correlational analyses conducted were one-tailed with the purpose of assessing their hypothesized predictive relationships (see Table 7).

Within the resiliency composite variable, internalizing disorders and externalizing disorders were found to be significantly positively correlated, $r(90) = .78$, $p<.01$. Neither scale was significantly correlated with competence; however, the correlations were in the expected negative direction.

Among the demographic variables, age was significantly positively correlated with gender, $r(90) = .250$, $p < .01$, indicating that the gender of girls is strongly associated with the group of adolescents in the sample as compared to younger children. Age was also significantly correlated with resiliency, $r(90) = .263$, $p <.01$, indicating that older adolescents were more likely to exhibit resilience. No other significant correlations among demographic variables emerged.

Resource loss was found to be significantly related to active coping, $r(64) = .299$, $p <.01$, as well as avoidant coping, $r(64) = .286$, $p<.01$, indicating that children and adolescents who reported greater levels of loss also tended to report engaging in more active and avoidant coping behaviors. As predicted, loss was also found to be significantly related to resiliency, $r(86) = -.226$, $p <.01$, indicating that those who experienced greater levels of loss were less likely to be resilient.

Lastly, active coping was found to be strongly correlated with avoidant coping, $r(64) = .698$, $p<.001$. This correlation indicates that those who engage in active coping were more likely to engage in avoidant coping behaviors. There were no other significant correlations among measures.

Resiliency Variable

For the current sample, the following percentage of children were in the clinical, and subclinical ranges, respectively: externalizing disorders, 14.86 %, 7.40%; internalizing disorders, 15.6%, 5.5%, total competence, 16.7%, 4.4%.

Prediction of Resiliency

A hierarchical regression analysis was conducted to explore resource loss as a potential predictor of resiliency. In this analysis, the demographic variables of gender and age were entered, followed by loss. The first regression analysis tested the relationship between the

independent variable (resource loss following the fire) and the dependent variable (overall resiliency).

As shown in Figure 1, the model indicated a significant path between resource loss and resiliency, B= -2.859, p <.001 (see Table 8). Results also indicated that the demographic variable of age accounted for a significant proportion of variance in children's' resiliency, B = .205, p =.008. These results indicate that loss and age predicted resiliency in children and adolescents. Specifically, older children exhibit higher levels of resiliency as compared to younger children. Gender, however, did not emerge as a predictor of resiliency. When all of the predictor variables were entered into the model, they accounted for 17.7 % of the variance in resiliency, R^2 = .18, F (3, 79) = 5.86, p = .001.

Moderator Model Tests

Four separate hierarchical multiple regression analyses were conducted to test the hypothesized moderating role of social support, active coping, avoidant coping and ethnicity. Specifically, the potential moderating role of each of these variables on the relationship between exposure to a traumatic event (resource loss) and resiliency were examined. In each of these analyses, gender and age were entered first into the regression followed by exposure/resource loss. The proposed moderator (i.e., social support, coping style or ethnicity) was then entered. The last step consisted of the interaction variable (i.e., loss x social support). A moderational effect is present if the interaction term is found to be a significant predictor of resiliency once the main effects have been controlled for. As a result, the hierarchical regression analysis will support a moderational relationship if the interaction term is found to contribute significantly to resiliency.

In regards to the first moderational analysis examining the moderational role of social support (see Table 9), loss was once again found to contribute a significant proportion of variance in resiliency, B= -.061, p =.033, indicating that those who experience the highest levels of loss have the lowest levels of resiliency. Age also emerged as a significant predictor of variance, B= .229, p =.006, suggesting that older children and adolescents experience higher levels of resiliency. The interaction term of social support x loss was not found to be significant suggesting that social support does not work as a moderator between resource loss and resiliency. The demographic of gender also failed to reach significance. The full model accounted for 19.4 % of the variance in resiliency, R^2 = .194, F (5, 79) = 3.805, p = .004.

The second moderational analysis examined active coping as a moderator between resource loss and resiliency (see Table 10). The interaction term of active coping x resource loss was not found to be significant. Loss, however, was found to contribute a significant proportion of variance in resiliency, B= -.081, p =.015, indicating that higher levels of loss contributed to lower levels of resiliency. Active coping was not found to be a significant predictor of resiliency although its mean was in the expected direction. Lastly, the demographic variables of age and gender failed to reach significance. When all of the predictor variables were entered into the model with active coping, they accounted for 22.7 % of the variance in resiliency, R^2 = .227, F (5, 58) = 3.416, p = .009.

The third moderational analysis examined avoidant coping as a moderator between resource loss and resiliency (see Table 11) Similarly to the previous analyses, loss was found to contribute a significant proportion of variance in resiliency, B= -.083, p =.013. The demographic of age was also found to be significant, B= .177, p =.044, once again indicating that older children and adolescents experience higher levels of resiliency than younger children who experience the same levels of loss. Avoidant coping was not found, however, to be a significant moderator of the relationship between resource loss and resiliency nor was it found to directly influence resiliency. Lastly, the demographic variable of gender was not found to be significant. When all of the predictors were entered into the model with avoidant coping, they accounted for 22.9% of the variance in resiliency, R^2 = .229, F (5, 58) = 3.449, p = .009.

The fourth moderational analysis examined the role of ethnicity and its ability to moderate the relationship between loss and resiliency (see Table 12). Total loss was found to predict a significant amount of variance in resiliency, B= -.090, p =.012. Age was also found to be significant predictor of variance, B= .237, p =.004, although gender failed to reach significance. In addition, ethnicity was not found to act as a moderator between loss and resiliency. When all of the predictor variables were entered into the model, they accounted for 18.3 % of the variance in resiliency, R^2 = .183, F (4, 81) = 4.462, p = .003.

Summary of Regression Analyses: In summary, results of the aforementioned models yielded several significant findings. Loss was found to significantly predict variance in resiliency across models. The demographic variable of age consistently emerged as a predictor of resiliency with older children experiencing higher levels of resiliency following a residential fire. Although social support was found to approach significance, active coping, avoidant coping and ethnicity

were not found to be significant. Lastly, none of the moderational analyses were found to be significant.

It should be noted, however, that due to a limited sample size, these regressions do not meet adequate statistical power standards. Although power varies by analyses due to differing sample sizes, overall, power is approximately .68 to detect a medium effect size. This is below the general standard of .80 indicating that these analyses may lack to ability to reject a false null hypothesis(Cohen, 1992).

Exploratory Analyses

When computing a term composed of multiple scales, it is possible that some of the effects found may be unique to one or more of scales used. As a result, exploratory analyses were conducted looking at each individual scale composing the resiliency variable (i.e., internalizing behavior, externalizing behavior and competence). In order to test these relationships, five separate hierarchical multiple regression were conducted for each individual scale in order to explore the potential predictors of total loss, social support, active coping, avoidant coping and ethnicity. For each regression analysis, the demographic variables of age and gender were entered first, followed by resource loss. Each proposed moderator was then entered into the equation, followed the interaction term (i.e., total loss x social support). Although none of the moderators were found to be significant, results regarding the role of loss, gender and age will be discussed.

With reference to the initial regression examining the predictor role of loss on total competence, loss failed to emerge as a significant predictor, B = -1.58, p = .149 (see Table 13). In addition, the demographic variables of age, B = .122, p = .264 and gender B = 1.70, p = .118 were also non-significant in predicting competence.

Loss was also examined in terms of its relationship to internalizing behaviors. Although total loss did not significantly predict internalizing behaviors, it did approach significance, B = .312, p = .057 (see Table 14). This result indicates that those who experience higher levels of loss, experience higher levels of internalizing behaviors. The demographic variable of age was also found to be significant, B = -1.292, p = .009, indicating that older children experienced lower levels of internalizing behaviors as compared to older children and adolescents. Age was also found to predict a significant amount of variance in internalizing behaviors, B = -1.167, p = .009. Gender did not reach statistical significance.

The third regression analysis examined the relationship between total loss and externalizing behaviors. Total loss was found to predict a significant proportion of variance in externalizing behavior, B = .486, p = .005 (see Table 15). Therefore, those with higher levels of loss experienced higher levels of externalizing behaviors. The demographic variable of age was once again found to be significant, B = -1.267, t = -2.512, p = .014 with younger children experiencing more externalizing behaviors. Gender was not found to be significant.

Social support was also examined in relationship to all three scales. No significant predictors of resiliency were found (see Tables 16-18). In reference to internalizing behaviors, age emerged as a significant predictor of resiliency, B = -1.092, p = .030, indicating that older age was negatively related to internalizing behaviors. The last analysis examining the role of loss and social support predicting externalizing behaviors found that total loss was a significant, positive predictor, B = .132, p = .032.

The next set of analyses examined the relationship between active coping and the three resiliency scales. Total loss was found to contribute a significant proportion of variation in predicting total competence, B = .382, p = .032 (see Table 19), as well as internalizing behaviors, B = -.383, p = .026 (see Table 20). No significant predictors of externalizing behaviors emerged (see Table 21). In addition, active coping failed to reach significance.

The role of avoidant coping in predicting resiliency variables was also examined. Total loss was found to be a significant predictor of total competence, B = .466, p = .037 (see Table 22) and externalizing behaviors, B = -.061, p = .033. In addition, gender was found to significantly predict internalizing behaviors, B = -8.258, p = .008 (see Table 23), and age was found to predict externalizing behaviors B = .183, p = .032 (see Table 24). No other significant predictors of total competence, total internalizing behaviors and total externalizing behaviors emerged.

Lastly, the role of ethnicity in predicting resiliency was examined. In regards to total competence, no significant predictors emerged (see Table 25). Total loss was found to be a significant predictor of internalizing behaviors B = .420, p = .048 as well as age B = -1.253, p = .010 (see Table 26). With regards to externalizing behaviors, once again both total loss, B = .568, p = .012 and age emerged as predictors, B = -1.107 p = .033 (see Table 27). Ethnicity failed to predict a significant amount of variance in any of the three resiliency variables.

Discussion

Summary of findings

The purpose of this study was to examine the role of resiliency following a residential fire. In addition, the project was developed to further understand the function of social support, coping, and ethnicity in the link between exposure to a traumatic event (i.e., resource loss) and resiliency. Specifically, it was hypothesized that the relationship between resource loss and resiliency would be moderated by each of these constructs.

Previous research has conceptualized resilience as behavioral competence in the face of adversity (Masten, 2006). It has become clear, however, that some individuals displaying competence still experience elevated levels of psychopathology (Luthar, 1991). This study is one of the first examinations of resiliency that includes a comprehensive definition of resilience incorporating internal well-being (i.e., internalizing and externalizing symptoms) as well as competence (i.e., adaptive functioning in terms of school, activities/hobbies and social interactions). This project sought to fill an important gap in the trauma and resilience literature by utilizing a comprehensive measure of resiliency to examine outcomes following a residential fire.

Previous studies on trauma have found loss to be one of the strongest predictors of distress, yet few studies have directly investigated its implications for resilience. In addition, those who have examined the relationship between loss and resiliency often focus on a lack of psychopathology, rather than on both a lack of psychopathology and the presence of competence.

In order to further examine the relationship between resource loss and resiliency, the first hypothesis of the current project stated that resource loss would negatively predict resiliency in children and adolescents. This hypothesis was supported by the data and was replicated in each model tested.

The finding that resource loss negatively predicts resiliency demonstrates the effect that experiencing a loss of resources (including objects, personal characteristics, conditions and monies) has on an individual's internalizing symptoms (i.e., anxiety, depressive symptoms, somatic complaints), externalizing symptoms (i.e. hyperactivity, oppositional behaviors) and behavioral competence (i.e., performing well in school, involvement in activities, and social competence). Based on the results of this study, it appears as though the effects of loss may be more pervasive than previous noted. Specifically, although previous studies have noted that

resource loss predicts psychopathology, the current study demonstrated that loss negatively predicts competence as well. It should be noted, however, when examined separately, loss did not significantly predict competence, however, the mean was in the expected direction.

Conservation of Resources (COR) theory states to function adaptively, individuals must maintain their internal (i.e., family roles, sense of optimism) and external resources (i.e., possessions). These resources are of importance as they aid individuals in achieving their goals (Hobfoll, 1988). Following a residential fire, children often experience a pervasive loss of resources including possessions, time, support, and a feeling of safety. COR theory also states that an initial loss of resources makes it more difficult to obtain later resources and that the initial loss may even lead to later losses of resources. In the current study, a loss of resources may have lead to greater difficulty in obtaining future resources that would have allowed individuals to display competence behaviors (i.e., the ability to concentrate in school; a switch of schools, leading to difficulty maintaining friendships). This loss of resources also significantly predicted internalizing and externalizing symptoms. As a result, loss also negatively impacted internal resources (i.e., positive outlook, motivation, self-efficacy), leading to a greater overall loss experienced. In addition, the initial loss of resources following the fire may be later exacerbated by losses incurred from a temporary move in housing or because of resources lost by family members. As a result, resource loss may affect resiliency through both losses immediately following the fire, as well as losses later realized. In addition, this loss is pervasive in its effects, potentially leading to increased psychopathology and decreased levels of competence.

The second hypothesis of the study examined the role of social support in moderating the relationship between resource loss and resiliency. Specifically, it was predicted that the relationship would be stronger for those with low levels of social support as compared to those with high levels of social support. This relationship, however, was not substantiated by the data. Although social support has been documented as a process which fosters positive mental health outcomes, its relationship to resiliency may not operate in the same manner. While social support may lead to lower levels of internalizing behaviors, its relationship to behavioral competence and externalizing disorders may be weaker. It should be noted, however, that in the current study, none of the resiliency variables were significantly related to social support although the means were in the expected direction.

Studies that have found social support as a moderator typically focus on internalizing mental health outcomes, rather on behavioral competence or externalizing behaviors. This difference in conceptualization of positive outcomes (i.e., lack of psychopathology versus resiliency) may have contributed to the difference in findings. It has also been suggested that social support may work as moderator of this relationship for those with high, but not low, exposure to a trauma (Kaspersen, Matthiesen, & Gotestam, 2003). As the levels of loss in the current study were in the low to moderate range, the level of loss may not have been high enough to activate this moderator. In addition, the current study focused on perceived social support as a moderator; however, received social support may be a better predictor of outcomes (Araya, Chotai, Komproe, & de Jong, 2007).

The third hypothesis of the study sought to determine the role of coping in moderating the relationship between resource loss and resiliency. Specifically, it was hypothesized that the relationship between resource loss and resiliency would be strongest for those who engage in high levels of avoidant coping as well as those who engage in low levels of active coping. Results of the current study, however, failed to support this hypothesis for either active or avoidant coping.

There are a few possible reasons for this unsubstantiated finding. It has previously been found that trauma duration moderates the effect of coping on outcomes. Specifically, the relationship between coping and outcomes is stronger for those who experience traumas of a longer duration as compared to those who experience traumas of a shorter duration (Littleton, Horsley, John, & Nelson, 2007). Based on this notion, coping may operate as a moderator between loss and resilience in traumas of a longer duration (i.e., community violence, abuse) but not for temporally short traumas. (i.e., residential fire without a lot of residual damage, motor vehicle accident). This relationship may not have been present in the current study as it consisted of a discrete trauma (residential fire) during which the participants experienced fairly low levels of loss.

Past research has shown that coping often acts as a moderator between a stressor (i.e., stressful home environment, trauma) and child psychopathology (i.e., internalizing behaviors, externalizing behaviors (Grant, et al., 2000; Halpern, 2004). Although this relationship exists, coping may not act as a moderator between exposure and resiliency. For example, it has been found that coping does not moderate the relationship between a stressful home environment and

academic achievement/classroom behavior (i.e., competence) for a sample of 4th and 5th graders (Gaylord-Harden, 2008). It was suggested that significance was not found due to the nature of the coping (i.e., in response to stressors versus dispositional coping), however, this relationship was not further elucidated in that study. Therefore, the nature of the stressor (i.e., chronic stress or discrete stress) does not appear to affect the role of coping in the relationship between stress and resiliency. In addition, coping was not found to act as a moderator between stress and peer acceptance (Gaylord, Kitzmann, & Lockwood, 2003).

In summary, it may be that while coping acts as a moderator between stress/exposure and psychopathology (i.e., internalizing and externalizing behaviors), it may not act as a moderator with competence. As competence is an essential component of resiliency, this lack of findings regarding competence may explain why the current study was unable to support coping as a moderator.

The fourth hypothesis investigated the role of ethnicity in moderating the relationship between resource loss and resiliency, however, the data failed to support this hypothesis. This lack of findings is consistent with both the trauma literatures and resilience literature which have found either mixed effects or no effects of ethnicity on predicting resiliency. It should be noted, however, that the current study only included individuals whom identified as either "Caucasian" or "African American". There were nine individuals who self-identified as another ethnicity, such as "biracial", "mixed", "Latino", or "Asian". As no significant interpretations would be able to be made about these individuals, they were excluded from the current analyses.

Influences Among Demographic Variables

The current study examined the effects of two demographic variables: age and gender. In the prediction of resiliency following loss, age was found to be influential in each model examined. Specifically, adolescents were found to exhibit higher levels of resiliency than children.

Younger children may be at a disadvantage for displaying resilience for a variety of reasons. First, younger children often have difficulty coping with their frustrations leading to increased levels of externalizing behaviors, such as, uncontrolled crying, prolonged temper tantrums, and aggressive behaviors As a lack of externalizing behaviors is an essential component of resiliency, this increased level of behaviors will lead to lower levels of resiliency. Younger children have also been found to evidence higher levels of internalizing behaviors

further contributing to lower levels of resiliency (Cannon & Weems, 2006). It has also been suggested that children may be at a disadvantage because those in late childhood are most at risk for experiencing internalizing behaviors following a trauma (Lynch, 2003). In addition, children may also be at greater risk for problems following a trauma as exposure has been related to lower self-esteem in children as well as higher levels of anxiety and insecurities.

Another possible reason that children exhibit lower levels of resiliency is because of their lower levels of cognitive flexibility and reasoning abilities. Although adolescents are able to consider multiple solutions to a problem through various means, children are often only able to generate one solution to a problem (Vasey, Crnic, & Carter, 1994). Although older adolescents tend to experience greater absolute levels of anxiety and other internalizing behaviors, they possess greater cognitive resources to cope with these demands.

Less research has considered the effects of competence and reasoning abilities, however, it can be hypothesized that cognitive flexibility and problem solving skills would enhance an individual's ability to exhibit competence and overall resiliency. Based on previous findings, it can be further hypothesized that by the time children reach adolescence, they have developed more effective coping skills and are better able to cope with the challenges experienced following a residential fire (Lieberman & Knorr, 2007).

It should also be noted that social competence, an important component of resiliency, is more pronounced in older children and adolescents. Individuals in these older developmental periods are more likely to possess the skills which allow them to adjust one's behavior in response to social feedback, as well as display a sensitivity to other's feelings and experiences (Ford, 1982). In conclusion, it appears as though adolescents are better equipped with the cognitive and interpersonal skills needed to adapt following a traumatic event such as a residential fire.

With regards to gender, the current study found that in general, gender was a significant predictor of resiliency, with girls being more likely to be resilient than boys, although this finding was not replicated across all models. This finding is consistent with previous research which has also found that females are more likely to be resilient (Kumpfer, et al., 1999). In contrast to the resilience literature, the trauma literature has evidenced mixed findings regarding gender. Although gender was not examined as a moderator in the current study, it may moderate the relationship between loss and resiliency or it may be related to other factors influencing

outcomes such as social support or coping (Hanson, et al., 2008). In fact, gender has been found to moderate the relationship between exposure and externalizing symptoms, however, the relationship to internalizing symptoms is less clear (Evans, Davies, & DiLillo, 2008). These gender differences may emerge as boys are more likely to use externalizing behaviors to express distress as compared to girls who are more likely to use internalizing. In addition, externalizing behaviors may be more disruptive in the classroom and the home environment, leading to a decrease in competence as well.

Gender differences may also be a result of biological processes. It has been suggested that neurobiological effects of a traumatic event differ by gender (Olff, Langeland, Draijer, & Gersons, 2007). Specifically, it has been hypothesized that women may report more threat and loss appraisals, leading to differing HPA-axis responses. Specifically, women may experience lower cortisol reactions to stress, leading to greater stress-related disorders. Differences in appraisal may also lead to differential activation of the HPA stress response. When the HPA-axis is chronically activated, a dysregulation of the entire stress response may occur. This dsyregulation has been implicated in a variety of psychiatric illnesses including PTSD, mood disorders and anxiety. In addition, women have been found to appraise more events as stressful, leading to higher levels of perceived distress. These appraisals include maladaptive interpretations of trauma symptoms (i.e., racing thoughts, anxious feelings), which have been shown to lead to internalizing disorders (i.e., anxiety, depression). It should be noted, however, that research involving biological gender differences is primarily limited to the adult literature. As a result, it is unclear whether these same processes are present in children. In addition, little has been done looking at these processes in resiliency; however, it can be assumed that the reverse of these processes would lead to positive adaptation (i.e., lower levels of threat appraisals, adaptive interpretations of trauma).

Is it important to note that in the current study, gender was highly correlated with age. Specifically, female gender was associated with increased age. As older age predicted higher levels of resiliency, the gender results found may be due to its relationship with age, rather than a specific gender effect.

It is also worth mentioning that the vast majority of research has examined the relationship between loss and internalizing symptoms (i.e., PTSD, depression), rather than the relationship between loss and resiliency. Although this study did not specifically examine the

role of gender in resiliency, it is one of the first investigations examining gender using the current conceptualization of loss and resiliency.

Benefits and Implications of the Study

The current study highlighted one of the unique features of residential fire, large scale resource loss. Although other traumatic events may involve a loss of resources (i.e., energies, personal characteristics and conditions), natural disasters (i.e., residential fires) typically involve a large scale loss of material resources. Although not investigated in the current project, this material loss of resources may make recovery from these traumas different from other types of traumatic events, where losses do not occur.

The strongest finding of the current study involved the significant relationship between loss and resiliency. This result was particularly noteworthy as it was not significantly affected by any of the proposed moderators (i.e., social support, coping, ethnicity). As unmoderated relationships are often the most robust relationships, a lack of moderators of further strengthens the interpretation of this finding. In addition, as the proposed moderators were not significant, it can be assumed that little can be done to affect this basic loss-resiliency relationship.

Based on these results, when intervening to promote resiliency, the focus should lie on preventing a loss of resources, in addition to other post-trauma environmental factors (i.e., social support networks, coping strategies). By increasing one's resources, whether through social programs, fire safety education or better construction of homes, one may be buffered from the full effects of experiencing a traumatic event.

Although the current study failed to find significant effects for the proposed moderating variables of social support, and coping it is important to note that the means of the main effects for social support and active coping were in the expected direction. Specifically, those with higher levels of social support were found to have higher levels of resiliency as well as those with high levels of active coping. Although these findings were not statistically significant, they still may have important implications for the trauma literature. Following a traumatic event, it may be important to foster social support networks for the child and to encourage children to seek out support from family members, peers and teachers. In addition, as active coping strategies have typically been found to promote positive functioning, children should be encouraged to employ these strategies as opposed to avoidant strategies such as avoidance and distraction.

Another significant implication of the current study is the examination of demographic variables on both mental health outcomes (i.e., internalizing and externalizing behaviors), as well as competence and overall resiliency. Previous studies have not done an adequate job of examining the role of demographic variables, although information regarding ethnicity is particularly sparse. Although efforts have been made to recruit subjects from varying ethnic backgrounds, many issues regarding the collection of this data have emerged. Engaging individuals, particularly those of minority status, in research endeavors has continually been a source of difficulty and many obstacles have been encountered. Specifically, three major barriers have been identified as reasons for difficulties recruiting those of minority status and low SES (Jones et al., 2006). These barriers include a general mistrust of research, difficulties accessing research facilities and problems with culture and linguistics. Those with limited resources often encounter additional barriers such as a lack of transportation to the laboratory, inability to take off work for the investigation, and a lack of child care if necessary.

The current study sought to eliminate many of these barriers by conducting interviews in places easily accessible to the individuals (i.e., homes, local religious places etc) as well as attempting to conduct interviews in a culturally sensitive manner. In addition, participants were provided with a small monetary incentive, limiting some of the financial barriers to participation. As a result of these efforts, fairly equal numbers of Caucasians and African Americans were recruited (44 Caucasians and 46 African Americans) as well as nine individuals who identified themselves as another nationality (i.e., Asian, Latino, bi-racial etc).

The majority of the current trauma child literature has focused on factors that predict poor outcomes (i.e., PTSD, depression, anxiety) following a traumatic event. It is important, however, to gain a deeper understanding of the factors that help children to perform well following trauma in order to further foster these processes in traumatized children. In addition, a better understanding of resiliency-promoting influences may help to foster resiliency pro-actively, before a traumatic event occurs.

Limitations of the Current Study

The predictions regarding the moderational role of social support, coping and ethnicity were not verified. This lack of results may be due to a number of reasons. The first reason may be due to the lack of power in the study. When averaged across analyses, the power of the current study is .68, well below the accepted standard of .8 needed to detect medium effects. As a result,

although the means for most analyses were in the expected direction, significance was not found. It is also important to note that the effects hypothesized to be present are likely in the small range (.20-.49), rather than the medium range (.50-.79), leading to less statistical power.

It is also important to note that the level of trauma experienced by the individuals involved in the current study may not have been severe enough to elicit strong post-traumatic stress reactions. For example, although approximately 45% of the sample experienced "some" or "a lot" loss of material resources, few experienced a loss of personal resources (i.e., loss of time to sleep, loss of free time). In addition, few people were at home during the fire, leading to limited levels of direct exposure.

Previous research has demonstrated the relationship that those who experience the highest levels of loss have the highest rates of psychopathology (Burke, et al., 1986; Green, et al., 1991; Lonigan, et al., 1991). Although less work has been done on resiliency, it can also be assumed that extreme levels of loss would have a profound effect on an individuals' ability to demonstrate resiliency and that the proposed moderating variables would have a greater effect on functioning. For example, an individual who has lost all their belongings and is forced to move to a new city will likely employ more coping strategies and seek greater levels of support than an individual who simply lost a few belongings in the fire but was not displaced (La Greca, et al., 1996). In addition, ethnicity may have a greater effect at the more severe levels of trauma as those who have less to begin with (i.e., resources, support systems etc) often experience the greatest levels of loss and the most difficulty returning to normal functioning (Hobfoll, 1988).

Another potential limitation of the current study is that the first assessment of functioning may have occurred too soon after the fire to capture the full effects of the trauma. Immediately following a traumatic event, individuals react in similar ways (i.e., employing both active and avoidant coping strategies, seeking support) and it is only after a greater time period that individual differences in functioning and coping strategies emerge. In addition, in many cases, the full effects of the trauma are not present until one to three years following the event (Hepp, et al., 2008).

Although it is commonly thought that the trajectory for those who experience traumas is to improve over time, it should be noted that there are four distinct paths that one may take (Hobfoll, et al., 2009). The first possible path "resistance trajectory", involves individuals who never develop symptomatology. For the current project, these individuals would also be labeled

as “resilient” as they were exposed to a traumatic event and continued to function normally. A second trajectory is the “resilience trajectory” which characterizes those who may have experienced levels of distress, but that have now recovered. Thirdly, an individual may be classified as on the “chronic distress trajectory” if they continue to display poor adaptation to the trauma. Lastly, the final trajectory “delayed distress trajectory”, includes those who display resilience initially, however, they become symptomatic over time. This “delayed distress trajectory” can encompass up to 10% of individuals, a group missed by the current study as it only examined the first wave of assessments. In addition, even those fitting the resilience trajectory may have not been captured as the length of time between the fire and the assessment was only four months. For the current study, it may have been more beneficial to examine individuals during the second or third wave of the study, once inter-individual differences are more likely to emerge, although the significant attrition rates in the study prevented this examination.

Another potential reason that significant findings were not found may be due to the resiliency measure employed. The current study utilized three scales (i.e., total competence, total internalizing behaviors and total externalizing behaviors) that were combined to create a resiliency variable. Although previous research has supposed the use of combining multiple aspects of functioning to evaluate resiliency, the current measure may have lacked the comprehensiveness needed to fully capture resiliency. For example, the current study only utilized parental report of behavior, rather than using a multi-informant method including child and teacher reports. In addition, the CBCL only captures a small portion of competence whereas observer methods of social competence and objective measures of grades may have provided a more accurate depiction of functioning. Although the original project collected data from the youth (Youth Self Report; Achenbach), and teacher (Teacher Report Form; Achenbach), the number of subjects who completed these measures was quite limited. As a result, meaningful statistical analyses could not be conducted using these measures. In addition, due to the previous collection of the data, other measures of competence (i.e., grades, social interactions, peer ratings), could not be examined.

As previously mentioned, a significant limitation of the study includes the lack of longitudinal data. During the original collection of data, children and their families were assessed in three waves which occurred approximately three, six and twelve months following the fire

(Jones & Ollendick, 2002). Unfortunately, there was a substantial attrition rate among the respondents from each assessment. As a result, the data obtained during the second and third assessment did not contain adequate amounts of subjects in order to accurately assess the impact of resiliency over time. It is likely that over time, changes in the effects of the proposed moderators would have occurred both at home and at school for the children and adolescents involved. During the first assessment, which occurred approximately four months post-fire, the full impact of the loss may not have been realized yet. In fact, some of the strongest predictors of post-traumatic distress occur as a result of ongoing stressors which may not have had their full impact at the first assessment (Galea, Tracy, Norris, & Coffey, 2008). Loss, therefore, may have a stronger impact on resiliency during the second and third assessments. Immediately following a traumatic event there tends to be a universal increase in coping strategies, whereas differences in active and avoidant coping emerge at later time points (Pollard & Kennedy, 2007). Therefore, coping differences may have a larger impact later in time as specific differences emerge.

Another significant limitation of the current study is the lack of inclusion of data regarding socio-economic status which may function as a possible confounding variable. Although the current study would have benefited from the inclusion of socio-economic status data, it was impossible due to the prior collection of the data. The initial project did seek to obtain information regarding income and socio-economic status; however, many individuals chose to abstain from reporting this information. As a result, the number of individuals who provided this information was too small to allow for significant comparisons.

Although ethnicity is often cited as the reason for differences in variables (i.e. psychological distress, social support, coping), socioeconomic status may account for these differences. Since individuals of an ethnic minority are more likely to have lower incomes and less education, SES may account for differences among ethnic groups (Alivdrez et al, 1996). In fact, it has been suggested that ethnicity is better conceptualized as a distal variable which works through a variety of proximal variables such as SES to affect outcomes (Alvidrez, et al., 1996). In a meta-analysis of PTSD symptoms, SES, rather than ethnicity, was found to be a moderate predictor of distress (Brewin, et al., 2000). Further substantiating this claim, in a study of Hurricane Katrina survivors, low SES was found to be a significant predictor of internalizing symptoms whereas minority status was not (Galea, et al., 2007). Although ethnicity may provide important cultural

information regarding responses to traumatic events, socioeconomic status should also be examined in future studies as it may provide a more accurate prediction of distress.

Directions for future research

The current study was one of the first to examine resiliency in the context of a residential fire. This project was limited, however, in that the data had been previously collected and at the time, there was little focus on behavioral competence. Future research should continue to explore the factors and processes that promote positive functioning following a residential fire. In addition, a focus of future work should include a comprehensive definition of resilience (i.e., internalizing behaviors, externalizing behaviors and various measures of behavioral competence). Multiple measures of resilience (such as grades, observations of social interactions, peer ratings), may provide a more in-depth view of specific areas impacted by trauma. Although little work has examined this notion, it may be that only certain aspects of resiliency are impacted by a trauma or that the nature of the trauma dictates areas of impairment.

Results of this project also noted the importance of resource loss following a traumatic event. Despite the presence of various protective factors, such as social support and active coping, it appeared as though the strongest relationship existed between loss and resiliency following the fire. This suggests that future projects should explore this link further and examine possible interventions aimed at reducing resource loss. These interventions may include fire safety education, various social services or by better construction of housing environments. Future research should also investigate the roles of the specific categories of resource loss. It may be that one or more categories differentially predicts adjustment following a residential fire and should be examined further.

Future research should continue to explore the role of demographic variables such as age, ethnicity and gender. Despite the important contributions of these variables, little research has been done examining them in the context of resiliency following a discrete traumatic event. In addition, studies that have examined the roles of these variables have been quite mixed. It is important to continue to consider the influences of demographic variables while also considering the impact of possible proxy variables such as socio-economic status.

The results of this project should also help inform clinical interventions following an event such as a fire. Despite the presence of various protective factors, such as social support and active coping, it appeared as though the relationship between loss and resiliency was unaffected

by these factors. As a result, clinical interventions should seek to buffer individuals from a loss of resources as well as aid individuals in rebuilding their loss of resources following a traumatic event.

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APPENDIX A:

Resource Loss Scale

**** Interviewer:** "After a disaster (i.e. Fire) some people lose things that make life easier and/or more enjoyable. I'd like to know about you and the things you lost because of the fire, ok?"

Then ask: "Due to the fire have you experienced any loss of…(READ ITEM)?"

If yes: "Did you experience a little, some, or a lot of loss of …(READ ITEM)?"

			A Little	**Some**	**A Lot**	
1. Your furniture	NO	YES	1	2	3	N/A
2. Your fun things (i.e. toys, games, stereos, computer, bike, etc.)	NO	YES	1	2	3	N/A
3. Your personal things (i.e. diary, letters, pictures, etc.)	NO	YES	1	2	3	N/A
4. Your clothing	NO	YES	1	2	3	N/A
5. Your pet	NO	YES	1	2	3	N/A
6. Something else important to you						
a._____	NO	YES	1	2	3	N/A
b._____	NO	YES	1	2	3	N/A
c._____	NO	YES	1	2	3	N/A

d._____	NO	YES	1	2	3	N/A
7. Time for enough sleep	NO	YES	1	2	3	N/A
8. “Free time”	NO	YES	1	2	3	N/A
9. Time at school	NO	YES	1	2	3	N/A
10. Feeling that you are “accomplishing your goals” (i.e. getting things done	NO	YES	1	2	3	N/A

			A Little	**Some**	**A Lot**	
11. A good relationship with your parents (i.e. getting along with your parents)	NO	YES	1	2	3	N/A
12. Time to spend with your loved ones like your family)	NO	YES	1	2	3	N/A
13. Time to do your normal everyday activities	NO	YES	1	2	3	N/A
14. Your sense of humor (i.e. feeling happy, laughing, and joking)	NO	YES	1	2	3	N/A
15. Feeling that your life is peaceful and calm	NO	YES	1	2	3	N/A

16. Closeness with your friends	NO	YES	1	2	3	N/A
17. Support from your teacher (i.e. feeling that your teacher understands you)	NO	YES	1	2	3	N/A
18. Motivation (i.e. wanting to get things done)	NO	YES	1	2	3	N/A
19. Feeling that your life is important (i.e. your life has a purpose)	NO	YES	1	2	3	N/A
20. Having a best friend	NO	YES	1	2	3	N/A
21. Time to finish your homework.	NO	YES	1	2	3	N/A
22. Time to “hangout” (play time) with your friends	NO	YES	1	2	3	N/A

APPENDIX B:

Dubow Social Support Scales

For these items you will be asked to circle the number under the words that are true for you. For each item you will have to decide which statement describes you and circle only one number that indicates if it is Really true or Soft of true.

	Really true for me	Sort of true for me				Really true for me	Sort of true for me
(1)	1	2	Some kids are often unhappy with themselves	BUT	Other kids are pretty pleased with themselves	3	4
(2)	1	2	Some kids don't like the way they are leading their life	BUT	Other kids do like the way they are leading their life	3	4
(3)	1	2	Some kids are happy with themselves as a person	BUT	Other kids are often not happy with themselves	3	4
(4)	1	2	Some kids like the kind of person they are	BUT	Other kids often wish they were someone else	3	4
(5)	1	2	Some kids are very happy being the way	BUT	Other kids wish they were different	3	4

(6)	1	2	they are Some kids are not happy with the way they do a lot of things	BUT	Other kids think the way they do things are fine	3	4

This survey asks about your family, friends, and other people that are sometimes important to kids you age. For each question, circle the answer that is most true for you.

(1) Some kids can count on their family for help or advice when they have problems, but other kids cannot. Can you count on your family for help or advice when you have problems?

always most of the time sometimes hardly ever never

(2) Some kids feel like their family is there when they need them, but other kids don't feel this way. Do you feel like your family is there when you need them?

always most of the time sometimes hardly ever never

(3) Some kids think their families really care about them, but other kids think their families don't. Do you think your family cares about you?

always most of the time sometimes hardly ever never

(4) Some kids think their teachers care about them, but other kids don't. Do you think your teachers care about you?

always most of the time sometimes hardly ever never

(5) Some kids have teachers who make them feel important, but other kids don't. Do your teachers make you feel important

always | most of the time | sometimes | hardly ever | never

(6) Some kids' teachers are mean to them, but other kids' teachers are not. Are your teachers mean to you?

always | most of the time | sometimes | hardly ever | never

(7) Some kids get picked on and teased by their friends, but other kids don't. Do you get picked on and teased by your friends?

always | most of the time | sometimes | hardly ever | never

(8) Some kids feel left out by their friends, but other kids don't. Do you feel left out by your friends?

always | most of the time | sometimes | hardly ever | never

(9) Some kids feel very close to their friends, but others don't. Do you feel very close to your friends?

always | most of the time | sometimes | hardly ever | never

(10) Some kids feel that they are free to talk with their family about a number of things, but other kids don't
feel this way. Do you feel that you are able to talk with your family about the fire?

always | most of the time | sometimes | hardly ever | never

(11) Some kids feel that they are free to talk with their teachers about a number of things, but other kids don't feel this way. Do you feel that you are able to talk with your teachers about the fire?

always	most of the time	sometimes	hardly ever	never

(12) Some kids feel that they are free to talk with their friends about a number of things, but other kids don't feel this way. Do you feel that you are able to talk with your friends about the fire?

always	most of the time	sometimes	hardly ever	never

APPENDIX C:

HICUPS

Now I want you to think about what you did to make things better or to make yourself feel better as a result of the fire. Please tell me how much you thought or did EACH of the different things listed below to try and make things better or to make yourself feel better. There are no right or wrong answers. Just indicate how often you did each of these things as a result of the fire.

RESPONSES: 1 = Not at all 2 = A little 3 = Somewhat 4 = A lot

After the fire occurred, I:

_____ 1. Listened to music.
_____ 2. Thought about what I could have done before I did something.
_____ 3. Wrote down my feelings.
_____ 4. Did something to make things better.
_____ 5. Tried to notice or think about only the good things in life.
_____ 6. Went bicycle riding.
_____ 7. Tried to stay away from the problem.
_____ 8. Tried to put it out of my mind.
_____ 9. Figured out what I could do by talking with one of my friends.
_____ 10. Thought about why it happened.

After the fire occurred, I:

_____ 11. Thought about what would happen before I decided what to do.

_____ 12. Tried to make things better by changing what I did.

_____ 13. Talked about how I was feeling with my mother or father.

_____ 14. Told myself it would be over in a short time.

_____ 15. Played sports.

_____ 16. Talked about how I was feeling with some adult who is not in my family.

_____ 17. Asked God to help me understand it.

_____ 18. Cried to myself.

_____ 19. Went for a walk.

_____ 20. Imagined how I'd like things to be.

RESPONSES: 1 = Not at all 2 = A little 3 = Somewhat 4 = A lot

After the fire occurred, I:

_____ 21. Talked to my brother or sister about how to make things better.

_____ 22. Tried to understand it better by thinking more about it.

_____ 23. Read a book or magazine.

_____ 24. Tried to stay away from things that made me feel upset.

_____ 25. Tried to solve the problem by talking with my mother and father.

_____ 26. Thought about what I could learn from the problem.

_____ 27. Let out feelings to my pet or stuffed animal.

_____ 28. Thought about which things were best to do to handle the problem.

_____ 29. Talked with my brother or sister about my feelings.

_____ 30. Waited and hoped things would get better.

RESPONSES: 1 = Not at all 2 = A little 3 = Somewhat 4 = A lot

After the fire occurred, I:

_____ 31. Thought about what I needed to know so I could solve the problem.

_____ 32. Went skateboarding or roller skating.

_____ 33. Talked with one of my friends about my feelings.

_____ 34. Watched TV.

_____ 35. Avoided the people who make me feel bad.

_____ 36. Did something to solve the problem.

_____ 37. Reminded myself that things could be worse.

_____ 38. Did some exercise.

_____ 39. Tried to figure out what I could do by talking to an adult who is not in my family.

_____ 40. Avoided it by going to my room.

After the fire occurred, I:

_____ 41. Tried to figure out why things like it happened.

_____ 42. Wished things were better.

_____ 43. Told myself it's not worth getting upset about.

_____ 44. Did something like video games or a hobby.

_____ 45. Did something in order to get something good out of it.

RESPONSES: 1 = Not at all 2 = A little 3 = Somewhat 4 = A lot

Table 1 : Demographic variables of Sample size (N), Age, Sex, Race, and Socio-Economic Status (SES)

		African Americans			European Americans			
		Boys	Girls	Subtotal	Boys	Girls	Subtotal	Total
Children (7-12yrs)	**N**	***13***	***12***	***25***	***11***	***16***	***27***	***52***
Adolescents (13-18 yrs)	**N**	***5***	***16***	***21***	***8***	***9***	***17***	***38***
Subtotal	**N**	***18***	***28***	***46***	***19***	***25***	***44***	***90***

Table 2: Means and Standard Deviations of Age, Sex, and Race

Variable	N	Mean	SD	Range
Age				
Total	90	11.97	3.17	6-18
Children	52	9.46	1.80	6 – 12
Adolescent	38	14.89	1.50	13 – 18
Sex		---	---	---
Total	90			
Males	37			
Females	53			
Race		---	---	---
Total	90			
African Americans	46			
European Americans	45			

*Table 3:*Measure Means, Standard Deviations and Internal Consistencies

Measures	**N**	**M**	**SD**	**Alpha**
Resource Loss (RLSC)	*86*	*14.50*	*8.85*	*.85*
Active Coping (HICUPS)	*64*	*2.35*	*.66*	*.87*
Avoidant Coping (HICUPS)	*64*	*2.70*	*.76*	*.86*
Total Social Support (DSSS)	*85*	*26.33*	*6.90*	*.70*
Internalizing Symptoms (CBCL)	*86*	*49.35*	*13.68*	*.91*
Externalizing Symptoms (CBCL)	*86*	*49.62*	*8.85*	*.80*
Competence (CBCL)	*86*	*41.34*	*10.40*	*.56*

Note: Mean score and standard deviation are not reported for the
Following measure that was standardized into z-scores: Resiliency

Table 4: T- tests for ethnicity group differences across measures

Measures	Caucasians N	Caucasians Mean (SD)	African Americans N	African Americans Mean (SD)	t	*p* 2-tailed
Overall Resiliency † (composite from CBCL)	44	.0421 (2.59)	46	-.0785 (2.10)	-.243	.041*
Total Competence (CBCL)	44	42.68 (12.95)	46	39.98 (7.65)	-1.21	.015*
Total Internalizing Behaviors (CBCL)	44	50.36 (13.35)	46	48.20 (13.86)	-.755	.839
Total Externalizing Behaviors (CBCL)	44	49.43 (13.74)	46	49.78 (14.89)	.116	.908
Total Resource Loss (RLSC)	42	16.11 (9.84)	46	12.95 (7.59)	-1.67	.237
Social Support (DSSS)	41	26.32 (7.26)	44	26.32 (6.46)	-.015	.298
Active Coping (HICUPS)	28	2.36 (.64)	36	2.33 (.69)	.189	.471
Avoidant Coping (HICUPS)	28	2.54 (.84)	36	2.82 (.68)	1.49	.054

Note: * = $p < .05$

Caucasians were coded as 0 and African Americans were coded as 1

† Measures were converted to z scores for analyses

Table 5: T tests for age group differences across measures

Measures	**Children (ages 6-12)** N	Mean (SD)	**Adolescents (ages 13-18)** N	Mean (SD)	t	*p* 2-tailed
Overall Resiliency † (composite from CBCL)	52	.-.56 (2.63)	38	.71 (1.62)	2.63	.001**
Total Competence (CBCL)	52	40.27 (11.49)	38	42.71 (9.21)	1.08	.248
Total Internalizing Behaviors (CBCL)	52	52.54 (14.98)	38	44.76 (9.93)	-2.78	.006**
Total Externalizing Behaviors (CBCL)	52	52.31 (15.70)	38	45.92 (11.17)	-2.14	.060
Total Resource Loss (RLSC)	48	13.75 (8.42)	38	15.44 (9.40)	.88	.703
Social Support (DSSS)	47	26.60 (6.89)	38	26.00 (6.99)	-.39	.765
Active Coping (HICUPS)	37	2.30 (.688)	27	2.43 (.626)	.76	.560
Avoidant Coping (HICUPS)	37	2.75 (.78)	27	2.63 (.733)	-.67	.677

Note: * = p < .05. ** = p <.01

Children were coded as 0 and Adolescents were coded as 1

† Measures were converted to z scores for analyses

Table 6: T- tests for gender group differences across measures

Measures	Females N	Females Mean (SD)	Males N	Males Mean (SD)	t	*p* 2-tailed
Overall Resiliency † (composite from CBCL)	53	.30 (2.29)	37	-.48 (2.35)	1.57	.733
Total Competence (CBCL)	53	42.77 (9.86)	37	39.19 (11.40)	1.59	.901
Total Internalizing Behaviors (CBCL)	53	47.70 (12.42)	37	51.49 (14.97)	-1.31	.070
Total Externalizing Behaviors (CBCL)	53	48.70 (15.27)	37	48.70 (12.75)	-.725	.129
Total Resource Loss (RLSC)	53	15.18 (9.08)	33	13.39 (8.50)	.91	.859
Social Support (DSSS)	53	26.58 (6.82)	32	25.92 (7.12)	.437	.473
Active Coping (HICUPS)	40	2.38 (.64)	24	2.30 (.71)	.46	.657
Avoidant Coping (HICUPS)	40	2.76 (.75)	24	2.56 (.78)	.86	.612

Note: * = p < .05. ** = p <.01

males were coded as 0 and females were coded as 1

† Measures were converted to z scores for analyses

Table 7: Zero-Order Correlations Among Variables

Variables	1.	2.	3.	4.	5.	6.	7.	8.
1. Loss	—	.						
2. Gender	.099	—						
3. Ethnicity	-.180	.041.	—					
4. Age	.149	.250*	.030	—				
5. Social Support	-.160	.048	-.002	-.145	—			
6. Active Coping (HICUPS)	.299*	.058	.024	.058.	.055	—		
7. Avoidant Coping (HICUPS)	.286*	.108.	.186	.454	-.024	.698**	—	
8. Resiliency	-.226*	.166	-.026	.012*	.175.	.064	.041	—

Note: N ranges from 64-90 for available data.

*Correlation is significant at the 0.05 level; **Correlation is significant at the 0.001 level.

Table 8: *Summary of Hierarchial Regression Analyses for Variables Predicting Resiliency from Total Resource Loss*

Variable	R^2 change	p	R^2	B	B	P
Step 1	.081	.014	.081			
Gender				.622	.130	.224
Step 2	.016	.008	.097			
Age				.222	.262	.008**
Step 3	.080	.001	.177			
Total Loss				-.286	-.076	.006**

Table 9: Summary of hierarchial regression analyses for child and adolescent resource loss, resiliency and social support.

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.023	.167	.023	.718	.151	.167
Step 2						
Age	.054	.038*	.054	.183	.234	.032*
Step 3						
Total Loss	.117	.004	.194	-.061	-.233	.033*
Social Support				. 054	.161	.124
TL x SS				.004	.109	.314

† = values were obtained for the entire model

Table 10: Summary of hierarchial regression analyses for child and adolescent resource loss, resiliency and active coping.

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.097	.012	.097	1.355	.312	.012*
Step 2						
Age	.045	.078	.142	.157	.220	.043*
Step 3						
Total Loss	.085	.106	.227	-.081	-.306	.015*
Active				.278	.087	.491
Coping						
AC x TL				.001	.002	.986

† = values are for the entire model

Table 11: Summary of hierarchial regression analyses for child and adolescent resource loss, resiliency and avoidant coping.

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.097	.012	.097	1.355	.312	.012*
Step 2						
Age	.045	.078	.142	.157	.220	.043*
Step 3						
Total Loss	.087	.078	.229	-.083	-.314	.013*
Avoidant				.275	.098	.449
Coping						
AV x SS				.018	.054	.668

† = values are for the entire model

Table 12: Summary of hierarchial regression analyses for child and adolescent resource loss, resiliency and ethnicity.

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.030	.108	.030	.837	.174	.108
Step 2						
Age	.067	.015*	.097	.205	.262	.015*
Step 3						
Total Loss	.086	.045*	.183	-.083	-.338	.012*
Ethnicity				-.228	-.062	.552
E x TL				.028	.064	.626

† = values are for the entire model

Table 13:Summary of hierarchial regression analyses for child and adolescent resource loss and total competence

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.029	.118	.029	3.622	.170	.118
Step 2						
Age	.015	.264	.043	.425	.122	.264
Step 3						
Total Loss	.024	.149	.068	-.186	-.158	.149

† = values are for the entire model

Table 14:Summary of hierarchial regression analyses for child and adolescent resource loss and total internalizing behaviors

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.024	.157	.024	-4.302	-.154	.157
Step 2						
Age	.064	.018*	.088	-1.167	-.257	.018*
Step 3						
Total Loss	.040	.057	.127	.312	.202	.057

† = values are for the entire model

Table 15:Summary of hierarchial regression analyses for child and adolescent resource loss and total externalizing behaviors

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.007	.459	.007	-4.302	-.081	.157
Step 2						
Age	.048	.043*	.055	-1.167	-.223	.018*
Step 3						
Total Loss	.086	.005**	.141	.312	.298	.057

† = values are for the entire model

Table 16:Summary of hierarchial regression analyses for child and adolescent resource loss, total competence and social support.

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.024	.161	.024	3.274	.154	.161
Step 2						
Age	.010	.359	.034	.356	.101	.359
Step 3						
Total Loss	.027	.522	.061	-.174	-.149	.203
Social				.093	.062	.581
Support						
SS x TL				-.002	-.012	.920

† = values are for the entire model

Table 17:Summary of hierarchial regression analyses for child and adolescent resource loss, total internalizing behaviors and social support.

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.019	.214	.019	-3.802	-.136	.214
Step 2						
Age	.055	.030*	.051	-1.092	-.237	.030*
Step 3						
Total Loss	.073	.088*	.147	.224	.146	.189
Social				-.255	-.129	.230
Support						
SS x TL				-.025	-.132	.236

† = values are for the entire model

Table 18 :Summary of hierarchial regression analyses for child and adolescent resource loss, total externalizing behaviors and social support.

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.003	.597	.003	-1.708	-.058	.597
Step 2						
Age	.037	.078	.041	-.948	-.195	.078
Step 3						
Total Loss	.132	.008**	.173	.382	.237	032*
Social				-3.64	-.176	.099
Support						
SS x TL				-.025	-.125	.252

† = values are for the entire model

Table 19: Summary of hierarchial regression analyses for child and adolescent resource loss, total competence and active coping.

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.040	.111	.040	4.283	.201	.111
Step 2						
Age	.017	.304	.057	.467	.134	.304
Step 3						
Total Loss	.088	.124	.145	-.383	-.293	.026*
Active				3.145	.200	.124
Coping						
AC x TL				.053	.026	.837

† = values are for the entire model

Table 20: Summary of hierarchial regression analyses for child and adolescent resource loss, internalizing behaviors and active coping.

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.108	.008**	.108	-8.258	-.329	.008*
Step 2						
Age	.030	.150	.138	-.739	-.180	.150
Step 3						
Total Loss	.011	.862	.149	.154	.100	.439
Active				-.670	-.036	.784
Coping						
AC x TL				.072	.030	.810

† = values are for the entire model

Table 21: Summary of hierarchial regression analyses for child and adolescent resource loss, total externalizing behaviors and active coping.

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.028	.189	.028	-4.608	-.166	.189
Step 2						
Age	.029	.177	.056	-.799	-.176	.177
Step 3						
Total Loss	.084	.140	.141	.466	.275	.037*
Active				.987	.048	.716
Coping						
AC x TL				-.018	-.007	.958

† = values are for the entire model

Table 22 :Summary of hierarchial regression analyses for child and adolescent resource loss, total competence and avoidant coping.

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.040	.111	.040	4.283	.201	.111
Step 2						
Age	.017	.304	.057	.467	.134	.304
Step 3						
Total Loss	.057	.306	.114	-.325	-.250	.063
Avoidant				.691	.050	.717
Coping						
AV x TL				.020	.012	.927

† = values are for the entire model

Table 23: Summary of hierarchial regression analyses for child and adolescent resource loss, total internalizing and avoidant coping.

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.108	.008**	.108	-8.258	-.329	.008*
Step 2						
Age	.030	.150	.138	-.739	-.180	.150
Step 3						
Total Loss	.010	.884	.148	.147	.095	.463
Avoidant				-.222	-.014	.920
Coping						
AV x TL				.044	.023	.859

† = values are for the entire model

Table 24: Summary of hierarchial regression analyses for child and adolescent resource loss, total externalizing and avoidant coping.

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.028	.189	.028	-4.608	-.166	.189
Step 2						
Age	.029	.177	.056	-.799	-.176	.177
Step 3						
Total Loss	.106	.073	.162	.578	.341	.010*
Avoidant				-2.677	-.150	.269
Coping						
AV x TL				-.265	-.127	.332

† = values are for the entire model

Table 25:*Summary of hierarchial regression analyses for child and adolescent resource loss, total competence and ethnicity.*

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.029	.118	.029	3.622	.170	.118
Step 2						
Age	.015	.264	.043	.425	.122	.264
Step 3						
Total Loss	.042	.303	.086	-2.765	-.155	.225
Ethnicity				-.183	-.133	.268
E x TL				-.087	-.045	.744

† = values are for the entire model

Table 26: Summary of hierarchial regression analyses for child and adolescent resource loss, total internalizing behaviors and ethnicity

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.024	.157	.024	-1.427	-.154	.157
Step 2						
Age	.064	.018*	.088	-2.411	-.257	.018*
Step 3						
Total Loss	.053	.189	.140	.420	.209	.048*
Ethnicity				-1.522	-.056	.598
E x TL				-.327	-.130	.335

† = values are for the entire model

Table 27: *Summary of hierarchial regression analyses for child and adolescent resource loss, total externalizing and ethnicity*

Variable	R^2 change †	p†	R^2†	B	B	p
Step 1						
Gender	.007	.459	.007	-2.393	-.081	.459
Step 2						
Age	.048	.043*	.055	-1.072	-.223	.043*
Step 3						
Total Loss	.093	.040*	.147	.568	.348	.012*
Ethnicity				1.925	.067	.527
E x TL				-.160	-.060	.654

† = values are for the entire model

Figure 1: The relationship between resource loss and resiliency

Figure 2: The moderational role of coping

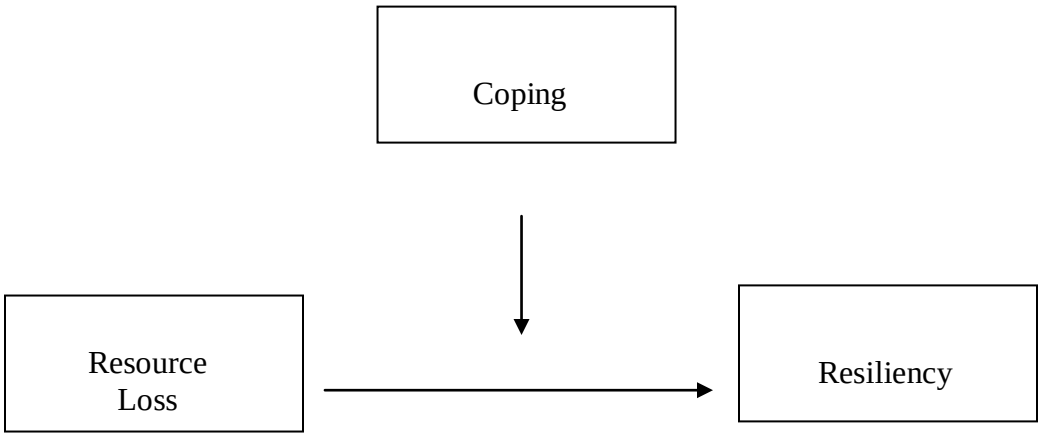

Figure 3: The moderational role of social support

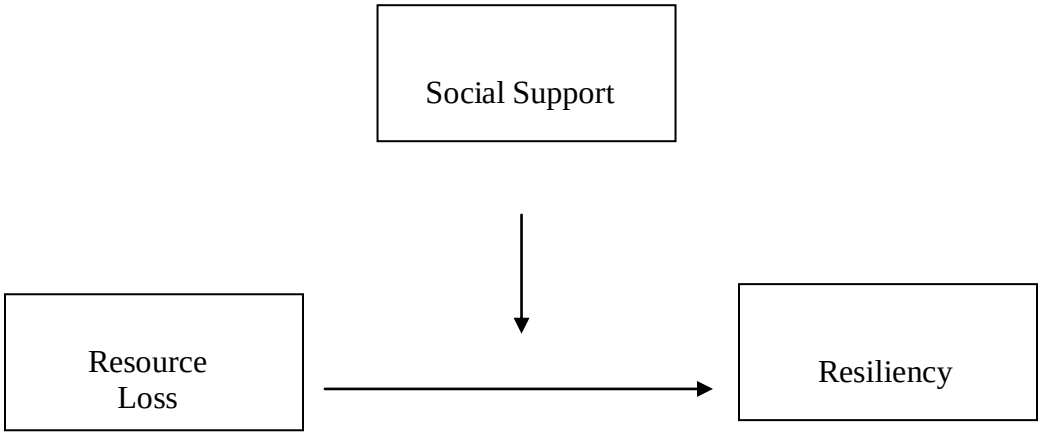

Figure 4: The moderational role of coping