2013

The Relation of Executive Functions to Active Coping Strategies and Internalizing Symptoms in a Community Sample of African-American Youth

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THE RELATION OF EXECUTIVE FUNCTIONS TO ACTIVE COPING STRATEGIES AND INTERNALIZING SYMPTOMS IN A COMMUNITY SAMPLE OF AFRICAN-AMERICAN YOUTH

A THESIS SUBMITTED TO

THE FACULTY OF THE GRADUATE SCHOOL

IN CANDIDACY FOR THE DEGREE OF

MASTER OF ARTS

PROGRAM IN CLINICAL PSYCHOLOGY

BY

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CHICAGO, IL

MAY 2013

ACKNOWLEDGMENTS

At this time, I would like to thank Dr. Noni Gaylord-Harden and Dr. Rebecca Silton for their academic support and continued interest in this research endeavor. Their support has been invaluable throughout this journey. Additionally, I would like to thank my family for their unconditional love and support of my academic aspirations. Lastly, I would like to thank my cohort and labmates for all their encouragement and kindness during this grueling process.

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ABSTRACT

The purpose of this study is to examine the relations between stressor appraisals, active coping, executive functions, and internalizing symptoms in a community sample of low-income African-American youth. There is a dearth of studies assessing how executive functions influence the connection between coping and internalizing symptoms, notably in community and minority populations. When faced with distressing, uncontrollable settings straining the capacity to self-regulate, youth with executive functioning deficits may encounter greater challenges in coping with stressors. Yet, since typically adaptive active coping strategies do not benefit some youth and can result in negative outcomes, it is important to identify what possible factors might be associated with this difference. Participants were 146 African American youth in the 6th-8th grades from two public schools in urban areas, ranging in age from 11-15 years (*M*=12.59). Results showed that the interaction of direct problem solving (DPS) coping and executive functions was significant as well as the interaction of seeking understanding (SU) and executive functions. In both cases, simple slopes analyses revealed that nonclinical youth reported lower depression scores. These analyses suggest that youth without clinically significant deficits in executive functions can use cognitive skills to think of ways to improve the problem (DPS) and to find meaning in a problem (SU). Thus, it is important to conduct research to identify what types of active coping strategies relate to improved mental health outcomes for youth with and without deficits in executive functions.

CHAPTER ONE

INTRODUCTION

Coping behavior in youth influences subsequent psychological outcomes. Past research has established that particular coping responses are related to positive mental health outcomes, while other responses are related to negative mental health effects (Carver, Scheier & Weintraub, 1989; Seiffge-Krenke & Klessinger, 2000). Yet, these differences can result from multiple influences, ranging from environmental-level factors (e.g., the type of stressor) to individual-level factors (e.g., temperament; Wadsworth & Berger, 2006; Derryberry, Reed, & Pilkenton-Taylor, 2003). Additionally, identifying coping strategies with adaptive or maladaptive psychosocial outcomes appear to differ depending on the race or ethnicity of the youth (e.g. African-American youth; Dempsey, 2002; Mosher & Prelow, 2007; Edlynn, Gaylord-Harden, Richards, & Miller, 2008). Another individual factor that potentially interacts with coping to affect youth mental health is executive functions. Executive functions act as a group of self-regulatory processes that facilitate an individual's participation in purposeful behavior with his/her environment (Anderson, 2008). Thus, these abilities could be associated with how well or how poorly an individual handles the situations and emotions that result from a stressful environment. However, there is a dearth of research studying the impact of executive functions on coping strategies, especially in youth, and how effective those strategies are in decreasing negative psychological outcomes.

Much of the present research involving executive functions and coping examines populations with existing impairments in executive functions, such as people living with schizophrenia and patients who have experienced head trauma (Eisenberg & Berman, 2010; Draper & Ponsford, 2008). While it may be easier to identify differences between populations with significant deficits in executive functions and "normal" groups, researchers are restricted in how much the results can inform work with nonclinical populations. The previous research has also had an additional focus on adults, whose coping strategies are likely to be established and less flexible than youth (Kaluza, 2000; Rasmussen, Aber, & Bhana, 2004). Conversely, adolescents are still developing their cognitive abilities and have less rigidly formed approaches to coping with stress. Such changes reflect the developing adolescent brain and its continuing plasticity, which can affect cognitive and behavioral actions (Banich & Compton, 2011, p. 436-437). With this increased malleability, adolescence provides an appropriate transitional period to study how executive functions, coping strategies, and stressor appraisal impact mental health outcomes. The proposed study will examine the relation of executive functions to coping with life stress in a non-disordered community sample of African American youth from economically-disadvantaged communities. Previous findings have demonstrated that African-American youth who self-reported clinically significant executive functioning challenges experienced increased depressive symptoms if they appraised stressors as highly distressing and used high levels of active coping strategies in response to the stressor (Kesselring, 2009). Since active coping is commonly viewed as an

adaptive strategy, it is important to understand which elements of active coping might be related to deficits in executive functions and these internalizing symptoms.

The current study builds on this finding by examining how specific subtypes of active coping such as cognitive decision making, seeking understanding, and direct problem-solving, relate to stressor appraisals and symptoms of depression and anxiety. Although general consensus has frequently related active coping to positive outcomes (Fields & Prinz, 1997; Grych & Fincham, 1993; Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001), the subscales of active coping range on what they measure. For example, the categories can vary from direct problem solving, which involves efforts/behaviors to improve the situation by changing the self or the environment, to positive cognitive restructuring, which involves thinking about and identifying the good things that happened and minimizing the problem and its consequences (Ayers, Sandler, West, & Roosa, 1996). Given that findings from previous research (Kesselring, 2009) suggest that youth with executive functioning difficulties may be at heightened risk for depression when using active coping, identifying which specific subtypes of active coping are helpful or relevant is important. Therefore, the current study will examine how executive functions act as a moderator of the association of various forms of active coping strategies and stressor appraisals to internalizing symptoms. If youth have executive functioning challenges, this could affect their ability to successfully employ active coping strategies; executive functions would not only be required to organize thoughts about the stressor and prepare for actions to initiate direct change, but they are critical for the preliminary appraisal of the stressor and the available

resources. Studying how executive functions may interact with coping strategies in youth can help guide researchers on where to intervene in order to improve the way youth handle stressful situations in their lives.

The subsequent sections of the current proposal will review the literature on the following topics: (1) overview of the coping process in children and adolescents; (2) the association between coping and internalizing symptoms; (3) a definition of executive functions; (4) development of executive functions in youth; (5) assessment of executive functions; (6) conceptual models of executive functions; and (7) the association between executive functions and coping.

Overview of the Coping Process

Children and adolescents who experience high levels of psychosocial stress are at greater risk factor for psychopathology (Grant, Compas, Stuhlmacher, Thurm, McMahon, & Halpert, 2003). Thus, determining ways to improve how youth adapt to and cope with such stress can help reduce the development of psychopathology (Sandler, Wolchik, MacKinnon, Ayers, & Roosa, 1997). Coping is traditionally described with Lazarus and Folkman's (1984) definition as an individual's "constantly changing cognitive and behavioral efforts to manage specific external and internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). This model views coping as goal-directed and motivational. While children and adolescents might have difficulty accurately evaluating if the stressor is exhausting their resources, coping indicates the intentional physical or mental actions they engage in when faced with a stressor (Compas

et al., 2001). Thus, the current study will regard coping as volitional responses consciously motivated to reduce stress or emotional reactions to stress.

Theoretical Models of Youth Coping.

Researchers classify coping behaviors along varying qualities. One approach examines how an individual attempts to change some aspect of the stressor or uses thoughts or actions to try and manage the distressing emotions that result from the stressor (problem-focused coping vs. emotion-focused coping; Lazarus & Folkman, 1984). Another approach considers how an individual either changes the external conditions involving the stressor or adapts oneself to those conditions in order to deal with the stressor (primary control coping vs. secondary control coping; e.g., Weisz, McCabe, & Dennig, 1994). Additionally, researchers categorize coping behaviors according to whether the individual engages with the stressor or disengages from the stressor (engagement coping vs. disengagement coping; e.g., Ebata & Moos, 1991). Though the aforementioned broadband models cover many types of coping and regularly appear in the literature, they may not always capture the distinct coping responses presented by youth (Compas et al., 2001). One coping response could potentially be classified along both sides of one dimension: walking away from a fight with a friend can help calm oneself down (emotion-focused) but also could allow time to think of more solutions to the conflict (problem-focused) (Compas et al., 2001). Using a model that categorizes youth coping behaviors into more specific subtypes will help clarify coping, executive functions, and outcomes are related.

One of the most widely-used and empirically-based models of youth coping is the four-factor model introduced by Ayers and colleagues (1996). The researchers developed the Children's Coping Strategies Checklist (CCSC) and categorized items of youth coping strategies into four specific subtypes: active, avoidant, distraction, and support-seeking (Ayers et al., 1996). Using the CCSC (Program for Prevention Research, 1999) to measure dispositional coping and situation-specific coping across two child samples, the researchers conducted a confirmatory factor analysis to test this four-factor model against broadband models of coping (e.g., problem- versus emotion-focused coping. Not only did Ayers et al. (1996) find that the four-factor model provided a better fit to their data compared to the broadband models, but they also observed that these four factors remained consistent across age groups and sex using equality of the covariance matrices, indicating that the model likely is valid for boys and girls and youth of varying ages (Ayers et al., 1996). Additionally, this framework is viewed as a model that advances the theoretical development of youth coping (Compas et al., 2001).

To engage in active coping strategies, youth directly deal with the stressor either cognitively or behaviorally, encompassing activities such as cognitive decision making, seeking understanding, and direct problem-solving (Ayers et al., 1996). Avoidant coping responses include behavioral and cognitive efforts that allow the child to avoid the stressor, such as withdrawal and wishful thinking (Ayers et al., 1996). Distraction strategies are considered activities or stimuli that divert one's attention from interacting with or thinking about the stressor, which include exercise or relaxation as a physical release of emotions or distracting activities like entertainment to remove attention to the

stressor (Ayers et al., 1996). When the child approaches another person, whether a peer or a caring adult, to request help in solving a problem or to share emotions and reduce distress, they are utilizing support-seeking strategies (Ayers et al., 1996).

The Role of Stressor Appraisals in the Coping Process

The traditional, transactional coping model proposed by Lazarus and Folkman (1984) is contingent upon the individual's appraisal of the stressor. This model views coping as the process where an individual repeatedly evaluates the surrounding events and potential resources that can be used to adjust to situational demands. Once the individual considers that a situational demand exceeds his or her resources, it is regarded as a stressor. Subsequently, the individual selects a coping strategy to counteract the imbalance between the demands and the resources. The individual's appraisal of the stressor influences the chosen coping strategy: whether (s)he views it in his/her control, whether (s)he can impact the outcome, what types of emotions are associated with the stressor, etc. After selecting a coping strategy and implementing it, the individual decides whether the coping strategy corrected the demand-resource imbalance. This perceived success (or failure) of the coping strategy will likely affect if it used in the future with related stressors and can alter how the individual determines the threshold of stressor imbalance.

The entire stressor appraisal process, however, would appear beyond a younger child's cognitive ability (Grant et al., 2003). Yet, as they age, older children and adolescents quickly develop the level of cognitive capacity to appraise stressors and their resulting coping responses (De Luca & Leventer, 2008). Hence, for these youth, the way

they evaluate the stressor can affect what coping strategy they will select. Youth may appraise the stressor along various dimensions: the compatibility of a coping strategy with their personal standards (sometimes certain options also have affective markers associated with them such as feelings of "pride" or "guilt"), the (perceived) controllability of the stressor, the capacity to produce change when interacting with the stressor, and the level of energy and effort needed to execute a certain coping strategy (Derryberry, Reed, & Pilkenton-Taylor, 2003).

Stressor appraisals frequently affect what coping actions youth choose as a response. This is particularly salient for stressors that are perceived as more distressing (e.g., provoking more sadness, fear, and anger) to the extent they are appraised as threatening psychological needs (Zimmer-Gembeck, Lees, Bradley, & Skinner, 2009). For example, bullying is often a stressful experience for children and adolescents, and one study found that bullied children who perceived more threat reported using more social support seeking and wishful thinking/ "distracting" strategies (Hunter, Boyle, & Warden, 2007). On the other hand, a similar study identified that if youth appraised bullying as a challenge (something to overcome, with a potential for mastery and gain) it was associated with increased use of direct problem-solving and social support seeking coping (Hunter & Boyle, 2004). One study examining youth facing divorce-related family stress found that threat appraisal was related to child self-reported increases in active, as well as avoidant coping (Lengua, Sandler, West, Wolchik, & Curran, 1999). When studying children coping with general negative life events (e.g., serious illness or injury, loss of friends or pets), the stressors viewed as threatening were related to greater

use of avoidant coping strategies, whereas stressors viewed as challenging were related to greater use of both active and avoidant coping strategies (Lengua & Long, 2002). Though the research on stressor appraisals influencing coping strategies is limited, it is apparent that experiences viewed as distressing and threatening appear to interact with the selection of coping strategies in a way that likely influences outcomes for youth.

There is also a lack of research on how appraising the controllability of stressors relates to the type of coping strategy implemented by youth. In examining interpersonal stressors, adolescents who viewed themselves as responsible for the cause of the event (e.g., higher level of "control") engaged in more problem-solving and support-seeking coping (Gamble, 1994). When adolescents facing cancer-related stressors perceived the stressors to be controllable or changeable, they were more likely to use an increased amount of coping strategies overall, not just active coping (Burgess & Haaga, 1998). In a study examining bullying as a stressor, youth who reported less control also reported increased use of social support seeking and wishful thinking/ "distracting" strategies (Hunter, Boyle, & Warden, 2007). In another bullying study, youth appraisals of greater control were associated with the use of active (including aggressive), problem-focused strategies (Hunter, Boyle, & Warden, 2006). Furthermore, a study of youth coping with long-term care for a physically disabled parent found that greater perceived choice in caregiving (e.g. more control) was related to lower appraised stress along with increased social support and approach coping and less avoidant coping (Pakenham, Chiu, Bursnall, & Cannon, 2007). These findings suggest that youth who appraise a stressor as

controllable frequently, though not exclusively, may be more likely to select active or approach strategies as a coping response.

The available research presently suggests that both appraisals and coping strategies are critical domains for youth facing stressful situations. Though researchers often use Lazarus and Folkman's (1984) transactional coping model when examining stress and coping in youth, they often fail to capture the cognitive appraisal component in their scales measuring stress in youth (Grant et al., 2003). This omission research may limit our understanding of how the youth are interpreting stressors in their lives before they cope with them, which is particularly important for youth facing increased levels of stress, such as economically-disadvantaged ethnic minority youth in urban settings. There is a paucity of research examining stressor appraisal in urban African American youth. However, the literature demonstrates that these youth face many uncontrollable stressors (e.g. poverty-related stressors, community violence) and respond with coping strategies that typically would appear maladaptive (e.g. avoidant coping), but in these circumstances function protectively (Dempsey, Overstreet, & Moely, 2000; Edlynn et al., 2008; Grant et al., 2000). Thus, it becomes important to incorporate the stressor appraisals from African American youth themselves in order to acquire their perspective, which may be more accurate than researcher-defined categories. To address this limitation in the literature, the current study will view coping responses as comprising both stressor appraisals of distress and control along with coping strategy type. The current study will examine how coping strategies as well as stressor appraisals predict internalizing symptoms.

Coping and Internalizing Symptoms

When working with children and adolescents, researchers studying coping have mainly investigated how coping affects psychological adjustment, often concerning internalizing symptoms (e.g., depression and anxiety) and externalizing symptoms (e.g., aggression), academic performance, and social competence (Compas et al., 2001). Amongst all these outcomes, internalizing symptoms are a particularly salient issue for adolescent functioning, and better understanding of how youth cope with these symptoms is important for various reasons. For example, during the span of adolescence, researchers witness higher rates of depression (Petersen, Compas, Brooks-Gunn, Stemmler, Ey, & Grant, 1993), particularly among females (Hankin, Abramson, Moffitt, Silva, McGee & Angell, 1998; Twenge &Nolen-Hoeksema, 2002). Additionally, results from a forty-year longitudinal study demonstrated that 70% of participants with persistent or recurrent internalizing problems in adolescence had an internalizing disorder in adulthood compared to 25% of mentally healthy adolescents (Colman, Wadsworth, Croudace & Jones, 2007).

Theory and empirical research examining ethnic minority issues in depression and anxiety remain inconclusive and divided. For example, the theoretical literature on depression commonly focuses on testing theories based on Eurocentric values (e.g. individualism and individual change) while the empirical studies either use European American samples that are then expected to be generalized across cultures, do not examine ethnic differences in depressive symptomatology, or report conflicting results in prevalence rates based on race/ethnicity (Hammack, 2003; Twenge & Nolen-Hoeksema,

2002; Kistner, David-Ferdon, Lopez, & Dunkel, 2007). While this uncertainty continues in the realm of research, African American youth face increased risk for these internalizing symptoms as a result of heightened rates of economic difficulties, such as poverty-related stressors (Adkins, Wang & Elder, 2009). Furthermore, in a recent review, increased reports of stressor events predicted higher levels of internalizing and externalizing symptoms for youth in the majority of studies, but the relation was stronger for internalizing rather than externalizing symptoms (Grant, Compas, Thurm, McMahon, & Gipson, 2004). With African American youth in low-income, urban communities typically facing increased exposure to stressful life experiences with psychological impacts, it becomes critical to examine how appraisals of these stressor events and the resulting coping interact to potentially reduce internalizing symptoms.

The literature examining the relation between youth coping and internalizing symptoms presents diverse results. Difficulties arise when comparing the varied ways of measuring stressors, appraisals, and coping, the theoretical disparity of coping constructs, and cross-sectional study designs (Grant et al., 2004; Compas et al., 2001). However, throughout the literature overall, research has supported that particular coping strategies are related to either increases or decreases in depressive and anxious symptoms. In their review of the youth coping, Compas and colleagues (2001) report that, typically, accounts of engagement coping, which involves active and support-seeking responses, are related to lower levels of internalizing, while accounts of disengagement coping, which involves avoidant responses, are related to higher levels of internalizing

symptoms. Yet, these common understandings are challenged when stressor appraisal and youth demographics are considered.

Active Coping Strategies and Internalizing Symptoms

Active coping strategies are an essential part of an adolescent's coping repertoire. Moreover, identifying the use of active coping (or lack thereof) provides an initial point to examine youth's adaptation to stress, especially since these types of strategies often have been associated with better outcomes (Compas et al., 2001; Dumont & Provost, 1999; Clarke, 2006). Active coping responses also frequently appear as a central component in many intervention programs, ranging from issues around divorce (Vélez, Wolchik, Tein, & Sandler, 2011), anxiety-prevention related to community violence (Cooley-Strickland, Griffin, Darney, Otte & Ko, 2011), as well as coping with anger in aggressive youth (Lochman, Curry, Dane, & Ellis, 2001). Hence, studying active coping strategies in adolescents can lead to distinguishing potential components related to improved functioning.

Nevertheless, the literature investigating the relation between active coping and internalizing symptoms in youth remains inconclusive. In general, active coping strategies are viewed as "adaptive" ways to respond to a stressor (Ebata & Moos, 1991; Herman-Stahl & Petersen, 1996; Compas et al., 2001). For example, youth who reported using more active coping strategies when dealing with divorce-related stressors likewise reported lower levels of internalizing symptoms (Sandler et al., 1994; Sandler, Tein, Mehta, Wolchik, & Ayers, 2000). In a study with Portuguese adolescents coping with daily stressors that mainly involve family issues, active coping strategies were used more

frequently by older adolescents and were associated with fewer depressive symptoms (Gaspar de Matos, Tomé, Borges, Manso, Ferreira & Ferreira, 2008). After experiencing the distress of a hurricane, youth who used the active coping strategy, positive reframing, reported fewer depressive symptoms (Jeney-Gammon, Daugherty, Finch, Belter, Foster, 1993). Youth who responded with active coping that involved adapting to and/or changing one's beliefs about stressors related to parental depression also reported fewer internalizing symptoms (Langrock, Compas, Keller, Merchant & Copeland, 2002; Fear et al., 2009). Moreover in the chronic illness literature, a study of youth coping with Type-1 diabetes found that the use of the active coping strategy, cognitive restructuring, was significantly associated with less depression and greater positive well-being (Edgar & Skinner, 2003), while another study involving youth with chronic pain also found that cognitive restructuring and positive thinking was related to decreased internalizing symptoms (Compas et al., 2006).

In contrast to the widespread results in the literature, certain studies have identified that active or approach coping strategies did not influence psychological outcomes, particularly for ethnic minority youth from underresourced communities (Dempsey et al., 2000; Dempsey, 2002; Edlynn et al., 2008; Grant et al., 2000). Other studies with this population have also found that active coping strategies were related to negative psychological outcomes. For example, increased use of the active coping strategy, confrontational coping (e.g., direct problem solving) over a 1-year period of time in ethnic minority youth coping with community violence exposure, predicted increased depressive and anxious symptoms over time (Rosario, Salzinger, Feldman, &

Ng-Mak, 2008). Additionally, a more recent study examining violence exposure and victimization in older African American adolescents found that, for females experiencing a high number of physical assaults, the use of high levels of problem-focused coping was associated with greater depressive symptoms (Hassan, Mallozzi, Dhingra, & Haden, 2011). As these studies demonstrate, the positive and adaptive effects of active coping strategies depend on the youth's context and appraisals. These findings are consistent with a cognitive-transactional model of coping which qualifies the effectiveness of coping as a function of the "goodness of fit" between coping attempts and other factors of stress and coping, most notably the controllability of the stressor. Thus, the same coping strategy that protects against emotional distress for a controllable stressor relates to more distress for an uncontrollable stressor (Forsythe & Compas, 1987), due to the inability to actively change uncontrollable stressors. In particular for urban, ethnic minority youth who frequently face threatening and uncontrollable stressors, their context can negate the stress-buffering capacity of active coping strategies and instead do the opposite, potentially augmenting stress and negative outcomes, such as internalizing symptoms.

The extant research examining how coping strategies relate to internalizing symptoms remains ambiguous. The literature contains reports of the varying success, failure, or null effects of all types of coping strategies, especially when one takes into account the specific context of low-income ethnic minority youth who disproportionately face certain additional stressor aspects, such as chronicity and uncontrollability (Clarke, 2006; Compas et al., 2001). With this in mind, coping responses cannot be systematically associated with either positive outcomes or negative outcomes. Instead it

seems that youth utilize "adaptive" coping strategies depending on their environmental context, the controllability appraisal of the stressor, as well as their access to physical, psychological, and social resources to cope with the stressor demands (Tolan & Grant, 2009; Dempsey et al., 2000). Stressor appraisals and adequate resources interact to affect the coping responses chosen and the subsequent psychological outcomes for youth (Landis et al., 2007). Thus, more research must be conducted to examine the underlying mechanisms between the stressor appraisals and coping responses.

Overview of Executive Functions

While children progress from childhood to adolescence, they exhibit increasing metacognitive skills that help them gauge the stressor characteristics and better match coping responses to these characteristics (Compas et al., 2001). This developmental change underscores the importance of understanding how adolescents' cognitive ability may influence coping behaviors. Such skills may include the ability to inhibit impulsive reactions, plan out actions, and perform behaviors in particular temporal sequence to reach a goal. These types of actions frequently fall under the realm of executive functions, a group of self-regulatory cognitive processes, which progress during adolescence (Anderson, 2008).

Executive Functions: Definition

Providing a definition for executive functions is difficult because of the ambiguity surrounding the term; at times it is used to describe behaviors measured in performing tasks, and in other instances it is represented by certain psychological phenomena or neurobiological structures (Dick & Overton, 2010). Yet, one traditional perspective is

viewing executive functions as "capacities that enable a person to engage successfully in independent, purposive, self-serving behavior" (Lezak, 2004, p. 35). These capacities fall under an umbrella of cognitively-based abilities that, while related, are not wholly unitary. Some studies statistically determine separable functions that contribute differentially to task performance, such as shifting, inhibition, and updating, but these remain moderately correlated, which continues to suggest potential underlying commonalities (Miyake et al., 2000). Moreover, while the frontal lobes and prefrontal cortex play a critical role in supporting executive functions, increased research, particularly in children and older adults, reveals that this region does not work in isolation but rather performs as part of a broader functional system involving the entire brain (Anderson, Jacobs, & Anderson, 2008). Researchers and clinicians, however, generally agree on certain faculties that are commonly associated with executive functions. These range from cognitive operations such as (a) attentional processes; (b) inhibition and self-regulation; (c) initiation of activity; (d) working memory; (e) cognitive flexibility; (f) planning ability and organization; and (g) selection of efficient problem-solving strategies, which subsequently interact with more affective and behavioral events (Anderson, 2008).

Development of Executive Functions in Youth

When studying executive functions in children and adolescents, a developmental framework must be considered because executive functions mature at different rates over time, with some peaking in late childhood or adolescence while others progressing until early adulthood (Best, Miller, & Jones, 2009). Furthermore, executive functioning

developments parallel neurophysiological developments of the growing brain, so as the processing capacity of the frontal lobes and other interconnected regions increases, the core executive functions begin emerging (De Luca & Leventer, 2008; Anderson, 2002). As the nascent functions start growing, they not only continue to mature (sometimes in spurts) but other, more complex functions also develop, underscoring the differential developmental trajectories on which each component might operate (De Luca & Leventer, 2008; Anderson, 2002).

Previous research demonstrates how inhibitory control and working memory act as basic executive functions from which more complex executive functions, like problem-solving, develop (Senn, Espy, & Kaufmann, 2004). Inhibitory control and working memory are among the earliest executive functions to appear, with initial signs observed in infants 7- to 12-months old (Anderson, 2002; De Luca & Leventer, 2008). Then in the preschool years, children display a spurt in performance on tasks of inhibition and working memory, usually between ages 3 to 5 (De Luca & Leventer, 2008; Best, Miller, & Jones, 2009). Also at this time period, cognitive flexibility, goal-directed behavior, and planning begin to develop (De Luca & Leventer, 2008). Nevertheless, preschool children do not have fully mature executive functions and continue to make many errors related to these developing abilities - often not due to the absence of the abilities, but rather because they lack the metacognitive awareness to know when and how to deploy particular strategies in particular contexts (Espy, 2004).

Preadolescent children continue to exhibit certain growth spurts in developing executive functions, suggesting a possible non-linear progression of development, along

with the preliminary maturing of particular functions as well (Anderson, 2002; De Luca & Leventer, 2008). During preadolescence, children display major increases in verbal working memory (Brocki & Bohlin, 2004); goal-directed behavior, with a potential spurt around 12 years of age (Anderson, Anderson, Northam, Jacobs, & Catroppa, 2001); response inhibition and selective attention (Klimkeit, Mattingley, Sheppard, Farrow, & Bradshaw, 2004); and strategic planning and organizational skills (De Luca, Wood, Anderson, Buchanan, Proffitt, Mahoney, & Panteli, 2003; Luciana & Nelson, 2002; Anderson, 2002). Additionally, between the ages of 8 to 10, cognitive flexibility even matches adult levels (De Luca et al., 2003; Luciana & Nelson, 2002). However, similar to childhood development, executive functions in preadolescents are limited because they lack the sophistication of being able to apply the different abilities to varied contexts as a result of their rudimentary inhibitory control (De Luca & Leventer, 2008).

Many executive functions may begin in childhood and preadolescence, such as inhibitory control. Yet, adolescence is the time period when the different brain systems become better integrated, so youth consistently improve how efficiently and effectively they apply executive functions (such as inhibitory control) over their responses (Luna, Garver, Urban, Lazar, & Sweeney, 2004; Leon-Carrion, García-Orza, & Pérez-Santamaría, 2004). Just as inhibitory control is a function that starts in childhood and improves over time, planning and goal-directed behavior also demonstrate a protracted time course with continued growth over adolescence (Anderson et al., 2001; Best, Miller, & Jones, 2009). Likewise, attentional control, with a potential spurt at age 15 (Anderson

et al., 2001), along with working memory (Luna et al., 2004) steadily develop at this stage.

While executive functions as a whole typically reach full maturity in early adulthood, adolescence marks an important time in executive functions development. Though the trajectory is not immutable, by early adolescence core executive abilities such as inhibitory control, working memory, and cognitive flexibility are already functioning adequately and possibly at adult levels. This establishes the position for developing sophisticated executive functions such as strategy planning and goal directed behavior, which, once mature, ultimately transition an adolescent into an adult levels of self-regulation. Hence, adolescence appears as an especially pivotal period to assess executive functions, at which time recognition of executive dysfunction or mastery could help discern challenges or strengths youth have in managing behavioral, cognitive, and emotional responses to environmental events.

Assessment of Executive Functions

Evaluation of youth executive functions primarily involves direct and indirect measures of executive functions. When implementing direct methods of assessment, clinicians or researchers directly administer a standardized protocol of tasks to measure specific abilities/behaviors. They observe and record the children's performance on these tasks using extensive batteries of tests such as the Delis-Kaplan Executive Function System (McCloskey, Perkins, & Van Divner, 2009). The information collected from these tasks can then be compared to an age-normed reference group, which helps identify specific challenges and/or strengths related to the child's executive functions. In order to

create a context for the child's performance and to support conclusions from these structured assessments, further representative behaviors are often obtained through a child interview and viewing the child's classroom efforts (McCloskey et al., 2009).

On the other hand, indirect methods of assessment do not require any direct interaction with the child nor observations of particular behaviors. Additionally, they help evaluate executive functions in daily life settings. With these types of self-report assessments, clinicians or researchers measure executive functions using norm-referenced, standardized behavioral questionnaires such as the Behavior Rating Inventory of Executive Function (BRIEF) scales, which provide age- and gender-normed indexes to determine deficits in youths' executive functions (McCloskey et al., 2009). At present, the only checklists available to assess youth executive dysfunction are the BRIEF scales. To supplement these measures and again provide a context for the interpretation of the child's executive functions, additional indirect assessments may include obtaining caregiver and teacher interviews along with reviewing the child's educational records (McCloskey et al., 2009).

Both types of assessments complement one another. With the direct methods of assessment, a child's observed performance on tasks provides an indication of the child's abilities to use executive functions to perform within the symbol systems fundamental in school activities (McCloskey et al., 2009). The results of these assessments can help distinguish particular executive function difficulties or strengths of a child, which can bolster the interpretation of the child's academic struggles and/or behavioral issues (McCloskey et al., 2009).

However, the direct method also introduces certain limitations. Specifically, with direct methods of assessment, the resulting abilities identified either as lacking or as favorable do not necessarily relate to the actual behavioral, social, or academic challenges the child exhibits at home or school (McCloskey et al., 2009). These scores cannot be interpreted in isolation, but instead, they must be understood in the social, behavioral, and/or academic context of the youth. These methods are also limited due to the fact that they exclusively rely on symbol system content to assess executive functions (i.e. completing cognitive/perceptual tasks using words and pictures), which can help identify problems in environments using symbol systems (like learning at school) but cannot measure issues related to a child's intrapersonal, interpersonal, and environmental involvement (McCloskey et al., 2009). An additional concern is that sometimes the process by which the child performs the task is more important than the quantitative score of the child's performance because even an incorrect response can provide insight into the mental processes the child is likely using to complete the task (McCloskey et al., 2009). For example, in the DKEFS Design Fluency subtest, a child who takes time to meticulously connect the lines in the designs may accurately complete the designs, but might not finish designs within the time limit. However, these types of efforts are not clearly measured or specified in the tests, which makes it more challenging for the clinician or researcher to interpret them. Moreover, the variety of test batteries and specific tasks increase heterogeneity in the assessment process, where different batteries often focus on measuring different components of executive function so even if tasks

seem similar across batteries that does not necessarily mean they are comparable in measuring the same component of executive functions (McCloskey et al., 2009).

Indirect methods provide some advantages over direct methods. For example, indirect methods offer a more straightforward, short procedure where adults and youth with elementary-level reading abilities can report on the child's challenges with executive functions, which also underscores their economical utility when compared to the hours spent testing a child with more direct methods (Walker & D'Amato, 2006). Moreover, these indirect methods use norm-referenced data on the executive functions applied to a child's day-to-day behavior in natural settings (Donders, 2002). Unlike direct methods, which involve evaluating a child's behaviors with uncharacteristic tasks in a simulated context, indirect methods may capture a more ecologically valid perspective of a child's executive functions (Donders. 2002). Furthermore, youth can provide their own unique perspective on the executive function difficulties they face with the self-report versions of these indirect methods of assessment, which is a position previously disregarded (Walker & D'Amato, 2006). These indirect methods likewise provide advantages for research objectives. For example, in addition to reducing research costs, indirect methods, such as self-report measures, are expeditious and efficient, enabling the researcher to collect information from a greater number of youth at a time.

Indirect methods of assessments also carry certain limitations. Current instruments only capture deficits in executive functions, where better scores correspond to the lack of executive dysfunction rather than identifying strengths and advanced executive functions (McCloskey et al., 2009). Additionally, the subscales in these

instruments often pertain to more than one facet or domain of executive functions, which obscures the particular deficit that is being reported (McCloskey et al., 2009). Although these limitations are present, the benefits of indirect methods over direct methods offer a useful and practical approach when assessing executive functions for research purposes.

Conceptual Models of Executive Functions

Numerous researchers have proposed varying conceptual models of executive functions. One influential model is Baddeley's (1986; 2002) multicomponent model of working memory, which is composed of a central executive system that regulates three other subsystems: the phonological loop, which maintains verbal information; the visuospatial sketchpad, which maintains visual and spatial information; and the more recently developed episodic buffer that integrates short-term and long-term memory, holding and manipulating episodes of multi-system information temporally and spatially in a limited storage capacity. Another conceptual model is the supervisory attentional system (SAS) proposed by Norman & Shallice (1986; Shallice & Burgess, 1996). In this model, "contention scheduling" is the process where well-established schemas provide automatic responses to routine situations, whereas executive functions are employed when faced with novel situations where the attentional control will provide the platform to generate new schema, implement these schema, and then assess their accuracy (Shallice & Burgess, 1996).

Stemming primarily from behavioral inhibition, the self-regulatory model views executive functions as composed of four main abilities: working memory that allows individuals to resist interfering information; management of affective responses in the

service of goal-directed behaviors; internalization of self-directed speech to control and sustain rule-governed behavior and to generate plans for problem-solving; and the analysis and synthesis of information into new behavioral responses to meet one's goals (Barkley, 1997). Zelazo and colleagues (1997) model executive functions in a problem-solving framework where executive functions is a macroconstruct composed of subfunctions working in phases to represent a problem, plan for a solution by selecting and ordering strategies, maintain the strategies in short-term memory in order to perform them by certain rules, and then evaluate the results with error detection and error correction.

While many of these models often present a unitary undertone with concepts like a central executive or SAS, some evidence for the nonunitary structure of executive functions comes from clinical observations of patients simultaneously failing one "executive task" while excelling on another, and numerous individual difference studies of diverse target populations showing low intercorrelations among performance on executive tasks (Miyake et al., 2000; Miyake & Friedman, 2012). Thus, Miyake and colleagues (2000; Miyake & Friedman, 2012) highlight a unity-diversity framework for executive functions based on past performance-based and neurophysiological research and theory using statistical modeling to focus on three executive functions: (a) shifting between tasks or mental sets, (b) updating and monitoring of working memory representations, and (c) inhibition of prepotent responses.

One of the most widespread conceptual models on executive functions is Lezak's (1995; 2004) model. This framework proposes four broad domains of volition, planning,

purposive action, and effective performance as working together to accomplish global executive functioning needs (Lezak, 1995; 2004). While this model presents extensive appeal to clinicians and researchers by influencing how they operationalize and assess executive functions, it lacks a distinct theoretical basis and few attempts at validation (Anderson, 2008).

While these various conceptual models of executive functions provide a foundation, the research findings vary in support of such models. Different components of executive functions have been previously confirmed in studies of youth without clinical impairments: working memory (Brocki & Bohlin, 2004; Huizinga, Dolan, & van der Molen, 2006; Lehto, Juujärvi, Kooistra, & Pulkkinen, 2003; McAuley & White, 2011), shifting (Huizinga et al, 2006; Lehto et al., 2003; Davidson, Amso, Anderson, & Diamond, 2006; McAuley & White, 2011), and inhibition (Brocki & Bohlin, 2004; Lehto et al, 2003; McAuley & White, 2011). On the other hand, other studies have observed executive functions being represented by a unitary factor in younger children (Wiebe, Espy, & Charak, 2008; Wiebe et al., 2011; Willoughby, Blair, Wirth, & Greenberg, 2010). Thus, the literature requires more evidence to support the validity of entire models of executive functions rather than just selected components of different models. This limitation primarily stems from the heterogeneous yet related cognitive operations included under the construct of executive functions (Anderson, 2008) as well as the fact that assessments of these "functions" are frequently dependent on either the instrument and/or task being used (Miyake et al., 2000). Without a conceptual model extensively validated across studies and with measurement concerns, researchers face obstacles in

developing uniform associations between executive functions and outcomes, often needing to qualify their conclusions.

However, in the sample that will be used for the current study, Kesselring (2009) conducted a confirmatory factor analysis (CFA) to validate the model of executive functioning underlying the BRIEF-SR for low-income African American youth. Confirmatory factor analyses were conducted on each clinical subscale: six of the nine clinical subscales showed good fit to the data (i.e., Inhibit, Behavioral Shift, Cognitive Shift, Monitor, Organization of Materials, and Task Completion). Additionally, to confirm the higher-order factor structure, the nine clinical subscales were tested to load on a latent construct representing the global executive functioning composite to replicate the hypothesized factor structure of the BRIEF-SR (Guy, Isquith, & Gioia, 2004). The test of the hypothesized model resulted in adequate fit to the data and evenly distributed factor loadings (Kesselring, 2009). The previous models of executive functions in youth presented evidence for multiple and varying components. Yet, the preceding CFA suggests the use of a global factor of executive functioning is appropriate for youth, as well as potentially more parsimonious for the proposed analyses of the current study. Thus, the global executive functions composite will be used in all subsequent analyses.

Putative Role of Executive Functions in the Coping Process

Coping commonly is conceptualized as a process. As previously described, one traditional definition of coping is an individual's "constantly changing cognitive and behavioral efforts to manage specific external and internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus and Folkman, 1984, p. 141). In

general, the process begins with the individual experiencing a stressor. Subsequently the individual must appraise the stressor, such as whether it is threatening or controllable. The last major component involves evaluating one's resources and what coping response(s) to then implement in the face of the stressor. This understanding of coping considers it as goal-directed and motivational, focusing on volitional responses consciously generated to reduce stress or emotional reactions to stress.

Relation of Executive Functions to Stressor Appraisals

In line with the coping model presented by Lazarus & Folkman (1984), one of the critical initial elements of reacting to adverse events is the *cognitive* appraisal of the stressor. Presently, this study focuses on primary appraisal, where an individual assesses the stressor as stressful, positive, controllable, challenging or irrelevant (Lazarus & Folkman, 1984). There is limited research examining how the one's executive functions affect the way a stressor may be perceived and evaluated. For example, the components of appraising a stressor (like physiological reactivity and subjective distress) can be influenced by some factors of executive functions, such as cognitive flexibility in novel situations altering how one interprets experiences that others' may perceive as threatening (Williams, Suchy, & Rau, 2009). With a special focus on children with health and pediatric conditions, Compas & Boyer (2001) underscore how attention (another major aspect of executive functions) and attentional processes alter a child's orientation to and appraisal of potentially stressful environmental factors and internal sensations that suggest threatening disease-related awareness. Furthermore, in a recent study examining executive functions in stress response and aggression, Sprague and

colleagues (2011) found that the magnitude of distress on reports of hostility/anger was significant only for community adults low in executive functions compared to those high in executive functions, where individuals with deficits in executive functions may interpret ambiguous stressors abruptly, commencing a process that produces higher appraisals of distress and, in this case, emotions related to aggression. Though the literature reflects yet emerging research regarding the effects of executive functions on stressor appraisal, the cognitive abilities necessary for evaluating a stressful event imply executive functions. Based on previous work with the sample that will be used for the current study (Kesselring, 2009), this study will build upon findings that highlight the significance of distress appraisals for low-income, African American youth and only use the distress appraisal scores in the subsequent analyses.

Relation of Executive Functions to Coping

The varying components of executive functions can be seen to extend to the cognitive abilities and external behaviors fundamental to coping (e.g., Eisenberg, Fabes, & Guthrie, 1997; Lazarus & Folkman, 1984; Weisz, 1990). In one example, an adolescent boy attempts to use direct problem-solving to settle a fight with a friend. Numerous steps would be involved; he would need to have initiative to desire a resolution, appraise the stressor, determine what is desired as the goal of coping, generate potential strategies, select a strategy, sequence the elements needed to execute that strategy, assess the outcome, and then determine if further strategies are required, hinging upon the correct evaluation of the first strategy. Hence, this example demonstrates that in

order to engage in coping behaviors, youth need to integrate executive functions, such as sequencing, cognitive flexibility, monitoring, evaluation, and so on.

In addition to being cognizant of one's own strengths and weaknesses, applying coping strategies effectively encompasses knowing how to appraise a situation and select a strategy while monitoring one's available resources (Horvath & Russell, 1999). When a person who has trouble with executive functioning progresses through the coping process, one would anticipate that, due to increased difficulty in actions like planning behavior, shifting between strategies, and revising responses following evaluation, this person would exhibit more ineffective coping: pairing maladaptive strategies like denial or self-blame to controllable stressors or applying the same strategy to multiple stressors when it does not work. On the other hand, a person with better executive functions would be more likely to employ coping successfully: selecting adaptive strategies like problem-solving or active coping to controllable stressors or being able to monitor effectiveness and shift strategies when needed.

These examples provide a strong preliminary rationale highlighting the interplay between executive functions and coping. However, scarce research has been conducted to study this relationship. The relevant studies primarily assess executive functions and coping in adult clinical populations who generally function at a decreased level of executive functions as a result of their diagnosis: patients with schizophrenia, individuals living with acquired brain injury, and individuals with alcohol/drug dependence.

Numerous studies within these adult populations contribute findings demonstrating that executive functions and coping relate in anticipated

adaptive/maladaptive ways. For example, in a community-based study of adults with schizophrenia, higher scores on the Wisconsin Card Sorting Test (WCST), a measure of cognitive flexibility, and higher scores on the Similarities subtest of the Wechsler Adult Intelligence Scales (WAIS)-III, used in this study as a measure of abstract thinking, were associated with higher levels of active coping as a response to illness-related stressors (e.g. direct problem solving or seeking understanding) (Wilder-Willis, Shear, Steffen, & Borkin, 2002). Another study examining persons with schizophrenia and schizoaffective disorder demonstrated that increased levels of metacognition were associated with increased use of active and support-seeking coping strategies whereas even middle levels of metacognition were associated with increased use of resignation coping strategies (Lysaker et al., 2011). Furthermore, in a study of adults with acquired brain injury, those patients who scored higher on tests of executive functions endorsed increased use of adaptive, problem-solving coping, whereas those patients with lower scores on tests of executive functions endorsed increased use of maladaptive, avoidant coping (Krpan, Levine, Stuss, & Dawson, 2007).

On the other hand, various studies have identified that executive functions and coping strategies are not related or their relationship is contrary to expectations. For example in a clinical sample of adults with schizophrenia, the participants who had poor insight into their illness along with average WCST scores actually reported increased use of denial compared to participants with poor insight and WCST scores in the impaired range (Lysaker, Lancaster, Davis, & Clements, 2003). In a study of acquired brain injury

patients, purposive or goal-directed behavior was not related to denial coping (Ownsworth, McFarland, & Young, 2002).

A different study of adult men receiving substance-use treatment for alcohol dependence actually found that executive functions interacted with coping strategy to predict alcohol use. The results demonstrated that participants with superior executive functions who responded to stressors using self-blame had an increased rate of drinking compared to participants with deficits in executive functions who used self-blame (Tapert, Ozyurt, Myers, & Brown, 2004). Surprisingly, this pattern corresponded to the results with the generally adaptive strategy of problem-focused coping: those with superior executive functions using problem-focused coping had higher rates of drinking compared to those with deficits in executive functions who responded with problem-focused coping (Tapert et al., 2004). Thus, the researchers' expectations were challenged because they hypothesized that individuals with better executive functions could effectively apply problem-focused coping when confronted with situations involving the temptation to drink (e.g., avoid drinking) (Tapert et al., 2004).

Studies examining the relation of executive functions and coping strategies in youth are scant. In a study of children and adolescent coping with functional abdominal pain (FAP), researchers found that, contrary to expectations, the global composite of executive functions was not related to coping, but rather the specific capacity of selective attention (measured separately) was related to increased use of both secondary control and disengagement coping strategies (Hocking et al., 2011). One study of children with cancer found that effortful control (understood as involving attentional and inhibitory

control behaviors) was unrelated to primary control, secondary control, or disengagement coping strategies in predicting internalizing symptoms (Miller et al., 2009). Another study examined children with ADHD alongside control children, where they were asked to select strategies for coping with a simulated stressor from vignettes (Babb, 2004). While the children with difficulty in executive functions (as measured by lower scores on a revised WCST) were more likely to select coping strategies such as giving up or unsure how to respond, the lower executive functions scores did not predict lower coping flexibility, contradicting the study's hypotheses (Babb, 2004). In a study of at-risk African-American adolescent girls, only higher scores on a measure of sustained visual attention was positively associated with increased reports of adaptive coping strategies (Gess, 2002).

The relation between executive functions and coping was also studied in a sample of children and adolescents who survived acute lymphocytic leukemia (ALL). The researchers found that higher composite executive functioning scores not only were significantly correlated with increased levels of primary and secondary control coping, but also significantly correlated with decreased levels of disengagement coping (Campbell, Scaduto, Van Slyke, Niarhos, Whitlock, & Compas, 2009). Additional results indicated that secondary control coping strategies, such as cognitive restructuring, fully mediated the relation between levels of executive functions and emotion regulation/psychopathology in this sample of ALL survivors (Campbell et al., 2009). These findings demonstrate that, in response to stress, deficits in executive functions are involved with activating typically-maladaptive coping strategies, whereas higher levels of

executive functions are involved with applying more adaptive coping strategies and the subsequent positive emotional and behavioral outcomes (Campbell et al., 2009).

A recent study examined the association between executive functions and coping on internalizing symptoms in a sample of low-income, urban African-American youth. Contrary to expectations, stress appraisals and coping strategies alone did not significantly predict depression scores (Kesselring, 2009). Likewise, using the global composite executive functions score from the Behavior Rating Inventory of Executive Function, Self Report (BRIEF-SR; Guy, Isquith, & Gioia, 2004), executive functions scores alone did not moderate the relation between coping strategies and internalizing symptoms. However, stress appraisals, coping strategies and executive functioning interacted to predict depressive symptoms. Specifically, for participants who reported executive functions scores in the nonclinical range (T score below 65 according to the norms for BRIEF-SR), higher distress appraisals were marginally associated with higher depression scores only for those participants who reported low scores on active coping (Kesselring, 2009). More importantly, however, for participants who reported executive functions scores in the clinical range (T score above 65), higher distress appraisals were significantly associated with higher depression scores only for those participants who reported high scores on active coping (Kesselring, 2009). Particularly for those youth with deficits in executive functions, if they apply active coping strategies when appraising stressors as highly distressing it may result in negative psychosocial adjustment.

For example, first an adolescent with execution functions deficits may not be able to appraise the stressor appropriately and may either overestimate or underestimate the level of distress. If he/she mistakenly perceives the stressor as particularly distressing, the adolescent may desire to cope with it immediately. Likewise, an adolescent with challenges in executive functions may inaccurately assess the resources he/she has to deal with the stressor, possibly overestimating his/her resources to be able to handle alone. Subsequently, he/she may not be able to inhibit a reaction and decide to use active coping strategies, such as, direct problem solving, to immediately approach the person who is upsetting him/her, which may lead to a futile attempt at resolution and continue to leave the youth upset. Additionally, such an adolescent may be unable to plan and sequence the necessary steps to apply an active coping strategy to the stressor, leading to frustration. In another example, if the adolescent were to use the active coping strategy such as seeking understanding to deal with what he/she might overestimate as distressing, it might cause him/her to ruminate on a stressor that he/she cannot control, which could cause increased negative feelings and result in depressed or anxious mood. Thus, once again, an active coping strategy is applied due to the ostensible distressing nature of the stressor, but it is misapplied and brings no resolution. The use of active coping strategies for uncontrollable stressors may be particularly problematic for the current sample, given that African American youth from low income communities experience uncontrollable stressors at higher rates than other youth (Compas et al., 2001; Landis et al., 2007; Gonzales, Tein, Sandler, & Friedman, 2001). Furthermore, even if the coping strategy were not successful, if the youth has deficits in executive functions, such as cognitive

flexibility, he/she might continue to inappropriately apply the same (maladaptive) coping strategy to distressing stressors, which would continue to frustrate the adolescent and exacerbate negative feelings, potentially producing depressive or anxious symptomatology. Thus, it is important to break down disaggregate the active coping factor to determine if certain subtypes are more susceptible to these negative outcomes for urban minority youth facing challenges in executive functions. The current study will examine the relation between executive functions and various subtypes of active coping and stressor appraisals on internalizing symptoms in the same sample as Kesselring (2009).

Limitations in Existing Literature

The existing research on the link between executive functions and coping strategies remains unsettled. Compounding this ambivalence, a number of weaknesses hinder the literature. One weakness is that executive functions as a construct lacks a cohesive definition in the literature, encompassing diverse cognitive skills that work together to enable a person to act in a purposive, goal-directed manner. Moreover, the component abilities that constitute executive functions (e.g. inhibition, set shifting, planning, etc.) often operate at varying levels of unity and separability (Miyake et al., 2000; Miyake & Friedman, 2012). With this variability in mind, researchers face a challenge when deciding whether executive functions should be considered with a global approach or with a component approach: in this case, being measured in relation to coping behaviors. Particularly if the component approach were chosen, then there would be considerable debate on which components should be most strongly associated with

coping responses. Additionally, matching the heterogeneity in abilities, there exists heterogeneity in measures that assess executive functions. For example, in the aforementioned studies, some researchers might have used the DKEFS or its subscales while others just used scores related to general intelligence tests as proxies for executive functions. Thus, with the difficulty in defining and measuring executive functions, it may be challenging to choose how to assess executive functions and compare them to coping behaviors. In attempting to reduce issues with heterogeneity, a global factor of executive functions will be used in the current analyses.

Another limitation stems from the *a priori* assumptions many researchers make about the buffering or harmful effects of certain coping responses. The literature demonstrates the complex interplay between many factors for these youth, highlighting the mutability of this distinction: demographics, stressor appraisal, and sufficient/insufficient coping resources. On the one hand, viewing coping strategies like avoidance as "maladaptive" may be inaccurate since that strategy may benefit an adolescent dealing with uncontrollable, highly distressing experiences like exposure to community violence. Conversely, it may be imprecise to regard strategies like support-seeking as "adaptive" because this strategy may be ineffective for an adolescent seeking help from a familiar adult who is similarly experiencing increased levels of stress with lower levels of resources. With these factors in mind, the status of a coping strategy needs to be assessed within the youth's milieu.

Moreover, several studies examining executive functions have used clinical populations who would be expected to present with marked impairments due to

compromised executive functions. This results in minimal knowledge about how executive functions relate to coping behaviors in non-clinical or community-based populations. From this more general, widespread perspective, it remains unclear how deficits or strengths in executive functions may manifest; ostensibly, coping with the pressure of an overpowering or severe stressor may be one relevant situation.

Finally, there is limited research examining executive functions and coping strategies, particularly in regards to youth, resulting in a vague understanding of the issues. Thus, further efforts are needed to examine how executive functions are linked to coping strategies in youth. This is particularly important for African-American youth from low-income communities, considering the dearth of research in this population and the increased rates of stress exposure. Adolescence represents a developmental period where executive functions are maturing, which likely leads to improved coping behaviors. While younger children often react directly to stressors and may not be able to cope as effectively in part due to the limited capacity of their executive functions, such as inhibition, where they cannot restrict their reactions; monitoring where they have difficulty assessing their resources; planning, where they do not sequence behaviors properly in response to stressors; or evaluation, where they have trouble assessing the success of a strategy and may reuse an ineffective strategy. However, the maturation of executive functions during adolescence likely corresponds with improvements in those areas of coping where youth previously had more difficulty. Studies additionally demonstrate that this developmental period is the time when coping abilities also begin to reach adult levels (Compas et al. 2001). With increased research over time, a more

distinct relationship between executive functions and coping may be modeled. By studying how coping may be influenced by executive functions in urban African-American youth, research may better clarify how these youth choose coping strategies and the advantages or disadvantages these strategies provide. Ultimately, since cognitive difficulties like deficits in executive functions could make certain coping strategies more or les effective, such research could inform either urban African-American youth in coping-related interventions or teachers/school officials in school-related settings or parents on what strategies might be better for youth with these cognitive challenges.

Considering these reasonable connections between executive functions and coping, high levels of executive functions could serve a protective or resilient function. Especially for urban African American youth who face numerous stressors, notable executive functions may improve their ability to cope with these stressors: for example, enabling them to assess whether a strategy is effective, shift between strategies, and match the appropriate strategy to its relevant stressor. Thus, while the preceding literature has revealed mixed results, further research examining the link between executive functions and coping strategies may provide crucial information.

The current study will address many of the above-mentioned limitations. This study will examine the relation between executive functions and coping in a community adolescent sample. Executive functions will be assessed to include multiple domains along with a global composite. Furthermore, aspects of the full coping process will be assessed including stressor appraisals, coping behaviors, as well as outcomes.

Current Study

The purpose of this study is to examine the relations between stressor appraisals, active coping strategies, executive functions, and internalizing symptoms in a community sample of low-income African-American youth. There is a dearth of studies assessing how executive functions might impact the connection between how individuals cope and reports of internalizing symptoms, especially in community-based and ethnic-minority populations. As a result of institutional- and societal-level inequality, ethnic minority youth are more likely to live in low-SES, urban neighborhoods, which means they are more likely to experience frequent, uncontrollable stressors such as community violence and discrimination (Stein et al., 2003; Coker et al., 2009). When confronting highly distressing and uncontrollable conditions that strain their capacity to self-regulate, youth with execution functioning deficits may encounter greater challenges in coping with stressors, manifested in reports of internalizing symptoms. However, since the typically adaptive utility of increased active coping does not benefit some youth and potentially results in negative psychological sequelae, it is important to identify what potential factors might be associated with this difference. Increased study of executive functions in these youth can provide enhanced insight on how they can modify particular coping strategies to be more adaptive. In the moderational analyses of the current study, deficits of executive functions are expected to act as a vulnerable-reactive factor, the presence of which will increase negative outcomes for youth as their stressor appraisals become more

negative and their coping attempts increase (Luthar, Cicchetti, & Becker, 2000). The research questions and hypotheses of the current study are as follows:

As a confirmatory factor analysis was already conducted on the BRIEF-SR and validated the suitability of the underlying conceptual model of global executive functions for this same sample of low-income African-American youth (see Kesselring, 2009), the global executive functions composite will be used in subsequent analyses. Additionally, to build upon the findings for distress appraisals with this sample (Kesselring, 2009), this study will focus on the distress appraisals in the subsequent analyses.

1. Hypothesis One predicts that higher scores on distress appraisals will be related to higher scores on the active coping subscales of cognitive decision making, direct problem-solving, seeking understanding, positive thinking, optimistic thinking, and control.
2. Hypothesis Two predicts that higher scores on the cognitive decision making, direct problem-solving, seeking understanding, positive thinking, optimistic thinking, and control subscales of active coping will be related to higher scores on depression and anxiety measures.
3. Hypothesis Three predicts that the relation between distress appraisal scores and scores on depression and anxiety measures will be moderated by scores of global executive functions. Participants who report high distress appraisals along with deficits in executive functions will report increased levels of depression and anxiety symptoms compared to participants with better executive functioning scores.

4. Hypothesis Four predicts that the relation between scores on active coping subscales and scores on depression and anxiety measures will be moderated by scores of global executive functions. Participants who report higher scores on the cognitive decision making, direct problem-solving, seeking understanding, positive thinking, optimistic thinking, and control subscales of active coping along with deficits in executive functions will report increased levels of depression and anxiety symptoms compared to participants with better executive functioning scores.
5. Hypothesis Five predicts that the relation between scores on active coping subscales and scores on depression and anxiety measures will be moderated by scores of global executive functions as well as distress appraisal scores. Participants who report higher scores on the cognitive decision making, direct problem-solving, seeking understanding, positive thinking, optimistic thinking, and control subscales of active coping along with deficits in executive functions and increased distress appraisal scores will report increased levels of depression and anxiety symptoms compared to participants with better executive functioning scores and lower distress appraisal scores.

CHAPTER TWO

METHODS

Participants

The data under current analysis was collected as part of a larger project designed to assess stress, coping, and executive functioning in low-income, African American youth. Participants will be 146 African American youth in the sixth – eighth grades from two public schools in urban areas. The average percentage of African American students at the two schools was 99.5% and the average percentage of low-income students, based on eligibility for free or reduced lunch programs, was 97.3%. Participants range in age from 11-15 years, with a mean age of 12.59 years (*SD* = 1.09). Of the 146 participants, approximately 60% are female. To detect a medium effect at Power = .80 with fourteen predictors in multiple regression analysis, a minimum of 135 subjects is needed for an alpha level of .05. Therefore, the current sample includes a sufficient number of participants for the proposed analyses.

Procedure

In the larger study, researchers visited the selected elementary schools and met with faculty and staff to introduce the project and describe the procedures of recruitment and data collection. Researchers then met with students to describe the project and distribute the parental consent forms. A recruitment letter and consent form were sent home with all sixth through eighth grade students describing the purpose of the study,

planned procedures, and confidentiality of data. Active parental consent and youth assent was obtained for all participants in the study. Students who received written parental consent were given a description of the purpose of the study and planned procedures and informed of confidentiality of data. Youth who agreed to participate were given a packet of questionnaires, including measures used for the current study. Measures were administered at the school in a group setting by graduate and undergraduate research assistants. At least two (2) research assistants were available to administer the surveys, answer questions, and monitor the progress of participants. Individual help with the forms was available to participants from research assistants. Participants were given a movie pass to a local cinema chain upon completion of the survey packets.

Measures

Executive Functions

Executive functions were assessed using the *Behavior Rating Inventory of Executive Function*, Self Report version (*BRIEF-SR*; Guy, Isquith, & Gioia, 2004). The BRIEF-SR is a self-report measure assessing children's and adolescents' perceptions of their own goal-directed, purposeful, problem-solving behaviors. The BRIEF-SR consists of 80 questions rated on a 1-3 Likert Scale (1 = Never, 2 = Sometimes, 3 = Often), with higher scores indicating greater executive dysfunction. The BRIEF-SR is reproduced in Appendix A.

The BRIEF-SR is subdivided into the following clinical subscales: Inhibit (ability to control impulses and behavior, appropriate modulation of behavior); Shift (which includes *behavioral* shift, which is behavioral adjustment to changes, and *cognitive* shift,

which is flexible problem-solving); Emotional Control (modulation of emotional responses); Monitor (awareness of own strengths, weaknesses, and effect of own behavior on others); Working Memory (ability to actively retrieve and hold information in the mind in order to manipulate and process it); Plan/Organize (anticipation of future events/consequences, using goals or instructions to guide behavior, planning, strategizing); Organization of Materials (ability to organize possessions and task materials); and Task Completion (completion of tasks in a timely manner, working at appropriate pace). In addition, the BRIEF-SR contains two validity subscales measuring inconsistent responding and unusually negative responding. Normative data on the BRIEF-SR indicate that the clinical subscales, the two indices, and the global composite score show adequate internal consistency and test-retest reliability, as well as adequate convergent and discriminant validity (Guy et al., 2004). The clinical scales of the BRIEF-SR are combined to create two indices: Metacognition, measuring awareness and use of participants' own cognitive resources, and Behavioral Regulation, measuring participants' ability to monitor and control their own behaviors. These two indices combine to create a Global Executive Composite (GEC) score, measuring overall executive functioning. Only the GEC score will be used for analyses. The reliability coefficient for the GEC in this sample was .86.

Coping Strategies

Participants' coping responses to stressors were assessed using *How I Coped Under Pressure, Revision 1* (*HICUPS-R1*; Program for Prevention Research, 1999). The HICUPS-R1 consists of 54 items scored on a 1-4 Likert scale (1 = never, 2 = sometimes,

3 = often, and 4= most of the time), with higher scores indicating greater usage of the coping strategy. To complete the HICUPS-R1, participants reported a stressor occurring in the past 3 months. Participants then reported the degree to which the problem was stressful for them (1 = not at all stressful, 2 = a little stressful, 3 = somewhat stressful, 4 = very stressful), and reported the amount of control they believed they had over the stressor (1 = none at all, 2 = a little, 3 = somewhat, 4 = very). They then reported the coping strategies they used to cope with the stressor. The HICUPS-R1 is divided into four factors measuring active coping strategies, distraction strategies, avoidance strategies, and support-seeking strategies. Only factor scores are reported; no overall coping score is created. This study used the subscales of the active coping factor in the current analyses: cognitive decision making (α= .62), direct problem solving (α= .69), seeking understanding (α= .64), positive thinking (α= .57), optimistic thinking (α= .73), and control (α= .71). The HICUPS-R1 is reproduced in Appendix A.

Depression

Depression symptoms were assessed using the *Children's Depression Inventory*, a widely-used measure of children's depression symptoms with well-established reliability and validity (*CDI*; Kovacs, 1992). The CDI consists of 27 items scored on a 0-3 Likert scale, with higher scores indicating greater depressive symptomatology. Subscales of the CDI assess negative mood, interpersonal difficulties, negative self-esteem, ineffectiveness, and anhedonia. Items can also be combined to form an overall depression score. Only 26 of the 27 items were administered to this sample (the item assessing suicidal ideation was redacted due to ethical considerations). The overall

depression score will be used for analyses. The reliability coefficient for the CDI in this sample was .85. The CDI is reproduced in Appendix A.

The CDI appears to be a valid instrument assessing depressive symptoms in low-income African American youth, despite the lack of minority youth in samples confirming the measure's factor structure. Research indicates that the higher-order factor structure of the CDI replicates in a sample of low-income African American youth, although the lower-order factors found different from the lower-order factors found in majority White samples (Steele, Little, Ilardi, Forehand, Brody, & Hunter, 2006).

Anxiety

Anxiety symptoms were assessed using the *Revised Children's Manifest Anxiety Scale* (*R-CMAS*; Reynolds & Richmond, 1992). The R-CMAS consists of 37 items scored dichotomously, with higher scores indicating greater anxiety symptomatology. Subscales assessed physiological anxiety, worry/oversensitivity, social concerns/concentration, and untruthful/inconsistent responding. Of the 37 items, 28 are combined to form an overall anxiety score. The remaining items assess response patterns and social desirability of responses. Research on low income African American youth indicates that the measure assesses an overall anxiety factor and lower-order factors of anxious arousal, worry, and social evaluation/ oversensitivity, indicating that the structure of generalized anxiety may be different for African American youth (White & Farrell, 2001). The overall anxiety score will be used for analyses. The reliability coefficient for the R-CMAS in this sample was .81. The R-CMAS is reproduced in Appendix A.

Demographics

Participants reported their sex, age, grade, race, parents' nationality, number of persons living in their household, and which person served as their primary caregiver. The demographic form is reproduced in Appendix A.

CHAPTER THREE

RESULTS

Descriptives

The means and standard deviations of all variables are presented in Table 1.

Table 1. Mean Scores and Standard Deviations of Study Variables

	Mean	Standard Deviation
Distress Appraisal	2.56	1.05
HICUPS-R1 Cognitive Decision Making	2.43	.66
HICUPS-R1 Direct Problem Solving	2.50	.74
HICUPS-R1 Seeking Understanding	2.67	.66
HICUPS-R1 Positive Thinking	2.76	.67
HICUPS-R1 Optimistic Thinking	2.62	.77
HICUPS-R1 Control	2.47	.73
CDI	.35	.27
R-CMAS	.42	.23
BRIEF-SR Global Executive Composite	135.55	24.66

Note. HICUPS-R1 = How I Coped Under Pressure, Revision 1; CDI = Children's Depression Inventory; R-CMAS = Revised Children's Manifest Anxiety Scale; BRIEF-SR = Behavior Rating Inventory of Executive Functioning – Self Report

Correlational Analysis

Correlational analyses were conducted to assess the relations among all study variables. Higher distress appraisals were significantly and positively related to higher anxiety and depression scores. Likewise, higher distress appraisals were significantly and positively related to seeking understanding coping and control coping. Poorer

executive functioning was significantly and positively related to higher anxiety and depression scores. Correlational analyses also demonstrated that all coping variables were significantly, positively associated with one another. Higher scores on direct problem solving coping were significantly and negatively related to depression scores, but no other associations between coping and internalizing symptoms were significant. Finally, the associations between executive functioning and coping strategies were all nonsignificant. Correlations among study variables are presented in Table 2.

Table 2. Correlations Among Study Variables

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1. Distress appraisal	--									
2. Anxiety	.25**	--								
3. Depression	.22*	.70**	--							
4.Cognitive Decision Making	.01	.06	.01	--						
5. Direct problem solving	-.01	-.11	-.18*	.62**	--					
6. Seeking Understanding	.19*	.05	-.06	.64**	.61**	--				
7. Positive Thinking	.01	-.06	-.03	.62**	.54**	.59**	--			
8. Optimistic Thinking	.15	-.04	-.11	.60**	.61**	.67**	.70**	--		
9. Control	-.19*	-.11	-.09	.54**	.58**	.54**	.58**	.70**	--	
10. Executive Functions	.04	.64**	.65**	.03	-.17	.02	.06	-.07	-.06	--

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

ANOVAs were used to assess gender and grade differences on study variables. The results indicated gender differences in regards to anxiety, as well as the use of certain active coping subscales. Specifically, females reported more anxiety symptoms (M = .46,

SD = .25) than male participants (*M* = .36, *SD* = .18), *F*(139) = 5.96, *p* = .016. Females also reported more cognitive decision making coping (*M* = 2.53, *SD* = .72) than males (*M* = 2.27, *SD* = .53), *F*(139) = 5.02, *p* = .027, and more use of seeking understanding coping (*M* = 2.79, *SD* = .66) than males (*M* = 2.46, *SD* = .62), *F*(139) = 8.75, *p* = .004. Additionally, ANOVAs revealed that sixth, seventh, and eighth graders differed in their reports of depressive symptoms. In terms of depressive symptoms, post-hoc analysis revealed that sixth graders reported higher levels of depressive symptoms (*M* = .43, *SD* = .30) than seventh graders (*M* = .30, *SD* = .26) and eighth graders (*M* = .28, *SD* = .20), *F*(138) = 5.47, *p* = .005.

Multiple Regression Analyses

Hypothesis One stated that higher distress appraisal scores would be related to higher scores on the subscales of active coping. To test Hypothesis One, participant gender and age was entered into step one of the model, and participant distress scores were entered in step two of the model. The analyses were conducted with each of the active coping variables (cognitive decision making, direct problem-solving, seeking understanding, positive thinking, optimistic thinking, and control) as dependent variables; thus six regression equations were tested.

Results of the regression equations for Hypothesis 1 are presented in Table 3. As hypothesized, distress appraisal was associated with the subscale of control coping, β = -.19, *p* = .04. However, contrary to expectations, this relationship was in the opposite direction, where higher distress appraisals were associated with lower levels of control coping. Though no specific *a priori* predictions were made, gender was significantly

associated with cognitive decision making coping, $\beta = .22$, $p = .02$. Specifically, females were more likely to use cognitive decision making coping than males. Gender was also significantly associated with seeking understanding coping, $\beta = .29$, $p = .002$. Specifically, females were more likely to use seeking understanding coping than males. Additionally, gender was marginally significantly associated with optimistic coping, $\beta = .17$, $p = .075$. Again, in this case, females were more likely to use optimistic coping than males. Contrary to expectations, distress appraisals were unrelated to the five other active coping subscales.

Hypothesis Two stated that higher scores on the cognitive decision making, direct problem-solving, seeking understanding, positive thinking, optimistic thinking, and control subscales of active coping would be related to higher scores on depression and anxiety measures. To test Hypothesis Two, participant gender and age were entered into step one of the model, and scores on the cognitive decision making, direct problem-solving, seeking understanding, positive thinking, optimistic thinking, and control subscales of active coping were entered in step two of the model, using depressive symptoms and anxiety symptoms as dependent variables; thus two regression equations were tested.

Results of the regression equations for Hypothesis 2 are presented in Table 4. As hypothesized, results of the regression equation indicated that higher cognitive decision making coping scores were marginally associated with higher anxiety scores, $\beta = .25$, $p = .07$. Additionally, direct problem solving coping was marginally related to anxiety scores, but in the opposite direction than predicted. Higher scores on direct problem

solving coping predicted lower anxiety scores, β = -.24, p = .07. Though no specific *a priori* predictions had been made, gender was marginally significantly associated with anxiety in the final step of the regression model, β = .17, p = .07. Contrary to expectations, the four other active coping subscales were unrelated to anxiety scores.

In model 2 of the second set of analyses, direct problem solving was significantly related to depression scores. However, results of the regression equation indicated that higher direct problem solving coping scores were significantly associated with lower depression scores, β = -.28, p < .05, which is in the opposite direction than predicted. Though no specific *a priori* predictions had been made, age was marginally significantly associated with depression in the final step of the regression model, β = -.18, p = .051. Specifically, younger students reported higher levels of depression symptoms. Contrary to expectations, the five other active coping subscales were unrelated to depression scores.

Table 3. Regression Summary Table: Main Effects of Distress Appraisal Predicting Active Coping Subscales

Cognitive Decision Making	**B**	**SE B**	***β***
Step 1			
Age	-.06	.06	-.11
Sex	.29	.13	.21*
Step 2			
Age	-.07	.06	-.11
Sex	.30	.13	.22*
Distress appraisal	-.01	.06	-.02

Direct Problem Solving	**B**	**SE B**	***β***
Step 1			
Age	-.04	.06	-.07
Sex	.14	.14	.09
Step 2			
Age	-.04	.06	-.07
Sex	.14	.14	.10
Distress appraisal	-.02	.07	-.02

Seeking Understanding	**B**	**SE B**	***β***
Step 1			
Age	-.05	.06	-.08
Sex	.42	.12	.31**
Step 2			
Age	-.04	.06	-.07
Sex	.39	.12	.29**
Distress appraisal	.09	.06	.14

Positive	**B**	**SE B**	***β***
Step 1			
Age	-.05	.05	-.09
Sex	.16	.12	.12
Step 2			
Age	-.05	.05	-.09
Sex	.16	.12	.12
Distress appraisal	-.01	.06	-.01

Optimistic	**B**	**SE B**	***β***
Step 1			
Age	-.08	.06	-.20
Sex	.27	.14	.18*

Control	**B**	**SE B**	***β***
Step 1			
Age	-.003	.06	-.004
Sex	.02	.14	.02

Step 2				Step 2			
Age	-.07	.06	-.11	Age	-.01	.06	-.01
Sex	.25	.14	.17	Sex	.06	.14	.04
Distress appraisal	.08	.07	.12	Distress appraisal	-.13	.06	-.19*

* $p < .05$. ** $p < .01$.

Table 4. Regression Summary Table: Main Effects of Active Coping Subscales Predicting Anxiety and Depression Symptoms

Anxiety	**B**	**SE B**	***β***	**Depression**	**B**	**SE B**	***β***
Step 1				Step 1			
Age	-.02	.02	-.10	Age	-.05	.02	-.20*
Sex	.11	.04	.23**	Sex	.03	.05	.06
Step 2				Step 2			
Age	-.02	.02	-.07	Age	-.04	.02	-.18
Sex	.08	.04	.17	Sex	.01	.05	.02
Cognitive decision making	.09	.05	.25	Cognitive decision making	.08	.06	.20
Direct problem solving	-.07	.04	-.24	Direct problem solving	-.10	.05	-.28*
Seeking understanding	.01	.05	.03	Seeking understanding	-.02	.06	-.04
Positive	-.02	.05	-.07	Positive	.03	.06	.08
Optimistic	.03	.05	.11	Optimistic	.001	.06	.003
Control	-.06	.04	-.18	Control	-.04	.05	-.10

* $p < .05$. ** $p < .01$.

Moderation Analyses

Hypothesis Three stated that associations between appraisal scores and depression and anxiety scores would be moderated by scores of global executive functions. Specifically, it was expected that participants who reported high distress appraisals and who exhibited poorer executive functions would display increased levels of depression and anxiety symptoms compared to participants who demonstrated better executive functions. Hypothesis Four stated that the relation between active coping subscale scores and depression and anxiety scores would be moderated by scores of global executive functions. Specifically, it was expected that participants who reported higher scores on the cognitive decision making, direct problem-solving, seeking understanding, positive thinking, optimistic thinking, and control subscales of active coping and who exhibited poorer executive functions would display higher depression and anxiety symptoms than participants with better executive functions.

Using guidelines by Baron and Kenny (1986) and Holmbeck (1997, 2002), moderations were tested with regression analyses. First, the continuous variables in the analyses were centered to create interaction terms between distress appraisals, active coping strategies and the global composite of executive functions (Aiken & West, 1991). To test Hypothesis Three, each centered distress appraisal variable was multiplied by the executive functions variable to create appropriate interaction terms. Hierarchical multiple regression analyses were conducted for depression scores and anxiety scores, with distress scores, scores of executive functions, and the interactions of distress appraisal with executive functions (distress appraisal x executive functions) as predictors.

The independent variable and the moderator(s) were entered in the first step, and the interaction term of these variables was entered in the second step. One regression equation was performed for each of the two outcome variables. It was expected that after controlling for the main effects of the predictor variables, the interaction of distress appraisal and executive functions would be a significant predictor of depression and anxiety.

Results of the regression equations for Hypothesis 3 are presented in Table 5. Contrary to expectations, executive functions classification did not moderate the relation between distress and anxiety scores. However, a marginally significant interaction of distress appraisal and executive functions classification was found for depression scores, $\beta = .16$, $p = .06$. Simple slopes tests indicated that for participants with EF scores classified as clinical, higher distress appraisals were significantly associated with higher depression scores, $\beta = .44$ $p = .04$. (See Figure 1). For participants with EF scores classified as nonclincal, higher distress appraisals were marginally associated with higher depression scores, $\beta = .18$, $p = .07$. (See Figure 1). There were main effects for executive functions classification in the prediction of anxiety scores, $\beta = .42$, $p = <.001$, and depression scores, $\beta = .50$, $p = <.001$. Specifically, those youth who reported clinical levels of deficits in executive functions also reported higher levels of both anxiety and depression.

Table 5. Regression Summary Table: Interactions between Executive Functions (EF) classification and Distress Appraisal Predicting Anxiety and Depression Symptoms

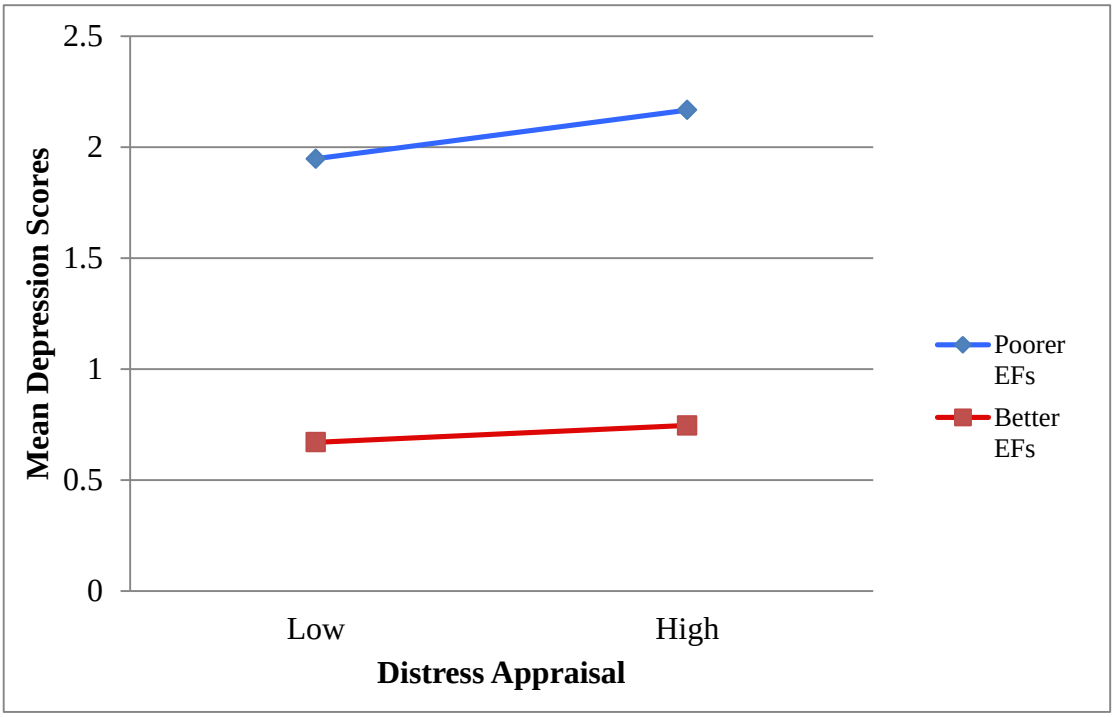
Anxiety	**B**	**SE B**	***β***	**Depression**	**B**	**SE B**	***β***
Step 1				Step 1			
Gender	.10	.04	.23*	Age	-.04	.02	-.18
Step 2				Step 2			
Gender	.06	.04	.13	Age	-.05	.02	-.20*
Distress appraisal	.05	.02	.23**	Distress appraisal	.05	.02	.22**
EF Classification	.26	.05	.42***	EF classification	.35	.05	.50***
Step 3				Step 3			
Gender	.06	.04	.13	Age	-.04	.02	-.18*
Distress appraisal	.05	.02	.23*	Distress appraisal	.04	.02	.15
EF Classification	.26	.05	.42***	EF Classification	.35	.05	.50***
EF X Distress	.004	.04	.008	EF X Distress	.09	.05	.16

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 6. Regression Summary Table: Simple Slopes Analyses between Executive Functions (EF) classification and Direct Problem Solving and Seeking Understanding Coping Subscales Predicting Depression Symptoms

Depression	**B**	***β***	***p***
Simple Slopes: Distress x EF			
Clinical levels of EF	.11	.44	.04
Nonclinical levels of EF	.04	.18	.07

Figure 1. Predicting depression from executive functions classification and distress appraisal



To test Hypothesis Four, each centered active coping subscale variable was multiplied by the executive functions variable to create appropriate interaction terms. Hierarchical multiple regression analyses were conducted for depression scores and anxiety scores, with active coping subscale scores, executive functions scores, and the interactions of active coping subscales with executive functions (cognitive decision making x executive functions, direct problem-solving x executive functions, seeking understanding x executive functions, positive thinking x executive functions, optimistic thinking x executive functions, and control x executive functions) as predictors. The independent variables and the moderator were entered in the first step, and the respective interaction terms of these variables were entered in the second step. Six regression equations were performed for each of the two outcome variables. It is expected that after controlling for the main effects of the predictor variables, the interaction of each active coping subscale and executive functions would be a significant predictor of depression and anxiety symptoms.

Results of the regression equations for Hypothesis 4 are presented in Table 7. A significant interaction of direct problem solving coping and executive functions classification was found on depression scores, $\beta = .22$, $p = .005$. The results of the simple slopes test indicated that direct problem solving coping predicted lower depression scores for nonclinical youth ($\beta = -.27$, $p = .003$); whereas the relation between direct problem solving coping and depression was nonsignificant for participants with clinical levels of EFs (See Figure 2). A significant interaction of seeking understanding coping and executive functions classification was also found on depression scores, $\beta = .17$, $p = .02$.

The results of the simple slopes test indicated that seeking understanding coping predicted lower depression scores for nonclinical youth (β = -.23, p = .01); whereas the relation between seeking understanding coping and depression was nonsignificant for participants with clinical levels of EFs (See Figure 3).

Though no specific *a priori* predictions had been made, executive functions classification was significantly and positively associated with depression and anxiety scores in the final step of all of the relevant regression models for Hypothesis 4 (See Table 7). Specifically, those youth who reported clinical levels of deficits in executive functions reported higher levels of depression and anxiety symptoms.

Contrary to expectations, executive functions classification did not moderate the relation between active coping subscales and anxiety scores.

Table 7. Regression Summary Table: Interactions between Executive Functions (EF) classification and Active Coping Subscales Predicting Anxiety and Depression Symptoms

Anxiety	**B**	**SE B**	***β***	**Depression**	**B**	**SE B**	***β***
Step 1				Step 1			
Gender	.10	.04	.21*	Age	-.05	.02	-.20*
Step 2				Step 2			
Gender	.06	.04	.12	Age	-.05	.02	-.21**
Cognitive decision making	.01	.03	.03	Cognitive decision making	-.01	.03	-.02
EF Classification	.29	.05	.45***	EF classification	.42	.05	.56***
Step 2				Step 2			
Gender				Age	-.05	.02	-.20**
Cognitive decision making	.06	.04	.12	Cognitive decision making	-.01	.03	-.03
EF Classification	.29	.05	.45***	EF Classification	.42	.05	.56***
EF X CDM	-.01	.10	-.01	EF X CDM	.09	.11	.06

Anxiety	**B**	**SE B**	***β***	**Depression**	**B**	**SE B**	***β***
Step 1				Step 1			
Gender	.10	.04	.22*	Age	-.05	.02	-.20*
Step 2				Step 2			
Gender	.07	.04	.14	Age	-.05	.02	-.21**
Direct problem solving	-.02	.02	-.07	Direct problem solving	-.05	.03	-.13
EF Classification	.28	.05	.44***	EF classification	.40	.05	.54***
Step 3				Step 3			

Gender	.06	.04	.14	Age	-.05	.20	-.21**
Direct problem solving	-.02	.03	-.06	Direct problem solving	-.08	.03	-.21**
EF Classification	.28	.05	.44***	EF Classification	.44	.05	.58***
EF X DPS	-.008	.06	-.01	EF X DPS	.19	.07	.22**

Anxiety	**B**	**SE B**	***β***	**Depression**	**B**	**SE B**	***β***
Step 1				Step 1			
Gender	.11	.04	.23**	Age	-.05	.02	-.20*
Step 2				Step 2			
Gender	.07	.04	.15	Age	-.05	.02	-.21**
Seeking understanding	-.01	.03	-.02	Seeking understanding	-.04	.03	-.11
EF Classification	.29	.05	.46***	EF classification	.43	.05	.58***
Step 3				Step 3			
Gender	.07	.04	.16	Age	-.05	.02	-.20**
Seeking understanding	-.02	.04	-.05	Seeking understanding	-.07	.03	-.18*
EF Classification	.29	.05	.45***	EF Classification	.42	.05	.56***
EF X SU	.06	.07	.07	EF X SU	.17	.08	.17*

Anxiety	**B**	**SE B**	***β***	**Depression**	**B**	**SE B**	***β***
Step 1				Step 1			
Gender	.10	.04	.21*	Age	-.05	.02	-.19
Step 2				Step 2			
Gender	.06	.04	.13	Age	-.05	.02	-.20**
Positive coping	-.04	.03	-.11	Positive coping	-.04	.03	-.09
EF Classification	.30	.05	.46***	EF classification	.42	.05	.56***

Step 3				Step 3			
Gender	.06	.04	.13	Age	-.05	.02	-.20**
Positive coping	-.03	.03	-.10	Positive coping	-.05	.03	-.12
EF Classification	.30	.05	.47***	EF Classification	.42	.05	.55***
EF X POS	-.03	.07	-.04	EF X POS	.07	.08	.07

Anxiety	**B**	**SE B**	***β***	**Depression**	**B**	**SE B**	***β***
Step 1				Step 1			
Gender	.10	.04	.21*	Age	-.05	.02	-.19*
Step 2				Step 2			
Gender	.06	.04	.13	Age	-.05	.02	.20**
Optimistic coping	-.01	.02	-.05	Optimistic coping	-.04	.03	-.10
EF Classification	.28	.05	.44***	EF classification	.42	.05	.55***
Step 3				Step 3			
Gender	.06	.04	.13	Age	-.05	.02	-.21**
Optimistic coping	-.01	.03	-.02	Optimistic coping	-.04	.03	-.12
EF Classification	.28	.05	.44***	EF Classification	.42	.05	.55***
EF X OPT	-.06	.07	-.07	EF X OPT	.05	.07	.05

Anxiety	**B**	**SE B**	***β***	**Depression**	**B**	**SE B**	***β***
Step 1				Step 1			
Gender	.11	.04	.23**	Age	-.05	.02	-.19*
Step 2				Step 2			
Gender	.06	.04	.13	Age	-.05	.02	-.20**

Control coping	-.03	.02	-.11	Control coping	-.03	.03	-.08
EF Classification	.29	.05	.45***	EF classification	.41	.05	.55***
Step 3				Step 3			
Gender	.06	.04	.13	Age	-.05	.02	-.20**
Control coping	-.03	.03	-.10	Control coping	-.03	.03	-.09
EF Classification	.29	.05	.44***	EF Classification	.42	.05	.55***
EF X CON	-.03	.07	-.04	EF X CON	.03	.08	.03

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 8. Regression Summary Table: Simple Slopes Analyses between Executive Functions (EF) classification and Direct Problem Solving and Seeking Understanding Coping Subscales Predicting Depression Symptoms

Depression	**B**	***β***	***p***
Simple Slopes: DPS x EF			
Clinical levels of EF	0.12	0.30	0.138
Nonclinical levels of EF	-0.08	-0.27	0.003
Simple Slopes: SU x EF			
Clinical levels of EF	0.08	0.17	0.415
Nonclinical levels of EF	-0.07	-0.23	0.011

Figure 2. Predicting depression from executive functions classification and direct problem solving coping

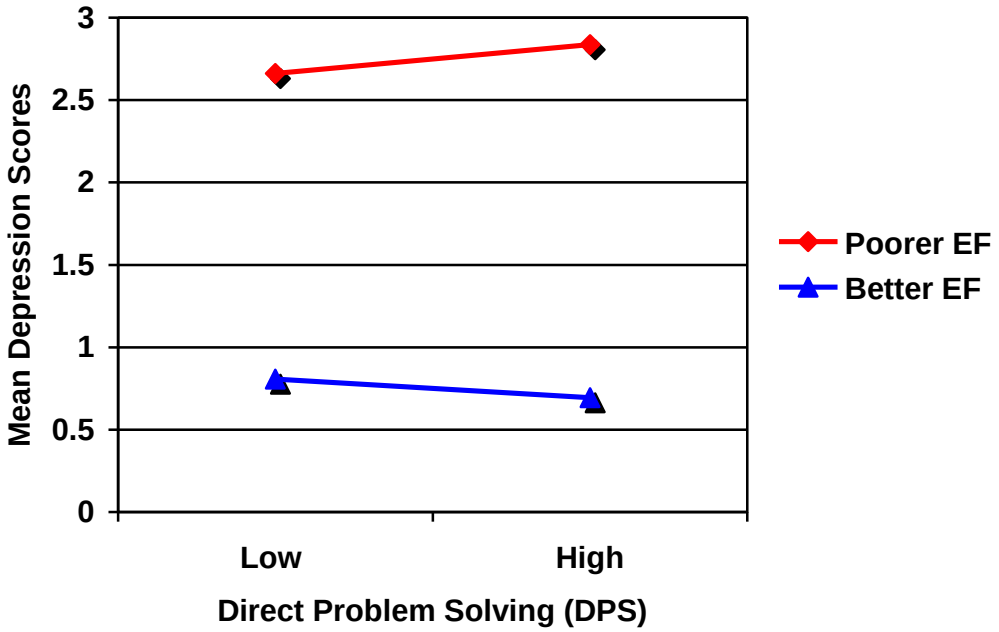
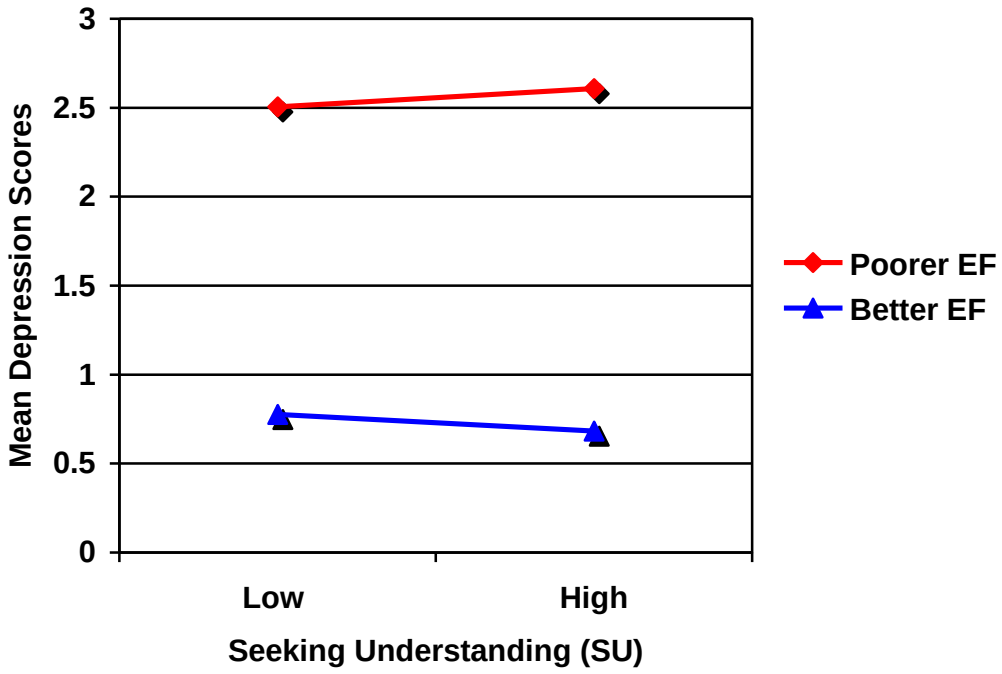


Figure 3. Predicting depression from executive functions classification and seeking understanding coping



To test Hypothesis 5, each centered active coping subscale variable was multiplied by the executive functions variable as well as the distress appraisal variable to create appropriate three-way interaction terms. Hierarchical multiple regression analyses were conducted for depression scores and anxiety scores, with active coping subscale scores, executive functions scores, distress appraisal rating, respective two-way interactions, and the three-way interactions of active coping subscales with executive functions with distress appraisal (cognitive decision making x executive functions x distress, direct problem-solving x executive functions x distress, seeking understanding x executive functions x distress, positive thinking x executive functions x distress, optimistic thinking x executive functions x distress, and control x executive functions x distress) as predictors. The independent variables and the moderators were entered in the first step, the respective two-way interaction terms of these variables entered in the second step, and the three-way interaction terms entered in the third step. Six regression equations were performed for each of the two outcome variables. It was expected that after controlling for the main effects of the predictor variables and the two-way interaction terms, the interaction of each active coping subscale and executive functions would be a significant predictor of depression and anxiety symptoms.

Results of the regression equations for Hypothesis 5 are presented in Table 9. Contrary to expectations, executive functions and distress appraisal did not moderate the relation between the active coping subscales and anxiety scores. However, a marginally significant two-way interaction of distress appraisals and cognitive decision making coping was found on depression scores, $\beta = -.22$, $p = .06$. The results of the simple slopes

tests, though, were nonsignificant, suggesting that distress appraisal scores did not have a clear pattern of impact on the relation between cognitive decision making coping and depression scores.

Though no specific *a priori* predictions had been made, distress appraisal was significantly associated with anxiety and depression scores in the final step of the relevant regression models for Hypothesis 5: for anxiety, $\beta = .25$, $p = .04$; for depression, $\beta = .34$, $p < .001$. Additional main effects of active coping subscales on anxiety and depression symptoms were seen in Hypothesis 5 beyond the results of Hypothesis 2. Control coping was marginally significantly associated with anxiety scores, $\beta = -.30$, $p = .08$. Cognitive decision making coping was significantly associated with depression scores, $\beta = .33$, $p = .007$. Seeking understanding coping was significantly related to depression scores, $\beta = -.27$, $p = .04$.

Again, without previous predictions, executive functions classification was significantly associated with anxiety and depression scores in the final step of the relevant regression models for Hypothesis 5: for anxiety scores, $\beta = .44$, $p < .001$; for depression scores, $\beta = .68$, $p < .001$. Specifically, those youth who reported clinical levels of deficits in executive functions reported higher levels of both anxiety and depression symptoms.

Table 9. Regression Summary Table: Interactions between Executive Functions (EF), Distress Appraisal, and Active Coping Subscales Predicting Anxiety and Depression Symptoms

Anxiety	**B**	**SE B**	***β***
Step 1			
Gender	.11	.04	.24*
Step 2			
Gender	.05	.04	.11

Distress appraisal	.05	.02	.26**
Cognitive decision making coping (CDM)	.08	.04	.25*
Direct problem solving coping (DPS)	-.001	.03	-.002
Seeking understanding coping (SU)	-.05	.04	-.15
Positive coping (POS)	-.06	.04	-.18
Optimistic coping (OPT)	.06	.04	.19
Control coping (CON)	-.08	.04	-.27*
Executive Function classification (EF)	.26	.05	.44***
Step 3			
Gender	.05	.04	.12
Distress appraisal	.05	.02	.26*
CDM	.10	.05	.32*
DPS	-.01	.04	-.03
SU	-.07	.05	-.23
POS	-.06	.05	-.19
OPT	.07	.05	.25
CON	-.10	.05	-.31
EF	.25	.06	.43***
EF X CDM	.11	.22	.09
EF X DPS	-.01	.13	-.02
EF X SU	.14	.12	.18
EF X POS	-.04	.13	-.04
EF X OPT	-.31	.23	-.39
EF X CON	.27	.21	.35
Distress X CDM	-.02	.04	-.06
Distress X DPS	-.02	.04	-.08
Distress X SU	.02	.05	.05
Distress X POS	.03	.05	.08
Distress X OPT	.01	.04	.02
Distress X CON	.004	.04	.02
Distress X EF	.03	.07	.06
Step 4			
Gender	.05	.05	.12
Distress appraisal	.05	.02	.25*
CDM	.10	.05	.30
DPS	-.01	.04	-.02
SU	-.08	.06	-.23
POS	-.06	.05	-.19
OPT	.07	.06	.25
CON	-.09	.05	-.30
EF	.26	.07	.44***
EF X CDM	.30	.51	.26
EF X DPS	.20	.33	.28
EF X SU	.13	.23	.17

EF X POS	-.31	.41	-.37
EF X OPT	-.41	.44	-.51
EF X CON	.37	.31	.48
Distress X CDM	-.01	.05	-.02
Distress X DPS	-.03	.04	-.09
Distress X SU	.01	.06	.02
Distress X POS	.01	.05	.04
Distress X OPT	.02	.05	.06
Distress X CON	.01	.04	.02
Distress X EF	.03	.09	.06
Distress X CDM X EF	-.26	.38	-.23
Distress X DPS X EF	-.10	.19	-.19
Distress X SU X EF	.01	.18	.01
Distress X POS X EF	.20	.26	.30
Distress X OPT X EF	.12	.38	.19
Distress X CON X EF	-.15	.28	-.25

Depression	**B**	**SE B**	**β**
Step 1			
Age	-.04	.02	-.17
Step 2			
Age	-.04	.02	-.18*
Distress appraisal	.08	.02	.33***
Cognitive decision making coping (CDM)	.08	.02	.22
Direct problem solving coping (DPS)	-.04	.04	-.11
Seeking understanding coping (SU)	-.09	.05	-.23
Positive coping (POS)	-.01	.05	-.02
Optimistic coping (OPT)	.01	.05	.02
Control coping (CON)	-.02	.04	-.06
Executive Function classification (EF)	.36	.05	.52***
Step 3			
Age	-.03	.02	-.15*
Distress appraisal	.08	.02	.33***
CDM	.12	.04	.32**
DPS	-.10	.04	-.28*
SU	-.10	.05	-.26*
POS	-.02	.05	-.06
OPT	.01	.05	.02
CON	-.01	.04	-.04
EF	.48	.06	.70***
EF X CDM	-.32	.21	-.23
EF X DPS	.53	.12	.65***
EF X SU	.06	.11	.07
EF X POS	-.18	.12	-.19

EF X OPT	.28	.22	.30
EF X CON	-.18	.19	-.20
Distress X CDM	-.09	.04	-.23*
Distress X DPS	.01	.04	.03
Distress X SU	.06	.05	.17
Distress X POS	.04	.05	.09
Distress X OPT	.01	.04	.02
Distress X CON	-.06	.04	-.17
Distress X EF	.10	.06	.17
Step 4			
Age	-.03	.02	-.13
Distress appraisal	.08	.02	.34***
CDM	.13	.02	.33**
DPS	-.10	.05	-.30*
SU	-.10	.04	-.27*
POS	-.02	.05	-.05
OPT	.001	.05	.004
CON	-.01	.05	-.03
EF	.47	.07	.68***
EF X CDM	-.60	.47	-.43
EF X DPS	.59	.31	.72
EF X SU	.23	.21	.26
EF X POS	-.20	.38	-..20
EF X OPT	.32	.40	.34
EF X CON	-.26	.28	-.30
Distress X CDM	-.08	.04	-.22
Distress X DPS	.02	.04	.07
Distress X SU	.03	.05	.09
Distress X POS	.05	.05	.14
Distress X OPT	-.01	.04	-.02
Distress X CON	-.06	.04	-.18
Distress X EF	.05	.09	.09
Distress X CDM X EF	-.16	.35	-.12
Distress X DPS X EF	-.01	.18	-.01
Distress X SU X EF	.13	.17	.18
Distress X POS X EF	-.15	.24	-.19
Distress X OPT X EF	.12	.35	.16
Distress X CON X EF	.06	.26	.10

Note: EF = Global executive composite in clinical or non-clinical range
* $p < .05$. ** $p < .01$. *** $p < .001$.

CHAPTER FOUR

DISCUSSION

Understanding the effects of stress on the coping of African American youth and the potential factors that protect against psychopathology are important for researchers studying adolescents. The current study investigated stressor appraisal, active coping among six subscales (cognitive decision making, direct problem solving, seeking understanding, positive thinking, optimistic thinking, and control), executive functions and symptoms of depression and anxiety among a community sample of low-income African American youth.

Consistent with Hypothesis 1, distress appraisal was associated with control coping. However, this relationship was in the opposite direction than expected, where higher levels of distress were related to lower levels of control coping. Contrary to expectations, distress appraisal was not associated with the other five active coping subscales. Consistent with Hypothesis 2, higher levels of cognitive decision making coping were marginally associated with higher levels of anxiety symptoms. While direct problem solving coping was also marginally related to anxiety symptoms as hypothesized, this relationship was the in the opposite direction than predicted. Contrary to expectations, the other four subscales were not associated with anxiety symptoms. In a similar pattern as for the anxiety symptoms, direct problem solving coping was associated with depression symptoms as expected, but this relationship was in the

opposite direction. Specifically, higher reports of direct problem solving coping were related to lower levels of depression symptoms. Contrary to expectations, the other five subscales were not associated with depression symptoms.

Consistent with Hypothesis 3, executive functions classification moderated the association between distress appraisal and depressive symptoms. Specifically, for youth with EF scores classified at nonclinical levels, higher distress levels were marginally associated with higher depressive symptoms. However, for youth with clinical levels of EF deficits, higher reports of distress appraisal were significantly associated with higher reports of depressive symptoms. Contrary to expectations, executive functions classification did not moderate the relation between distress and anxiety scores.

As predicted in Hypothesis 4, executive functions classification moderated the association between direct problem solving coping and seeking understanding coping with depressive symptoms, respectively. For these 2 subscales of active coping the results were similar. For youth reporting nonclinical levels of EF deficits, higher levels of direct problem solving coping and seeking understanding coping were associated with lower levels of depressive symptoms. However, for youth reporting clinical levels of EF deficits, the two subscales were not associated with depressive symptoms, respectively. Contrary to expectations, executive functions classification did not moderate the relation between active coping subscales and anxiety scores. Hypothesis 5 was not supported by the findings of the current study.

Gender Differences

Girls in the study reported higher rates of anxiety symptoms than boys, which corresponds to earlier research (Handwerk et al., 2006; Luo et al., 2008). On the other hand, the experience of depression symptoms was similar for both genders. Gender differences where girls report higher levels of internalizing symptoms than boys are a repeated finding in the literature, but the age when this divergence appears has varied. Thus, the comparable rates of depressive symptoms among boys and girls may have resulted from the sample's mixed age range, including pre-adolescents and adolescents. In the current study, the average participant's age was 13, and numerous studies have not identified differences in internalizing symptoms between girls and boys prior to the age of 15 (Angold, Costello, & Worthman, 1998; Ge, Conger, & Elder, Jr., 2001; Zahn-Waxler, Klimes-Dougan, & Slattery, 2000).

The female adolescents in this study also reported higher levels of cognitive decision making (CDM) coping and seeking understanding (SU) coping. In the research literature, there have been mixed findings in regards to gender and active coping strategies. Some studies report girls displaying higher rates of active coping when dealing with stress compared to males (Compas et al., 2001) while other studies have documented similar rates of active coping strategies, such as CDM and SU, in both boys and girls (Carlson & Grant, 2008). However, perhaps CDM tapped into a strategy of coping that involved more thinking and reflection, which could be related to rumination. Previous studies have reported that girls more commonly employ rumination in response to stressors than boys (Grant et al., 2004; Landis et al., 2007; Rudolph, 2002).

Additionally, while SU is technically meant to include cognitive efforts to find meaning in a stressful situation or to understand it better, perhaps it overlaps with support-seeking coping or trying to reflect on the meaning after talking with others. For African American low-income youth, previous literature has found that boys more frequently endorse avoidant and distraction coping, while girls utilize more support-seeking strategies (Chandra & Batada, 2006; Clark, Novak, & Dupree, 2002; Grant et al., 2000; Tolan et al., 2002).

Overall, sixth graders in the study experienced higher levels of depressive symptoms than seventh and eighth graders. This result could be due to the fact that the sixth graders were dealing with the transition to middle school and this type of transition is the type of event that can leave adolescents susceptible to symptoms of depression (Rudolph et al., 2001; Carter et al., 2006). Additionally, the developmental literature demonstrates that youth are experiencing puberty earlier than previous generations, and the related changes that correspond to the pubertal experience also reflect a timeframe where adolescents are more vulnerable to depressed symptomatology (Sanborn & Hayward, 2003; Hyde, Mezulis, & Abramson, 2008).

Main Effects of Distress Appraisal

Of all of the active coping subscales assessed in the current study, distress appraisal was only related to control coping. Specifically, distress appraisals were negatively related to the control coping strategy in this population. On the questionnaire, control coping is assessed using items such as "You told yourself you could handle what ever happens" and "You told yourself that you could handle this problem." The inverse

association between control coping and distress appraisals may be explained by a third variable, namely uncontrollable stress. Similar to other samples of African American youth from under-resourced communities, it is likely that many of the youth in this study were facing uncontrollable stressors, which may cause more distress than controllable stressors. In addition, control coping would not be an effective strategy when responding to uncontrollable stressors, so those youth in this study would be less likely to report using it. The control coping approach focuses restructuring one's thoughts to give yourself an increased level of agency and/or authority over the stressor compared to the other active coping subscales, which either focus on how to look at the positive aspects of one's life or how to respond to/engage with a stressor cognitively or behaviorally. Another third variable to explain this relationship could be self-efficacy/self-esteem. Previous research has demonstrated that people with a low sense of perceived self-efficacy are more prone to aversive experiences since they often worry, interpret physiological arousal as indicating anxiety, and appraise stressors as more threatening than they are (Jerusalem & Wittag, 1995; Bandura, 1981). Thus, with higher levels of distress, it would be easier for an individual to quickly feel overwhelmed, where they would be less likely to try to convince themselves that they have agency or authority over stressors.

Interestingly, distress appraisal was unrelated to the other active coping subscales. These active coping subscales differ from the control coping subscale in that they reflect attempts to solve the problem and change the stressor. Conversely, control coping focuses on cognitive attempts to convince and reassure oneself that one has control over

the problem, addressing the self and not the stressor. It is not clear why distress appraisals are related to control coping, but unrelated to the active coping subscales that reflect problem-solving. Control coping and distress appraisals both include a cognitive evaluation component. Specifically control coping includes an evaluation of what one can/cannot do and reassuring oneself about managing the stressor, and distress appraisals involve cognitively evaluating how upset one feels in response to the stressor. The other active coping subscales do not share this cognitive evaluation component with distress appraisal, and focus more on generating solutions and understanding why the problem occurred. In addition, control coping and distress appraisals focus on "the self," whereas, the problem-solving nature of the other active coping strategies focus on the stressor.

Main Effects of Active Coping Subscales

As predicted, certain active coping subscales were significantly related to reports of internalizing symptoms, such as cognitive decision making (CDM) coping and direct problem solving (DPS) coping. Specifically, higher reports of cognitive decision making (CDM) coping were marginally associated with higher levels of anxiety in the participants. This is consistent with previous literature that has found that use of active coping strategies can lead to more internalizing symptoms in minority youth from underresourced communities (Rosario, Salzinger, Feldman, & Ng-Mak, 2008; Hassan, Mallozzi, Dhingra, & Haden, 2011). The strategies for CDM coping all refer to thinking about what one could do or what one needs to know before responding to the stressor. Although these types of thoughts might prevent exposure to potentially harmful outward, physical activity, they could increase the youth's mental activity and the likelihood for

cognitive rumination or worry. For example, even though rumination is commonly associated with depression, it is still highly correlated with anxiety symptoms (Fresco et al., 2002) as well as being thought of as a transdiagnostic factor for the comorbidity between anxiety and depression (McLaughlin, Borkovec, & Sibrava, 2007; McLaughlin & Nolen-Hoeksema, 2011). Thus, what begins as coping by thinking how to plan for responding to a stressor, with increased use, could exacerbate into worry and anxiety-related symptomatology.

Additionally active coping might not be particularly effective for urban stress. Previous literature has examined how certain coping strategies are connected to particular stressors (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001). Numerous studies have demonstrated that active coping approaches are less effective when stressors are uncontrollable, such as during parental divorce (Compas et al., 2001; Sandler, Reynolds, Kliewer, & Ramirez, 1992) and exposure to poverty-related stress and community violence (Dempsey, Overstreet, & Moely, 2000; Edlynn et al., 2008; Grant et al., 2000; D'Imperio, Dubow, & Ippolito, 2000). Such research demonstrates that coping strategies that might result in positive outcomes for mainstream populations can instead relate to negative or null outcomes for low-income urban minority youth.

In a more recent example, Grant (2007) also found that youth reporting higher levels of distress had worse outcomes in the long term if they used individually based direct coping strategies (which could include active coping approaches such as cognitive decision making or direct problem solving coping) compared to youth who used acceptance or fatalistic coping strategies (Grant, 2007). With the previous research

studies in mind, perhaps the youth in this study did not employ as many active coping approaches in response to high distressing situations because they have experienced that such strategies are not effective for them.

On the other hand, contrary to expectations, higher levels of direct problem solving (DPS) coping were associated with lower levels of both anxiety and depression symptoms. Instead of corresponding to the aforementioned studies that have found that active coping could have negative psychosocial outcomes for African-American youth, the current results match more mainstream, conventional findings that active coping strategies are related to positive psychosocial outcomes (Ebata & Moos, 1991; Herman-Stahl & Petersen, 1996; Compas et al., 2001). The approach for DPS coping is explicitly active and involves doing something in order to improve one's "problem." These strategies are more likely to include self-motivated activity that might make the youth not dwell on thoughts about the stressor, feel good about at least trying to do something to solve their problem, and less likely to develop internalizing symptoms. When reviewing the general pattern of findings, those active coping strategies with a cognitive element appear to be less adaptive for this population, but active coping strategies engaging direct behavioral actions may not be as problematic. Although their findings were specific to avoidant coping, Gaylord-Harden and colleagues (2010) identified that the distinction between cognitive and behavioral strategies is important for urban African-American youth. The current study may be demonstrating that this cognitive-vs.-behavioral distinction may also hold true for active coping strategies. This underscores the need to

study specific subscales of active coping to better understand the effectiveness (or lack thereof) of these strategies on different stressors and/or in different contexts.

Additionally, the age of the sample may have influenced the extent of the usefulness of active coping behaviors that involve cognitive strategies, such as cognitive decision making. For example, by middle childhood, and especially by adolescence, youth develop more complex language and metacognitive abilities, which is related to their utilization of more cognitive-based coping as they mature (Compas et al., 2001; Aldwin et al., 2011). However, since this study's population is primarily early adolescents, they might prefer using behavioral-type coping strategies such as direct problem solving. Perhaps due to their still-developing cognitive abilities, younger adolescents might not be able to employ cognitive-based active coping strategies as well as behavioral-based approaches.

Furthermore, 4 of the active coping subscales did not significantly predict anxiety symptoms and 5 of the active coping subscales did not significantly predict depression symptoms. One potential reason for this is that in a number of studies, use of active coping approaches did not affect reports of internalizing symptoms (Dempsey et al., 2000; Dempsey, 2002; Edlynn et al., 2008; Grant et al., 2000). Another possibility regarding these null findings is that active coping strategies might have been related to outcomes (either positive or negative) other than internalizing symptoms, such as peer relationships, academic performance (Compas et al., 2001), exposure to violence ,and externalizing behaviors (Grant et al., 2000).

In examining the active coping strategy use of this sample, reports of each strategy were highly correlated with one another (i.e., correlated at r = .54 and higher), suggesting that the participants were not consistently selecting one specific strategy, but were using a range of different strategies. However, these strategies showed different associations to appraisals and internalizing symptoms. Given this, only studying the singular effects of each strategy one might not fully capture the effects of active coping in this sample. Recent work in the coping literature suggests that youth are more likely to respond to stress with combinations of coping strategies and that studying patterns of coping among the youth may be more effective in predicting outcomes (Gaylord-Harden et al., 2008, 2010; Tolan et al., 2002; Brady et al., 2008; Waasdorp & Bradshaw, 2009). In the future, implementing person-based statistical approaches (e.g., cluster analysis) would enhance studies investigating active coping and internalizing symptoms in youth to better understand the potentially influence of naturally-occuring patterns of coping along with youth outcomes and not isolated coping strategies (Masten, 2001).

Interaction Effects of Distress Appraisal and Executive Functions

The cognitive capacities necessary for appraising and coping with stressors correspond to those that comprise executive functions. This similarity prompted a potential moderational role for executive functions on the relation between distress appraisal/active coping strategies and internalizing symptoms. Specifically, deficits in executive functions were expected to be related to higher levels of internalizing symptoms in the context of youth's distress appraisal and active coping strategy preferences. Contrary to expectations, no significant interaction was found between

executive functions and distress appraisal on anxiety symptoms. However, executive functions did moderate the relation between distress appraisal and depression. Youth who appraised their stressor as highly distressing experienced higher levels of depression symptoms if they self-reported clinically significant executive functions difficulties. However, this relation was only marginally significant for the youth who did not report significant executive functions deficits.

Previous work has suggested that youth with deficits in executive functions struggle with emotion regulation (McCloskey et al., 2009; White, Jarrett, & Ollendick, 2012). This potential for emotional dysregulation may make them highly reactive to stressors, where they appraise the stressors as distressing. For example, some of the minimal research on this topic shows that youth with executive functioning problems exhibit more negative (e.g., hostile) appraisals of stressors than peers without these difficulties (Ellis, Weiss, & Lochman, 2009; Hummer et al., 2011). Thus, youth with executive functioning difficulties may be more likely to appraise a stressor as highly distressing than youth without difficulties.

Since self-monitoring, shifting, and problem solving are primary components of executive functions, youth with executive functioning problems frequently have trouble with these skills (McCloskey et al., 2009). Deficits in these skills can affect the coping process: these youth become more vulnerable to negative stress appraisals, triggering trouble regulating their distressing emotions in reaction to the stressor, having difficulty choosing an active coping strategy and implementing it, and subsequently misevaluating their emotional reactions which should signal them to shift to a different strategy. Not

only could emotional distress arise at multiple points of this singular process, but the recurring inconsistency or ineffectiveness to manage their emotions in response to stressors may exacerbate that distress into increases in depression symptoms.

Interaction Effects of Coping

Contrary to expectations, no significant interaction was found between executive functions and active coping subscales on anxiety symptoms. However, executive functions did moderate the relation between active coping subscales and depression. The interaction was significant for those youth who did not experience clinically-significant executive functions deficits and for two active coping subscales: direct problem solving (DPS) coping and seeking understanding (SU) coping. Specifically, youth who used higher levels of DPS coping experienced lower levels of depression symptoms if they did not report clinically significant executive functions difficulties. This relation was not significant for the youth who reported significant executive functions deficits. A similar pattern arose for SU coping: youth who used higher levels of SU coping experienced lower levels of depression symptoms if they did not report clinically significant executive functions difficulties while this relation was not significant for the youth who reported significant executive functions deficits.

These findings suggest that when youth without clinically significant deficits in EF use high levels of DPS and SU coping, they experience lower levels of depression. However, this effect did not appear in the youth with clinically significant EF deficits. Specifically, when youth with clinically significant executive functions deficits used high levels of direct problem solving and seeking understanding coping, their levels of

depression do not change. Direct problem solving and seeking understanding are problem-focused strategies that attempt to directly improve the situation. Due to their cognitive challenges, youth with EF deficits might have difficulty applying active coping strategies, especially those that focus on directly modifying the stressor. DPS coping involves attempting actions to improve one's situation. If youth with EF deficits choose this coping strategy, they could have poorly planned and sequenced their actions to try and solve the problem, such as an interpersonal stressor. If they (re)acted upon someone else's behavior, for example, they could get into a fight and, again with their EF difficulties, they could misinterpret this outcome as "positive" because they stuck up for themselves instead of evaluating the danger of getting into a fight. SU coping deals with thinking about how to learn from the stressor or what caused it. However, youth with EF deficits might have trouble organizing how the events occurred leading to the stressor as well as perhaps misappraise their behavior or the behaviors of others. These issues could lead to an inaccurate understanding of the problem and an unproductive use of seeking understanding coping. Thus, this pair of examples provides a limited illustration of how the active coping strategies of youth with EF troubles can end up ineffective, not helping reduce their negative outcomes (i.e., depressive symptoms).

As a result of these interactions between executive functions and active coping strategies, one notes effects on depression symptoms but not anxiety symptoms, particularly for direct problem solving and seeking understanding coping. Further, as discussed above, DPS showed main effects on anxiety and depression; however, when interacting with executive functioning, DPS was only associated with depression. Given

that DPS coping involves doing something in order to improve one's "problem," this strategy is likely to include self-motivated activity that might make the youth not dwell on thoughts about the stressor, feel good about at least trying to do something to solve their problem, and diminish depressive symptomatology. Likewise SU coping, though involving thinking (about how to understand what happened), can potentially make one feel that you have done something to reach a more full resolution of your stressor (not just thinking about planning your response). These strategies would be more effective, when youth do not have executive functioning deficits, in protecting against depressive symptoms because they could help reduce negative/low mood or boost positive/high mood for resolving your stressor, whereas they might not be as effective at protecting against anxiety symptoms, such as physiological hyperarousal.

In this study, there were also main effects of executive functions (EFs) classification and internalizing symptoms. Those participants with self-reported levels of clinically high deficits in EFs also endorsed higher levels of both depression and anxiety symptoms. This is consistent with some recent literature that has found that impairments with EFs (often in youth either with medical issues or ADHD) were related to higher depression and anxiety symptomatology (Jarrett & Ollendick, 2008; Maalouf et al., 2011; Han et al., 2012). Difficulties with EFs would lead to cognitive issues that could develop into internalizing difficulties. For example, if an adolescent has trouble with cognitive flexibility, and gets stuck in his/her thoughts (in this case negative thoughts), then this could lead to rumination on these thoughts, which is a common depressive symptom, especially in adolescent girls. Likewise, if an adolescent has difficulty inhibiting

thoughts or behaviors, he/she might not be able to stop from worrying or stop from engaging in obsessive compulsions and rituals. Or perhaps the pathway can be reversed, where these youth are normally able to employ their EFs appropriately but these capacities become impaired in the context of higher depression and/or anxiety symptoms (Jarrett & Ollendick, 2008).

Three-Way Interaction Effects Among Distress Appraisal, Active Coping Subscales, And Executive Functions

In a previous study with this sample, youth who self-reported clinically significant deficits in executive functions also experienced higher levels of depression symptoms if their initial appraisals of stressors were highly distressing and if they reported high use of active coping strategies to cope with the stressor (Kesselring, 2009). On the other hand, the youth with executive functions deficits did not show higher depressive symptomatology even with high distress appraisals if they also reported low levels of active coping. Hence, it was proposed that executive functions acted as a vulnerable-reactive factor for these youth (Luthar et al., 2000), where youth who have challenges with executive functions experienced poorer results when they attempted to use active coping for a high distressing stressor compared to youth without these deficits.

Thus, in this study, the aim was to investigate which of the varied active coping strategies might be more or less influenced in the coping effectiveness by deficits in executive functions for these youth in this urban, low-income, high-distress environment. In contrast to the significant two-way interactions above, the test of three-way interactions yielded nonsignficant results. Few studies have investigated the interaction

between appraisals, coping, and executive functions on youth outcomes, such as internalizing symptoms, which limits the extent to what predictions can be made. One study on this topic suggested that youth with deficits in executive functions appraised stressors as more negative (in this case, hostile) than the youth without such challenges (Ellis, Weiss, & Lochman, 2009). In another study, the authors described how certain aspects of EFs can alter the appraisal process that will influence subjective distress in response to adverse events (Williams, Suchy, & Rau, 2009). For example, people with difficulties in cognitive flexibility and comfort with novelty could interpret stressors as more threatening and distressing (Williams, Suchy, & Rau, 2009).

While it makes sense conceptually and in some of the previous literature that deficits in executive functions would influence the ability to cope effectively with a distressing situation, executive functions classification did not interact with coping and distress to predict internalizing symptoms in this three-way interaction. One reason may be that since the previous two-way interactions found significant positive outcomes on depressive symptoms for the youth *without* deficits in executive functions, perhaps this buffering effect was attenuated once distress was also added to the regression equation. In addition, perhaps due to the classification of clinically significant executive functions deficits at T-scores of 65 or higher meant that the small number of people who met this criteria might not have had high enough levels where they appraise their stressors as overly distressing nor be as ineffective in using active coping strategies. Another reason for these nonsignificant findings could be a result of running three-way interactions on this smaller sample size, especially with the small number of youth (less than 15% of the

sample) in the clinically-significant executive functioning group. Perhaps the amount of predictors along with any potential missing data from participants attenuated the power to detect relations to internalizing symptoms.

Additionally these null findings might have resulted from dividing the active coping factor into its more singular components, which may not capture the effects of an active coping approach. Recent findings in the extant literature have shown that youth have a tendency to act as "diversified copers," employing a multitude of strategies instead of just one type of strategy (Gaylord-Harden et al., 2008; Gaylord-Harden et al., 2010; Rasmussen, Aber, & Bhana, 2004; Tolan et al., 2002). Perhaps separating out each active coping subscale diminishes the strength of the relation between active coping and the outcomes (i.e., internalizing symptoms), especially when adding moderating variables such as distress appraisal and executive functions. For example, a marginally significant two-way interaction was found of distress appraisal and cognitive decision making coping on depression scores in the three-way interaction analyses. However, the results of the simple slopes tests were nonsignificant, which may suggest that distress appraisal scores did not have a clear pattern of impact on the relation between cognitive decision making coping and depression scores. It may also reflect how the small sample size limited the statistical power to detect these effects, which might have been significant with a larger sample. Particularly when considering low-income, urban minority youth, future research should attempt to also investigate more person-centered analyses and multifaceted coping styles.

Limitations

There are a number of limitations to address concerning this study. The study focused only on data collected from self-report measures. By using self-report surveys, one concern may be shared method variance and, thus, inflated associations between variables. One way to improve prospective data collection is to incorporate measures on coping and outcomes from multiple informants such as parents and teachers, although others may not reliably report on another individual's stress experiences and coping responses (Waasdorp & Bradshaw, 2009; Bradshaw, Sawyer, & O'Brennan, 2007). While youth may be able to accurately self-report problems with their own executive functioning (McCloskey et al., 2009), the measurement of executive functions likewise could have been augmented with multiple reporters like parents and teachers as well as performance-based assessment to obtain behavioral data. Additionally, youth who present with deficits in executive functions also might not be able to accurately recognize their difficulties.

Another issue is that youth are more likely to report certain types of symptoms (such as anxiety vs. depression) in response to coping with certain types of stressors. For African American youth, various research studies have demonstrated that reports of stressors involving peers, family, and/or racial discrimination are more strongly associated with depression than anxiety (Jones et al., 2003; Brody et al., 2006). Such evidence underscores other research that has similarly found interpersonal stressors being more strongly associated with depressive symptoms than non-interpersonal stressors (Rudolph et al., 2000). In regards to this study, the youth recounted a breadth of stressful

events, ranging from interpersonal issues at school or home to community violence exposure to racism to grief. However, since this range was not introduced into the analyses, the ability of the predictors to account for the variability in anxiety and depression scores may have been weakened due to losing what variability may have been associated with stressor type. In the future, research should take into account the variability in symptoms that occur due to stressor type when investigating the relations among appraisals, coping, and executive functions on internalizing symptoms.

An additional limitation of the current study is its cross-sectional nature, which precludes the ability to infer causal relationships between the active coping responses and the internalizing symptoms. Furthermore, the restricted generalizability of these results is a limitation as well. The current study focused on African American youth from low-income, urban communities. The youth in this study likely experience numerous stressors simultaneously at different levels. For example, a youth from the study could be experiencing interpersonal conflicts amongst peers and/or family members, could be facing racial discrimination, and would experience these issues in the context of poverty-related stress, community violence, and institutional racial discrimination. While youth from more affluent communities experience stressors such as interpersonal conflict and racial discrimination, the effects of these stressors are not exacerbated by the context of urban poverty. As a consequence, the results of the current study can only be generalized to other African American youth from urban, underresourced communities.

Strengths

While this study has certain limitations, there are also several strengths. For example, the current study extends the literature on executive functions and coping in youth. While much of the necessary abilities for successful coping would entail employing executive functions-related capacities such as planning, sequencing, and monitoring, there has been a dearth of research jointly examining these two areas. Furthermore, the early to mid-adolescent youth in the current study reflect a crucial developmental stage when executive functions and coping skills are maturing and gaining importance as factors for their psychological health (Compas et al., 2001; De Luca & Leventer, 2008). Additionally, much of the preceding research has focused on clinical populations of youth with pediatric health issues and/or diagnoses that already suggest a greater possibility of executive dysfunction (e.g., ADHD diagnosis). However, this study examines executive functions in a community sample, and more importantly, in African American youth, who have underrepresented in the executive functions literature. Another strength of this study is that it focuses on subscales of active coping and not only active coping at a broader level. This adds to the limited previous research on coping and executive functions so within the heterogeneity of active coping strategies one might gain greater understanding of how difficulties with executive functions might only be relevant for certain strategies.

Conclusions

The current study expands the literature on stress and coping involving low-income African American youth. Consistently in previous research, African American

youth, and especially those from low-income families, have not been studied as much in the stress and coping literature even though they frequently experience higher levels of chronic stress (e.g, violence-related stress, poverty-related stress, etc.) compared to their White, middle-class counterparts (Compas et al., 2001). Thus, researchers and others assume which coping strategies may be effective for low-income African American youth without the same empirical basis of how these youth's internal and external resources and stressor experiences influence their coping strategies. By including African American youth as a specific population, it provides researchers and others the opportunity to augment the well-being of these youth and observe the myriad of coping strategies with the youth.

APPENDIX A

BEHAVIOR RATING INVENTORY OF EXECUTIVE FUNCTION, SELF-REPORT (BRIEF-SR)

Over the past 6 months, how often has each of the following behaviors been a *problem?*	Never	Sometimes	Often
1. I have trouble sitting still	N	S	O
2. I have trouble accepting a different way to solve a problem with schoolwork, friends, tasks, etc.	N	S	O
3. When I am given three things to do, I remember only the first or last	N	S	O
4. I start projects (such as homework, recipe) without the right materials	N	S	O
5. I overreact to small problems	N	S	O
6. My desk/workspace is a mess	N	S	O
7. I am not aware of how my behavior affects or bothers others	N	S	O
8. I have problems finishing long-term projects (such as papers, book reports)	N	S	O
9. I get upset by a change in plans	N	S	O
10. I get in other peoples' faces	N	S	O
11. I try the same approach to a problem over and over even when it does not work (I get stuck)	N	S	O
12. I have a short attention span	N	S	O
13. I don't plan ahead for future activities	N	S	O
14. I have angry outbursts	N	S	O
15. I lose things (such as keys, money, wallet, homework, etc.)	N	S	O
16. I don't notice when my behavior causes negative reactions until it is too late	N	S	O
17. I have difficulty finishing a task on my own	N	S	O
18. I get disturbed by an unexpected change (such as teacher, daily activity)	N	S	O
19. I have problems waiting my turn	N	S	O
20. I am slower than others when completing my work	N	S	O
21. I forget to hand in my homework, even when it's completed	N	S	O
22. I have trouble getting ready for the day (such as school, work, etc.)	N	S	O
23. I become tearful easily	N	S	O
24. I forget to bring home from school what I need (such as homework, assignments, books, materials, etc.)	N	S	O
25. I am unaware of my behavior when I am in a group	N	S	O
26. I have problems completing my work	N	S	O
27. It bothers me when I have to deal with changes (routines, foods, places)	N	S	O
28. I interrupt others	N	S	O
29. I am not creative in solving a problem	N	S	O
30. I have trouble with jobs or tasks that have more than one step	N	S	O
31. I don't plan ahead for school assignments	N	S	O
32. I have outbursts for little reason	N	S	O
33. My backpack/schoolbag is disorganized	N	S	O
34. I have a poor understanding of my own strengths and weaknesses (I try things that are too difficult or too easy for me)	N	S	O
35. I have many unfinished projects	N	S	O
36. I have trouble getting used to new situations (such as classes, groups, friends)	N	S	O
37. I am impulsive	N	S	O
38. I test poorly even when I know the correct answers	N	S	O
39. I forget what I am doing in the middle of things	N	S	O
40. I have problems organizing my written work	N	S	O

Over the past 6 months, how often has each of the following behaviors been a *problem?*	Never	Sometimes	Often
41. My eyes fill with tears quickly over little things	N	S	O
42. I am late for many activities (such as school, appointments, meals)	N	S	O
43. I don't know when my actions bother others	N	S	O
44. I have good ideas but do not get the job done (I lack follow-through)	N	S	O
45. I have trouble changing from one activity to another	N	S	O
46. I get out of my seat at the wrong times	N	S	O
47. I get caught up in details and miss the main idea	N	S	O
48. When I am sent to get something, I forget what I am supposed to get	N	S	O
49. I don't think ahead about possible problems	N	S	O
50. I react more strongly to situations than my friends	N	S	O
51. I have difficulty finding my clothes, glasses, shoes, books, pencils, etc.	N	S	O
52. I make careless errors	N	S	O
53. I have trouble finishing tasks (such as chores, homework)	N	S	O
54. I get out of control more than my friends	N	S	O
55. I have difficulty coming up with different ways of solving a problem	N	S	O
56. I have trouble staying on the same topic when talking	N	S	O
57. I have trouble carrying out the things that are needed to reach a goal (such as saving money for special items, studying to get good grades, etc.)	N	S	O
58. I get upset easily	N	S	O
59. My work is sloppy	N	S	O
60. I don't check my work for mistakes	N	S	O
61. I blurt things out	N	S	O
62. I get stuck on one topic or activity	N	S	O
63. I have trouble remembering things, even for a few minutes (such as directions, phone numbers, etc.)	N	S	O
64. I have problems getting started on my own	N	S	O
65. I get upset over small events	N	S	O
66. I talk too loudly	N	S	O
67. I have trouble thinking of a different way to solve a problem when I get stuck	N	S	O
68. I change topics in the middle of a conversation	N	S	O
69. I have trouble prioritizing my activities	N	S	O
70. I overreact	N	S	O
71. I act too wild or "out of control"	N	S	O
72. I have problems showing what I know during tests	N	S	O
73. I forget instructions easily	N	S	O
74. I have problems balancing school, work, and other activities	N	S	O
75. I am easily overwhelmed	N	S	O
76. I think or talk out loud when working	N	S	O
77. It takes me longer to complete my work	N	S	O
78. I am absentminded	N	S	O
79. I talk at the wrong time	N	S	O
80. I don't think of consequences before acting	N	S	O

APPENDIX B

HOW I COPED UNDER PRESSURE, REVISION 1 (HICUPS-R1)

AFRICULTURAL COPING SYSTEMS INVENTORY-
YOUTH VERSION
(Gaylord-Harden & Utsey, 2007)

Instructions

The statements below represent some ways people cope with problems or stressful situations in their daily lives. Before you respond to the statements below, you will need to think of something stressful that happened to you within the past week or so. A "stressful situation" is any problem or situation that you find troubling or causes you to worry. These problems may be related to your family, friends, school, relationships, or other things you consider important in your life. To help us understand the stressful situation you are thinking of when responding to the statements in this survey, please write one or two sentences that describes what happened in the situation you are thinking of.

Use this space to describe your stressful situation:

DID YOU REMEMBER TO DESCRIBE YOUR STRESSFUL SITUATION?

A. Circle the number that shows how stressful this problem was for you or how much you worried about it.

1	2	3	4
Not at all	A little	Somewhat	Very

B. Circle the number that shows how much control you think you have over this problem.

1	2	3	4
Not at all	A little	Somewhat	Very

*Note: Appraisal variables were assessed as part of the Africultural Coping Systems Inventory-Youth Version (Y-ACSI). Participants completed the Y-ACSI, and then completed the HICUPS-R1. Participants reported on the same stressor for both coping measures.

HICUPS-R1

Instructions
"Sometimes things happen that make you feel bad or upset. These could be things that happen in your family, at school, in your neighborhood, or with your friends. We'd like you to write down one thing that happened to you during the past 3 months that made you feel bad or upset.

_____

_____

"When events like this happen people think or do many different things to help make their situation better, or to make themselves feel better. Please tell us 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 when this event happened. There are no right or wrong answers, just mark how often you did each of these things during the event you just described."

1. *When you had this problem in the past 3 months,* you thought about what you could do before you did something.

Never	Sometimes	Often	Most of the time
1	2	3	4

2. You tried to notice or think about only the good things in your life.

Never	Sometimes	Often	Most of the time
1	2	3	4

3. You tried to ignore it.

Never	Sometimes	Often	Most of the time
1	2	3	4

4. You told people how you felt about the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

5. You tried to stay away from the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

6. You did something to make things better.

Never	Sometimes	Often	Most of the time
1	2	3	4

7. *When you had this problem,* you talked to someone who could help you figure out what to do.

Never	Sometimes	Often	Most of the time
1	2	3	4

8. You told yourself that things would get better.

Never	Sometimes	Often	Most of the time
1	2	3	4

9. You listened to music.

Never	Sometimes	Often	Most of the time
1	2	3	4

10. You reminded yourself that you are better off than a lot of other kids.

Never	Sometimes	Often	Most of the time
1	2	3	4

11. You daydreamed that everything was okay.

Never	Sometimes	Often	Most of the time
1	2	3	4

12. You went bicycle riding.

Never	Sometimes	Often	Most of the time
1	2	3	4

13. You talked about your feelings to someone who really understood.

Never	Sometimes	Often	Most of the time
1	2	3	4

14. You told other people what you wanted them to do.

Never	Sometimes	Often	Most of the time
1	2	3	4

15. You tried to put it out of your mind.

Never	Sometimes	Often	Most of the time
1	2	3	4

16. *When you had this problem,* you thought about what would happen before you decided what to do.

Never	Sometimes	Often	Most of the time
1	2	3	4

17. You told yourself that it would be OK.

Never	Sometimes	Often	Most of the time
1	2	3	4

18. You told other people what made you feel the way you did.

Never	Sometimes	Often	Most of the time
1	2	3	4

19. You told yourself that you could handle this problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

20. You went for a walk.

Never	Sometimes	Often	Most of the time
1	2	3	4

21. You tried to stay away from things that made you feel upset.

Never	Sometimes	Often	Most of the time
1	2	3	4

22. You told others how you would like to solve the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

23. You tried to make things better by changing what you did.

Never	Sometimes	Often	Most of the time
1	2	3	4

24. You told yourself you have taken care of things like this before.

Never	Sometimes	Often	Most of the time
1	2	3	4

25. *When you had this problem,* you played sports.

Never	Sometimes	Often	Most of the time
1	2	3	4

26. You thought about why it happened.

Never	Sometimes	Often	Most of the time
1	2	3	4

27. You didn't think about it.

Never	Sometimes	Often	Most of the time
1	2	3	4

28. You let other people know how you felt.

Never	Sometimes	Often	Most of the time
1	2	3	4

29. You told yourself you could handle what ever happens.

Never	Sometimes	Often	Most of the time
1	2	3	4

30. You told other people what you would like to happen.

Never	Sometimes	Often	Most of the time
1	2	3	4

31. You told yourself that in the long run, things would work out for the best.

Never	Sometimes	Often	Most of the time
1	2	3	4

32. You read a book or magazine.

Never	Sometimes	Often	Most of the time
1	2	3	4

33. You imagined how you'd like things to be.

Never	Sometimes	Often	Most of the time
1	2	3	4

34. *When you had this problem,* you reminded yourself that you knew what to do.

Never	Sometimes	Often	Most of the time
1	2	3	4

35. You thought about which things are best to do to handle the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

36. You just forgot about it.

Never	Sometimes	Often	Most of the time
1	2	3	4

37. You told yourself that it would work itself out.

Never	Sometimes	Often	Most of the time
1	2	3	4

38. You talked to someone who could help you solve the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

39. You went skateboard riding or roller skating.

Never	Sometimes	Often	Most of the time
1	2	3	4

40. You avoided the people who made you feel bad.

Never	Sometimes	Often	Most of the time
1	2	3	4

41. You reminded yourself that overall things are pretty good for you.

Never	Sometimes	Often	Most of the time
1	2	3	4

42. You did something like video games or a hobby.

Never	Sometimes	Often	Most of the time
1	2	3	4

43. *When you had this problem,* you did something to solve the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

44. You tried to understand it better by thinking more about it.

Never	Sometimes	Often	Most of the time
1	2	3	4

45. You reminded yourself about all the things you have going for you.

Never	Sometimes	Often	Most of the time
1	2	3	4

46. You wished that bad things wouldn't happen.

Never	Sometimes	Often	Most of the time
1	2	3	4

47. You thought about what you needed to know so you could solve the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

48. You avoided it by going to your room.

Never	Sometimes	Often	Most of the time
1	2	3	4

49. You did something in order to get the most you could out of the situation.

Never	Sometimes	Often	Most of the time
1	2	3	4

50. You thought about what you could learn from the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

51. You wished that things were better.

Never	Sometimes	Often	Most of the time
1	2	3	4

52. You watched TV.

Never	Sometimes	Often	Most of the time
1	2	3	4

53. You did some exercise.

Never	Sometimes	Often	Most of the time
1	2	3	4

54. You tried to figure out why things like this happen.

Never	Sometimes	Often	Most of the time
1	2	3	4

APPENDIX C

CHILDREN'S DEPRESSION INVENTORY (CDI)

Client ID: _____

Age: _____ Birthdate: _____
mm/dd/yyyy

Grade: _____ Gender: Male Female

Today's date: _____
mm/dd/yyyy

CDI

by Maria Kovacs, Ph.D.

Kids sometimes have different feelings and ideas.

This form lists the feelings and ideas in groups. From each group of three sentences, pick one sentence that describes you ***best*** for the past two weeks. After you pick a sentence from the first group, go on to the next group.

There is no right or wrong answer. Just pick the sentence that best describes the way you have been recently. Put a mark like this ☒ next to your answer. Put the mark in the box next to the sentence that you pick.

Here is an example of how this form works. Try it. Put a mark next to the sentence that describes you ***best***.

Example:

- ☐ I read books all the time.
- ☐ I read books once in a while.
- ☐ I never read books.

Remember, pick out the sentences that describe you best in the PAST TWO WEEKS.

Item 1
- ☐ I am sad once in a while.
- ☐ I am sad many times.
- ☐ I am sad all the time.

Item 2
- ☐ Nothing will ever work out for me.
- ☐ I am not sure if things will work out for me.
- ☐ Things will work out for me O.K.

Item 3
- ☐ I do most things O.K.
- ☐ I do many things wrong.
- ☐ I do everything wrong.

Item 4
- ☐ I have fun in many things.
- ☐ I have fun in some things.
- ☐ Nothing is fun at all.

Item 5
- ☐ I am bad all the time.
- ☐ I am bad many times.
- ☐ I am bad once in a while.

Item 6
- ☐ I think about bad things happening to me once in a while.
- ☐ I worry that bad things will happen to me.
- ☐ I am sure that terrible things will happen to me.

Item 7
- ☐ I hate myself.
- ☐ I do not like myself.
- ☐ I like myself.

Item 8
- ☐ All bad things are my fault.
- ☐ Many bad things are my fault.
- ☐ Bad things are not usually my fault.

Item 9
- ☐ I do not think about killing myself.
- ☐ I think about killing myself but I would not do it.
- ☐ I want to kill myself.

Turn over and fill out the other side.

Remember, pick out the sentences that describe you best in the past two weeks.

Item 10
- ☐ I feel like crying every day.
- ☐ I feel like crying many days.
- ☐ I feel like crying once in a while.

Item 11
- ☐ Things bother me all the time.
- ☐ Things bother me many times.
- ☐ Things bother me once in a while.

Item 12
- ☐ I like being with people.
- ☐ I do not like being with people many times.
- ☐ I do not want to be with people at all.

Item 13
- ☐ I cannot make up my mind about things.
- ☐ It is hard to make up my mind about things.
- ☐ I make up my mind about things easily.

Item 14
- ☐ I look O.K.
- ☐ There are some bad things about my looks.
- ☐ I look ugly.

Item 15
- ☐ I have to push myself all the time to do my schoolwork.
- ☐ I have to push myself many times to do my schoolwork.
- ☐ Doing schoolwork is not a big problem.

Item 16
- ☐ I have trouble sleeping every night.
- ☐ I have trouble sleeping many nights.
- ☐ I sleep pretty well.

Item 17
- ☐ I am tired once in a while.
- ☐ I am tired many days.
- ☐ I am tired all the time.

Item 18
- ☐ Most days I do not feel like eating.
- ☐ Many days I do not feel like eating.
- ☐ I eat pretty well.

Item 19
- ☐ I do not worry about aches and pains.
- ☐ I worry about aches and pains many times.
- ☐ I worry about aches and pains all the time.

Item 20
- ☐ I do not feel alone.
- ☐ I feel alone many times.
- ☐ I feel alone all the time.

Item 21
- ☐ I never have fun at school.
- ☐ I have fun at school only once in a while.
- ☐ I have fun at school many times.

Item 22
- ☐ I have plenty of friends.
- ☐ I have some friends but I wish I had more.
- ☐ I do not have any friends.

Item 23
- ☐ My schoolwork is alright.
- ☐ My schoolwork is not as good as before.
- ☐ I do very badly in subjects I used to be good in.

Item 24
- ☐ I can never be as good as other kids.
- ☐ I can be as good as other kids if I want to.
- ☐ I am just as good as other kids.

Item 25
- ☐ Nobody really loves me.
- ☐ I am not sure if anybody loves me.
- ☐ I am sure that somebody loves me.

Item 26
- ☐ I usually do what I am told.
- ☐ I do not do what I am told most times.
- ☐ I never do what I am told.

Item 27
- ☐ I get along with people.
- ☐ I get into fights many times.
- ☐ I get into fights all the time.

*Note: Item 9 was not administered.

APPENDIX D

REVISED CHILDREN'S MANIFEST ANXIETY SCALE (R-CMAS)

"WHAT I THINK AND FEEL"
(RCMAS)

Cecil R. Reynolds, Ph.D., and Bert O. Richmond, Ed.D.

Published by
WESTERN PSYCHOLOGICAL SERVICES
wps® 12031 Wilshire Boulevard
Los Angeles, CA 90025-1251
Publishers and Distributors

Name: _____

_____

Age: _____ **Grade:** _____

Sex ***(circle one):*** Girl Boy

Today's Date: _____

School: _____

Teacher's Name ***(optional):*** _____

_____

DIRECTIONS

On the back of this form, there are some sentences that tell how some people think and feel about themselves. Read each sentence carefully. Circle the word *Yes* if you think the sentence is true about you. Circle the word *No* if you think it is *not* true about you. Circle an answer for every sentence, even if it is hard to choose one that fits you. Do not circle both *Yes* and *No* for the same sentence. If you want to change an answer, draw an X through your first answer and then circle your new choice.

There are no right or wrong answers. Only you can tell us how you think and feel about yourself. Remember, after you read each sentence, ask yourself, "Is it true about me?" If it is, circle *Yes*. If it is not, circle *No*.

Circle one answer for each sentence.

Yes	No	1. I have trouble making up my mind.
Yes	No	2. I get nervous when things do not go the right way for me.
Yes	No	3. Others seem to do things easier than I can.
Yes	No	4. I like everyone I know.
Yes	No	5. Often I have trouble getting my breath.
Yes	No	6. I worry a lot of the time.
Yes	No	7. I am afraid of a lot of things.
Yes	No	8. I am always kind.
Yes	No	9. I get mad easily.
Yes	No	10. I worry about what my parents will say to me.
Yes	No	11. I feel that others do not like the way I do things.
Yes	No	12. I always have good manners.
Yes	No	13. It is hard for me to get to sleep at night.
Yes	No	14. I worry about what other people think about me.
Yes	No	15. I feel alone even when there are people with me.
Yes	No	16. I am always good.
Yes	No	17. Often I feel sick in my stomach.
Yes	No	18. My feelings get hurt easily.
Yes	No	19. My hands feel sweaty.
Yes	No	20. I am always nice to everyone.
Yes	No	21. I am tired a lot.
Yes	No	22. I worry about what is going to happen.
Yes	No	23. Other people are happier than I.
Yes	No	24. I tell the truth every single time.
Yes	No	25. I have bad dreams.
Yes	No	26. My feelings get hurt easily when I am fussed at.
Yes	No	27. I feel someone will tell me I do things the wrong way.
Yes	No	28. I never get angry.
Yes	No	29. I wake up scared some of the time.
Yes	No	30. I worry when I go to bed at night.
Yes	No	31. It is hard for me to keep my mind on my schoolwork.
Yes	No	32. I never say things I shouldn't.
Yes	No	33. I wiggle in my seat a lot.
Yes	No	34. I am nervous.
Yes	No	35. A lot of people are against me.
Yes	No	36. I never lie.
Yes	No	37. I often worry about something bad happening to me.

*Note: Participants did not fill out the demographic information on this page.

APPENDIX E

DEMOGRAPHIC FORM

Demographic Questionnaire

1. MALE FEMALE

2. How old are you? _____

3a. Circle the category that best describes your race or ethnicity.

Asian
Black or African American
African
AfroCarribean (e.g., Jamaican)
Hispanic or Latino
Native Hawaiian or other Pacific Islander
White
Other _____

3b. What country are your parents from? _____

4. What grade are you in?

Sixth (6^{th}) Seventh (7^{th}) Eighth (8^{th})

5. Circle all of the people that live at home with you

My Mom
My Dad
My Sisters How many? ____
My Brothers How many? ____
My Grandmother
My Grandfather
My Aunt
My Uncle
My Cousins How many? ____
Others _____

6. Circle the person you live with that takes care of you.

My Mom and Dad
My Mom only
My Dad only
My Grandmother and Grandfather
My Grandmother only
My Grandfather only
My older sisters
My older brothers
My Aunt
My Uncle
My older cousins

7. What religion are you, if any? _____

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VITA

In 2007, Arie Zakaryan graduated *cum laude* from Harvard University, majoring in Literature. During his undergraduate studies at Harvard, Arie wrote an Honors Thesis in the Literature Department but studied psychology in his classes and outside research projects. He worked with the Victims of Violence office, who studied narrative therapy for women who have suffered domestic violence. This fueled his interest in working with populations exposed to trauma and violence.

After graduation, Arie was a research coordinator for the University of Miami Department of Psychiatry. After gaining this valuable work and research experience, he pursued graduate school in Clinical Psychology in order to research questions examining risk factors and resilience factors in minority youth exposed to violence. At Loyola, Arie has worked as a teaching and research assistant for Dr. Rebecca Silton, Dr. Noni Gaylord-Harden, and Dr. Maryse Richards. Upon completion of his doctorate, Arie will likely pursue either a post-doctoral position to gain further research experience or a position in a university-based medical center to engage in both clinical and research work