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Toward a Developmental Origin of the Predictors of Health: How Representations of Childhood are Associated with Well-being in Adulthood

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Toward a Developmental Origin of the Predictors of Health: How Representations of Childhood are Associated with Well-being in Adulthood

by

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Thesis

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Master of Arts

The University of Texas at Austin

December 2012

Abstract

Toward a Developmental Origin of the Predictors of Health: How Representations of Childhood are Associated with Well-being in Adulthood

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The University of Texas at Austin, 2012

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In this study I explored whether the way adults think about their early childhood is related to their perception of control, coping strategies, and health outcomes. The participants (N=78) in this study were administered the Adult Attachment Interview (AAI) between 1 and 18 years ago, when they were new parents. The current online survey assessed perceived control (a composite of the Perceived Health Competency Scale and a general life control item), coping strategies (generated from a factor analysis of the Brief C.O.P.E. measure), anxiety (GAD-7), overweight (a composite of waist-to-hip ratio by body mass index), lifetime number of mental health diagnoses, and lifetime number of physical health diagnoses. As expected, non-problem-focused coping strategies and low perceived control were significantly associated with overweight and poor mental and physical health outcomes. This study added a developmental component to explain the roots of these maladaptive strategies: Dismissing speech on the AAI,

characterized by idealizing childhood, minimizing childhood needs and/or distress, and emphasizing the normalcy and independence of one's upbringing strongly negatively predicted current perceived control and approach coping, relative to Secure speech. In fact, Dismissing speakers endorsed using fewer coping strategies over all. Given the pervasive influence of perceived control and active coping on myriad aging and health outcomes, the origins of these strengths is of particular interest. Dismissing speakers, although they endorse experiencing less anxiety, are clearly faring the worst. Attachment theory as a framework for explaining lifespan agency, anxiety, health behaviors, and outcomes is discussed.

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Introduction

With this study I explore whether the way adults think about their early childhood is related to their perception of control and other health predictors. Perceived control seems to exert a direct influence on experiences of stress by altering threat appraisal and has been shown to predict psychological and physiological adjustment to illness and aging (Smith, Wallston, & Smith, 1995). But the influence of coping behaviors is also present. Health psychologists have long measured the influence of a person's perception of control not only on lifestyle choices but also on specific health management such as coping strategies, anxiety, drug and rehabilitation adherence, disease regimen maintenance, and regular doctor's visits (Dornelas, Sampson, Gray, Waters, & Thompson, 2000; Mildestvedt, Meland, & Eide, 2008; Brug, Lechner, & DeVries, 1995). In addition, anxiety seems to foster poor health behaviors, such as alcohol use and drug addiction, (Martin-Marino et al., 2010), and has been found to mediate the relation between perceived control and physical health outcomes (Lledó-Boyer et al., 2010). However, the origin of these health predictors is less well understood. It has been speculated that the experience of having exerted control in the past is what fosters a sense of efficacy, and that not having been a successful actor in one's environment leads to lower expectations of control over outcomes, and therefore lower motivation to act (Bandura, 2007). Children's early experiences with the parent, and specifically, the extent to which their emotional and exploration needs are met, predicts infants' attachment security (Bowlby, 1979). Attachment security, in turn, has been associated

with greater agency in children and adults (Sroufe, 2005). The present study explores the model that adult attachment security is associated with perceived control, which in turn predicts better coping strategies, lower anxiety, healthier behaviors, and less disease.

I use the Adult Attachment Interview to assess adults' current state of mind with respect to their experiences of childhood and examine whether it contributes any explanatory power to the path to health management which perceived control is known to influence. My theory is that as we experience age- or illness-related decline, attachment patterns emerge again as the organizing framework for our response to our increasing dependency. I propose that consistent responsiveness in the first relationship, or at least the way we think about that first relationship, orients us towards a certain pattern for getting dependency needs met throughout the lifespan.

Understanding the origin of a person's perceived control is important, because the demographics of illness have changed dramatically in the last 40 years. The Centers for Disease Control estimates that over half of the deaths in the United States are as a direct result of health behaviors (smoking, drinking, and tobacco use), and as such, are preventable (Ford, Zhao & Li, 2011). The populations of developed countries are living longer, as medicine has focused on retarding the process of disease progression, even aging itself. Now health care costs will force societies to move from focus on disease care to focus on health promotion. Among the most important mechanisms associated with the health choices people make is their perceived self-efficacy: the belief that one can produce desired effects through one's actions (Bandura, 1997) accompanied by the freedom from anxiety required to act on those beliefs (anxiety & health behavior

reference). In the context of health, this basic belief is called perceived control, "the belief that one can determine one's own internal states and behavior, influence one's environment, and/or bring about desired outcomes" (Wallston, Wallston, Smith, & Dobbins, 1987).

PERCEIVED CONTROL AND HEALTH

Perceived control has been shown to be strongly, positively, and consistently related to better health outcomes (see Holden, 1991, for meta-analysis). Julian Rotter (1966) is credited with first measuring differences in individual and group behavior when an outcome is perceived to be either within our outside a subject's control. In the 1970's and 80's, Kenneth Wallston applied Rotter's findings to health, creating the construct of internal vs. external health locus of control, operationalized in the first health locus of control (HLC) scale (Wallston, 1976). This scale measures one's "disposition to act in a certain manner in health-related situations," modifiable by experience, and is not considered as stable as a personality trait. In his 1992 revision of the scale, Wallston reviewed this construct's development and notes that two critical pieces had been missing in explaining a person's health behavior: the value a person places on health, and a broader control-related expectancy construct such as self-efficacy. He came to understand the health locus of control as a moderator of the (equal or stronger) effect of a person's general control expectancy on their health behavior. Perceiving oneself to have some control over outcomes may bias the appraisal of stressors and threats as less dangerous, causing a lower HPA-axis response and reducing the damage stress causes.

In this case, it is not stressful events, but rather the perceived inability to manage them which produces detrimental biological effects (Bandura, 1991; Maier, Laudenslager & Ryan, 1985). In fact, some research has demonstrated perceived control to be just as or even more important than actual control in reducing both physical and psychological distress (see, e.g., Taylor, 1999).

Parallel to this work, Albert Bandura (1997) had isolated self-efficacy, a construct related to perceived control, as an underlying expectation of influence on people and outcomes in one's environment. Self-efficacy refers to a general conviction of personal agency: that one may be an effective actor in the world. Wallston and Bandura both find this general control expectancy at the root of a person's motivation to act. Wallston formulated a unidimensional construct applying general self-efficacy to the health context, which he named "perceived health competence." Empirical studies have shown that the more competent one feels, the greater the perceived control of one's health and the more positive the health outcomes (Smith, Wallston, & Smith, 1995). The Perceived Health Competence Scale (PHCS) has been used, for example, to predict exercise and health-information seeking behaviors in older adults (Marks & Lutgendorf, 1999) and to compare health-related self-efficacy between people with chronic obstructive pulmonary disease and chronic heart failure (Arnold et al., 2005) among many other non-heart-related chronic illnesses (see Ayers et al., 2007, for a review). Perceived control appears as helpful for coping with long-term debilitation, such as rheumatoid arthritis, as it is for coping with acute disorders (Schiaffino & Revenson, 1992). In this study I began with an attempt to replicate these findings using Wallston's Perceived Health Competence Scale

along with a general measure of perception of life control to operationalize the construct of perceived control in the health context and to evaluate my first hypothesis: *Greater perceived control is associated with better health.*

MECHANISMS OF PERCEIVED CONTROL: COPING & ANXIETY

Nearly half the deaths in the United States are caused by three health behaviors: smoking, over-eating, and drinking. This has been true for the past ten years; the only change has been that obesity and lack of exercise are poised to overtake tobacco as the most prevalent behavioral causes of death in the United States (Centers for Disease Control and Prevention, April 2004). Self-efficacy has not only a direct association with health outcomes, but is also a predictor of change in health behavior. In general, if a person perceives herself to be able to effect the outcomes she intends, then making a behavioral change makes sense. If a person perceives that she can change her behavior and outcomes, she is much more likely to be successful making health-related behavioral changes such as smoking cessation following myocardial infarction (Dornelas, Sampson, Gray, Waters, & Thompson, 2000), exercise behavior change following diagnosis with coronary heart disease (Mildestvedt, Meland, & Eide, 2008), and the consumption of a healthy diet (Brug, Lechner, & DeVries, 1995). If, on the other hand, she does not have an expectation that making the behavior change will improve her condition in life, she will not act (Bandura, 1997). This study explores how a perception of control might motivate coping behaviors and how those coping behaviors mediate the influence of perceived control on health. Perceived control may be exerting such a powerful influence

on quality of life because prognosis so strongly depends on health choices the patient is able to make and maintain.

Coping strategies are often grouped into problem-focused, emotional preoccupation and avoidance types, with an approach strategy being associated with direct engagement with the stressor, presumably with the expectation that one's engagement will improve one's outcome (Macrodimitris & Endler, 2001). Blaming oneself or others for one's illness is found to be maladaptive (Affleck, Tennen, Pfeiffer, & Fifield, 1987; Taylor, Lichtman, & Wood, 1984). Taylor (1999) speculates that healthy adjustment to disease (marked by acknowledgement and problem-focused coping) is key to mood maintenance and lifestyle changes that promote healthier behaviors; hostility, on the other hand, interferes with one's ability to adjust to and manage the disease. In a study by Daniel Bar-On (1986) with patients recovering from heart attack, those who attributed the cause of their myocardial infarction to elements under their own control, such as stress or smoking, were more likely to have made active plans for recovery, such as changing jobs or exercising, and to have returned to work and resumed other activities. Patients who attributed their heart disease to elements outside their control, such as bad luck or fate, had not made plans, had not returned to work, and were less likely to have resumed other activities (cf. Affleck, et al., 1987). Perceiving little control over one's outcomes is linked to fear and anxiety (Wallston, 1999; Macrodimitris & Endler, 2001).

Indeed, anxiety is a crucial component in the constellation of the predictors of health outcomes. Not only does state anxiety positively predict disengagement coping

and negatively predict problem-focused coping (Osowiecki & Compas, 1999; Scott-Sheldon, Kalichman, Carey, & Fielder, 2008; Prokopčáková, 1992), it also drops as perceptions of control and self-efficacy rise (Pond, R., Stephens, C., & Alpass, F., 2010; (Thomasson, P. & Psouni, E, 2010). Anxiety as a moderator has been found to interact with control to predict problem-focused coping (Weinstein, F., Healy, C., & Ender, P., 2002) and with problem-focused coping to predict superior daily health regimens in both clinical and nonclinical populations (Sultan, Epel, Sachon, Vaillant, & Hartemann-Hautier, 2008). The effects of coping, control, and anxiety have been tested together as an "interactional phenomenon" – the choice of coping solution has been shown to depend on anxiety and anticipated control over stressors (Torestad, Magnusson, & Olah, 1990). Thus, this study incorporates these three components to provide the fullest account of influences on health outcomes.

The health outcomes studied here are general composites of lifetime conditions, because individuals in the present study do not include patients coping with a specific disease. The Brief C.O.P.E. (Carver, 1997), the assessment of coping that will be used in the present study, requires subjects to endorse the ways in which they respond to stress in general. Asking about a general response to stress makes sense in light of the fact that the preponderance of mental and physical health sequelae to stress are remediated by a problem-focused response, and the focus of this study is to ascertain participants' general inclination towards perceived control and coping strategy. Because I expected that perceived control exerts its influence on health in large part via its underlying the ability

to change health behavior, I formulated my second hypothesis: *Coping strategies mediate the association between perceived control and health outcomes.*

DEVELOPING PERCEIVED CONTROL

Given the powerful associations with better overall health and management of both chronic and acute illness that perceived control seems to exert, researchers in self-efficacy and health psychology began to explore its origins. Rotter (1966), Bandura (1997), and Walker (2001) supposed that a person who has successfully exercised control in the past, termed veridical (as opposed to illusory) control, will expect that they can control or affect their outcome. Put another way, the sense that one is an effective actor who can influence outcomes is rooted in experience. Walker goes on to formulate perceived control and perceived social support as complementary variables in relation to control, i.e. part of what a person develops is an expectation of the responsiveness of others and "control" over mobilizing that support. The foundation of the perception of control in actual experience, rather than exclusively in an inborn trait for example, is central to my argument that it may be earliest relationships that organize the mind toward or away from addressing stressors directly.

John Bowlby's theory holds that a developing person has needs for both safety and exploration (Bowlby, 1973). John Bowlby developed this idea based on ethological theory, hypothesizing that humans are born with an attachment system designed to evaluate instinctively the availability of the caregiver and to adapt patterns of behavior to keep the caregiver near, in order to optimize chances for survival. Bowlby considered

meeting the need for exploration just as critical for survival. If the caregiver is dependable, wider and wider exploration of the world is possible and help, if necessary, is near. The infant forms an internal working model of herself as worthy of care and competent. If the caregiver is not dependable, safe exploration suffers and the infant's working model of herself is one of less value and reliability; the infant does not experience the practice of agency in the world. The infant learns very early to balance these needs according to the environment she finds herself in. The pattern developed can be traced through childhood, as developmentally appropriate agency – a child's belief that she can exert her control and influence her environment – is hampered either by helplessness or ineffectual persistence (Sroufe, 2005). Agency is thus conceptually similar to perceived control. Since the quality of the early mother-infant attachment relationship predicts agency during the preschool years, it is likely that perceived control might also be related to attachment security.

Anxiety may have similar relations with attachment security. Bowlby (1973) labeled the distress an infant experiences when the caregiver is not available "separation anxiety." If the child has an expectation based in experience that the caregiver will fulfill his safety and exploration needs, he will be less likely to develop anxiety. But if the caregiver is not experienced as consistently available, the child is fearful and develops general "free-floating anxiety." In a meta-analysis of 46 studies testing this theory, children's attachment insecurity accounted for 30% of the variance in the development of anxiety in childhood – an association that increases as the child matures through adolescence (Colonnesi et al., 2011). In a cross-lagged panel study comprising

exclusively adolescents, symptoms of anxiety were negatively related to the security of both current and future paternal and maternal attachment relationships (van Eijck, Branje, Hale, & Meeus, 2012). It may be that the lack of a secure base directly provokes anxiety, or that within a secure relationship with the caregiver, the child learns to regulate his emotions and tolerate anxiety better (Brumariu, Kerns, & Seibert, 2012). Whatever the mechanism, I do not hypothesize an association between anxiety and any specific insecure classification, as the evidence to date has been mixed on that point. Rather, given its past associations with control and coping, and its position at the heart of developing attachment patterns, I will be using generalized anxiety as a control variable when examining any additional influences of past attachment security on health behaviors (Viana & Rabian, 2008).

In the present study, past attachment security in adulthood is assessed by interviewing adults about their relationship with their parents during childhood. An objective record of what actually happened during their childhood does not exist. Rather, we assess the way adults *represent* their earliest relationships. How the speaker currently formulates his past experience of care may be more important for how he manages his health currently than what actually happened in his childhood. The Adult Attachment Interview (AAI) is a research tool which elicits patterns in the way people talk and think about their earliest experiences (Main, Goldwyn & Hesse, 2003). Its creators speculate that the mind itself is organized by the pattern of care and our own responses to it. The interviewer asks a prescribed set of questions and probes, and the interview lasts between an hour to an hour and a half, on average. A reliable coder then analyzes the text for

coherence (see Measures – Adult Attachment Interview for a detailed description). An adult speaker classified as Secure speaks in a balanced, coherent way about the care he received as a child. He seems to value his needs and his relationships without being helplessly enmeshed or angry about them in the present (as the Preoccupied speaker is), nor idealizing, derisive, or bluntly unavailable to discuss it (as the Dismissing speaker is). (For a thorough exposition on the hypothesized paths to forming these representations and a meta-analysis of the empirical evidence for them to date, see van IJzendoorn, 1995).

But whether her representations of events are veridical or not, the adult seems to use them in a consistent way to manage relating with her own parents and children. A mother's adult attachment representation, as revealed by the AAI, is very highly correlated (>.80) with her child's attachment security, as measured by the Ainsworth Strange Situation procedure (van IJzendoorn, 1995). We are hypothesizing that the way she responds to her child's needs for safety, support, and autonomy may be related to the way she responds to her own needs for safety, support, and autonomy. This study seeks to understand whether she also manages relating to her Self and her own dependency needs in a similarly predictable pattern, as has been speculated theoretically (Banai, Mikulincer & Shaver, 2005).

Prior research in psychosomatics and support processes has established a framework associating adult attachment security with health and coping. Using questionnaires assessing adults' attachment "style" with respect to close adult partners, associations have been found between the way adults think about current relationships

and their own health. Attachment styles of adults and their elder parents are also shown to affect the interaction between the generations in later life, including their support and care behaviors (Merz, Schuengel, & Schulze, 2008). Indeed, compelling new research is emerging that attachment style may underlie our health and support behaviors in adulthood, i.e. if we have internalized personal agency and worthiness, expect the world to respond reasonably, and can tolerate dependency and intimacy – all hallmarks of attachment security – we make sounder choices about our health habits and benefit more from social support.

Indeed, problem-focused coping strategies encompassing acceptance, knowledge, active management, and social support are associated with a sense of control. Attachment patterns have been proposed as the missing developmental link underlying the origins of coping strategies (Strauss, 2004). Secure adults are more likely to turn to their partner for support when distressed (Crowell, Treboux, Gao, Fyffe, Pan, & Waters, 2002) and such support may help them manage their stress. Attachment style has been shown to moderate coping with breast cancer and ulcers (Schmidt et al., 2002), influence diabetes management (Attale, Guedeney, Sola, Slama, Dantchev, & Consoli, 2004), interact with social support to reduce stress (Ditzen, Schmidt, Strauss, Nater, Ehlert, & Henrich, 2007; Ognibene & Collins, 1998), and affect both perception of and physical response to chronic and acute stress (Maunder, Lancee, Nolan, Hunter, & Tannenbaum, 2006). However, though these studies are based conceptually in attachment theory, the measures of attachment security they employ are questionnaires on the subjects' comfort with closeness with their adult romantic partners. It cannot be assumed that the

attachment styles reported in adulthood between romantic partners are related to those formed in infancy between children and their primary caregiver and observed in adults. Although there is some evidence for the importance of family experiences in the development of adult romantic attachment processes, there is little evidence of a simple or direct relationship between childhood attachment style and adult romantic attachment style. Indeed, several studies have found only weak convergence between self-report and interview measures of adult attachment (Jacobvitz, Curran & Moller, 2002; Shaver, Belsky, and Brennan, 2000). Because I hypothesize that perceived control and coping strategies are rooted in the way adults represent their care during childhood, I hypothesize that: *Adult attachment security as measured by the AAI is associated with greater perceived control and problem-focused coping strategies.*

In summary, the current study proposes first to replicate the relations among perceived control, coping strategies, and anxiety as a constellation of predictors of health, and ultimately to test the relation of adult attachment security with those predictors. As this is the first study to examine the role of attachment security as assessed with the AAI and health outcomes, I will empirically generate clusters of coping strategies to uncover associations between participant's attachment status and their coping strategy. For insecure speakers, the Adult Attachment Interview yields a specific type of insecurity – dismissing or preoccupied – which may orient the mind toward certain coping strategies. The dismissing speaker is known to see himself as normal and independent, and typically speaks in a matter-of-fact manner, avoiding discussing feelings (Main, Goldwyn, & Hesse, 2003). Depending on how conscious dismissing speakers are of their tendency to

minimize negative events or feelings, they may endorse acceptance and problem-solving on the coping measure, but may also use coping tactics such as distraction and minimization. Preoccupied speakers seem to be entangled in past relationships and ineffectual in seeking help. Hence, we anticipate finding more preoccupied speakers to use strategies associated with "emotional preoccupation coping" (Macrodimitris & Endler, 2001), a method of coping focusing more exclusively on reducing emotional distress and which is much less effective than a more direct problem-focused approach. We expect adults classified as preoccupied to endorse not only seeking support and advice, but also venting, denial, the use drugs and/or alcohol, and/or refusing to take responsibility for managing the stressor. Neither type of insecure speaker is expected to be effective at mobilizing social support; the dismissing speaker because she does not perceived herself to need it, and the preoccupied speaker because she cannot be soothed and regulated by it. Analyzing a breakdown of attachment insecurity and predictors of specific maladaptive coping strategies will be an exploratory portion of the proposed study.

Methods

SUBJECTS

To date, data have been obtained in follow-up from 78 adults (ranging in age from 24 to 57 years), the subject pool for this study. They come from two different sources: the Life Experiences and Health Project (n=31) and the ongoing Parents & Partners longitudinal study (n=47).

The participants in the Life Experiences and Health Project (LEAHP) study were recruited with flyers, direct solicitation at several child care facilities in Austin, Texas, and email contact to parents on waiting lists for those child care centers. The sample is women, 85% white and middle class; the remainder are split evenly between Asian, Latino, and Other. The average age is 37 years.

The current wave of the ongoing Parents & Partners (P&P) longitudinal study is the source of 47 participants (41 women, 6 men), originally recruited from birthing classes, birth announcements, public service radio announcements, and flyers. At the time of their initial recruitment, only couples who were living together, expecting their first baby, and who spoke English as their first language were recruited. Most were married (91%), most were Caucasian (82%), and the rest were Hispanic (7%), African-American (2%), or Native American, Middle Eastern, or Indian (8%). The combined income of 80% of the couples was $44,800 or more per year (adjusted for inflation). The proportion of mothers who had completed at least some college was 69%, and 23% of the mothers held an advanced degree. Their average age is now 54 years.

Based on a model of 3 interacting predictors of health – attachment security, perceived control, and coping style – we used G*Power 3.0.10 to calculate that 38 participants would be required to identify an effect of size .3 and 74 participants would be required to identify an effect of size .15. Thus the current data are reported with 78 participants.

PROCEDURES

The subjects in this study have all been administered the Adult Attachment Interview as part of their participation in prior or ongoing studies in the Jacobvitz-Hazen lab at the University of Texas at Austin. Some were administered the interview prior to the birth of their first child; some were interviewed who already had pre-school-aged children. This study on perceived control is part of a broader initiative researching any relations between developmental attachment security, health behaviors, and health outcomes, covered under the University of Texas IRB proposal #2010-02-0102.

In this follow-up study participants completed an online survey on perceived control of health, coping strategies, and health outcomes. As each subject agreed to complete the survey, she received a link to the survey, then a compensation gift card in appreciation of the spent participating in this research.

MEASURES

Perceived Control. Participants were administered two measures of perceived control. The first is the 8-item unidimensional Perceived Health Competence Scale (Smith, Wallston, & Smith, 1995), used to evaluate participants' level of perceived control with respect to their health. The questions on this scale load on a single factor

and include such items as “It is difficult for me to find effective solutions to the health problems that come my way” and “I’m generally able to accomplish my goals with respect to my health.” The second is a measure of perceived control over life in general from the National Survey of Midlife Development in the United States, or MIDUS survey (Lachman, Markus, Marmot, Rossi, Ryff, & Shweder, 1995). The participant reports the level of general control she has over her life, on a -3 to +3 scale. (See Appendix A for the measures comprising the perceived control composite.) To accommodate for Bandura’s (1997) suggestion that general control may be as much or more important than specific health control, I defined the perceived health control composite a priori as the MIDUS general life control item added to the total Perceived Health Competency Scale score.

Coping. The coping style of participants was assessed using the Brief C.O.P.E. (Carver, 1997), a 28-item measure asking about typical coping behaviors. It is a shorter set than the full C.O.P.E., which subjects often found too repetitive and tedious. It identifies preferred coping choices and has been used with medical operations, natural disaster, and hurricane survivors (Carver, 1997). Instructions to the participant encourage them to consider how they cope in general, rather than with any one specific current life stressor. Each of the 14 scales (self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame) in the C.O.P.E. consists of 2 questions. These items were analyzed as described in the data analysis section below to derive factors reflecting adaptive coping.

All but three scales (venting, denial, and acceptance) of the Brief COPE showed test-retest reliability across three time points as .60 or higher; the remaining three met the minimally acceptable threshold (Nunnally & Bernstein, 1994) of .50 or higher. (See Appendix B for the Brief C.O.P.E.)

Health. We assess mental and physical health with a series of health behavior questions and participant-reported diagnoses, which include tobacco use and alcohol use; BMI assessed with height and weight; waist and hip circumference measurements to generate the waist-to-hip ratio; and past mental and physical health diagnoses. Appendix C contains the complete set of health assessments, which are a subset of the National Survey of Midlife Development in the United States (MIDUS) (Lachman, Markus, Marmot, Rossi, Ryff, & Shweder, 1995). The mental health outcome is defined as the sum of the following diagnoses: schizophrenia, chronic sleeping problems, bi-polar disorder, drug dependency, alcoholism, and depression. The physical health outcome variables are 1) a weight composite: the factor of waist-to-hip ratio by BMI (WHO, 2008); and the sum count of the following physical diagnoses: diabetes, heart disease, recurring backache, high cholesterol, stroke, hypertension, lung disease, liver disease, arthritis, cancer, and skin disorders.

Adult Attachment Security. Adult attachment security was assessed using the semi-structured Adult Attachment Interview (Main, Goldwyn, & Hesse, 2003). This interview is coded for the way the speaker expresses himself as evaluated against Grice's linguistic maxims of coherence and whether he speaks in an entangled, angry, idealizing, or dismissing way about his attachment figures. The interview is transcribed verbatim,

and the coder uses only the transcripts (as opposed to aural or visual cues) to analyze the participant's speech. The way a speaker represents her childhood and her parents as measured by the AAI is very highly correlated with her child's security classification as measured by the Ainsworth Strange Situation (van IJzendoorn, 1995). Mary Ainsworth's student Mary Main has speculated that there is something in the organization of the caregiver's mind which leads her to treat her infant in predictable ways. This study explored whether this caregiving pattern might extend to the adult herself, i.e. whether the adult treats her own health needs using corresponding patterns.

The AAI starts with questions about the participant's early childhood experiences of each parent, as well as requests for the speaker to furnish examples of the descriptors they use. The interviewer asks for the participant's own analysis of why she believes her parents behaved the way they did, and how she feels her childhood has influenced her adult development. She is asked to talk about any major losses or trauma and to speculate on how her past might influence her parenting of her own children. Though the recounting of specific life circumstances and events is used by the coder to gauge the speaker's consistency and to get some idea of any major adversities, the primary purpose of the interview is not to evaluate the speaker's history, but to evaluate how the speaker is able to talk about it.

The AAI is coded using nine scales, each coded on 9-point Likert scale: 1=low; 9=high). The coder uses these scales to categorize the adult speaker into a primary organized classification of secure, dismissing, or preoccupied, and a disorganized classification as necessary of unresolved with respect to loss or trauma. If a speaker

reveals specific signs of being unresolved with respect to trauma or loss, this classification is always given first and followed by the next best fitting organized classification. Secure speech is marked by coherence, defined as consistency of episodes recounted and the speaker's interpretation, direct and fresh speech, the ability to talk about negative experiences in a way that neither excuses nor withdraws them, and availability to tell a story without altering it strategically or losing intention. The coherence of transcript and coherence of mind scales are thus key in evaluating security. Each of the insecure classifications is associated with a closed, inflexible, *incoherent* way of talking about the past. The scales associated with insecurity are designed to capture in which of several ways the speaker does not seem able to evaluate her parents and her childhood in an open, balanced way, that is, in which ways the speaker violates the principles of coherence:

Dismissing. A classification of dismissing is associated with high scores on one or more of four scales: idealization of parent, insistence on lack of recall, dismissing derogation, and fear of loss.

1. Idealization. The idealizing speaker describes her parent(s) in glowing terms but cannot support this representation with any anecdotes or specific details of quality attention to herself as a child. In answer to the probe, "You described your mother as loving. Please provide an example of a time when she was loving to you in your early childhood" the speaker might respond, "Because she was an excellent mother." A persistent inability to

support glowing generalities is considered a sign of being closed to this topic.

2. Insistence on lack of recall. The speaker may insist systematically that she cannot remember any details of her childhood. While a secure speaker may have trouble at first recalling specifics, typically she will eventually provide some support for the way she characterizes her childhood. On the other hand, the dismissing speaker makes it clear she is either not able or not available to discuss her past at all.
3. Dismissing derogation. Derogating speech is marked by brief, strong contempt of attachment relationships or figures. These speech acts are different from anger, in that they indicate the event or parent is foolish, laughable, and/or not worth the time to discuss. The derogation closes the subject and forces the interview on without evaluation.
4. Fear of loss. This scale measures a somewhat rare but highly powerful indicator that the speaker has profound and unfounded fear of loss of their own child. The fear does not seem based current reasonable risk, but rather on some past experience now lost to awareness. It is the only scale which measures the speaker's assessment of a current relationship.

Again, dismissing speech violates coherence by forcing a closing of the topic at hand. The coder does not speculate on whether the closure is willful or not. Indeed, it often appears to be a default mode of thinking and talking that does not allow evaluation of the past.

Preoccupied. A classification of preoccupied is associated with a high score on one of the following two scales:

1. Involving/preoccupying anger. When the speaker becomes actively angry, as if the relationship problem is happening in the present moment, her speech is coded high on this scale. Expressing rage felt in the past, or the existence of ongoing disappointment or resentment does not necessarily qualify here; rather the speaker seems drawn out of the context of the interview, may illicit the interviewer's sympathy, or may even address the interviewer as the parent. The speaker may use psychological jargon to define the parent or relationship, may oscillate in her evaluation beyond a generally balanced reflection, and often slips in speech with respect to tense and person.
2. Passivity/vagueness in discourse. This speech is vague, inarticulate, or even child-like; the speaker seems not to be able to finish complete thoughts or stay on topic. Sentences are littered with vague or nonsense terms and do not seem to reach a destination. The coder is left with an inchoate representation of

> childhood experiences, lost in irrelevancies and contradictions. This scale is coded using both frequency and strength of these linguistic features.

To reiterate, preoccupied speech violates coherence by becoming entangled and lost in the present about events and feelings from the past. Grice's maxims of quantity, relevance, and manner are systemically violated. Though the speaker may appear to be evaluating past experience by talking about it so much, close examination reveals rather a kind of looping of ideas, an unfruitful absorption in trying to grasp clear ideas about the past (passivity), or an ongoing enmeshment (angry preoccupation), demonstrating the speaker's inability to make any fresh evaluation of the topic.

Secure. The secure speaker is identified primarily by the *absence* of high scores on the scales associated with insecurity and by moderate to high scores on the coherence of transcript, metacognitive monitoring (rare demonstration of monitoring and reporting on the processes of thinking while the interview is in progress), and coherence of mind scales. As such, secure speakers have the greatest range of variability. They are also recognized by fair and balanced speech; a measure of forgiveness for, or at least recognition of, the influence their past has had on their current state of mind; speech that seems freely flowing and autonomous; an ability to evaluate past experiences and current choices flexibly and in the moment; valuing of relationships, both past and present; and a general collaboration with the interviewer, using a manner that is complete and absent of unlicensed, i.e. unqualified or unexplained, contradictions. The secure speaker is not

required to evince all of these. Rather, she must be able to represent a coherent and open account of how she thinks about her parents and early experiences, revealing a mind that is open to the topic.

Unresolved. The patterns above are referred to as "organized." They are strongly associated ($r > .80$ (Hesse, 2008)) with the way parents seem to treat their children, with adult attachment representation (AAI)-to-infant attachment classification (Ainsworth Strange Situation) associations as follows: dismissing adult-to-avoidant infant, preoccupied adult-to-anxious/resistant infant, and secure adult-to-secure infant. There is also a disorganized adult attachment classification highly correlated with infant disorganization: Unresolved.

> *Unresolved.* Speech scoring highly on the indices of disorganization and/or disorientation in reasoning, discourse, or reported behavior while discussing the loss of or abuse from a major attachment figure qualifies the speaker for an unresolved attachment classification. These brief but marked lapses may include expressions that the lost person is not dead, unreasonable self-blame, confusion between the lost/abusing figure and the self, and disorientation with respect to time or space. The speaker may also use psychologically confusing statements and techniques, describing impossible tricks of the mind or feelings. In addition, the speaker's conversation may change, to include lengthy irrelevant details, eulogistic speech, sudden changes in topic, or

> invasions of the traumatic topic where it otherwise doesn't belong. The coder may also take into account any reported extreme responses (loss of life control, suicide attempts, severing of other relationships) as moderate indices of lack of resolution regarding the trauma.

When an adult scores at least at the mid-point on the indices of unresolved she is given a primary classification of Unresolved. The coder also always includes the next organized classification, and though these adults are more likely to have a secondary insecure classification, it is not rare for the second classification to be secure. When the unresolved category is included in an analysis, it is referred to as using the 4-way, rather than the 3-way, classification. We used primarily the first organized classification for each participant, though the 4-way classification was tested as well, to explore any links between being unresolved for loss or trauma and health.

The 9 scoring scales, the 3- and 4-way categorical classification, the coherence scale alone, and binary secure vs. insecure codes are all available for use in analyzing any association between adult attachment classification and our outcome variables of interest. As attachment theory postulates that very different mental representations are at the source of each insecure category, I ensured before analyzing that enough participants were collected so that the coherence scale or binary secure vs. insecure designations as the prediction measure were not required.

The AAI has been shown to be stable over time. The reliability and validity of the AAI have been demonstrated by several studies. In a sample of 90 English mothers,

Fonagy, Steele, & Steele (1991, cited in van IJzendoorn, 1995) obtained a test-retest reliability rate of 80% when the AAI was administered on two occasions, 6 months apart. Discriminant validity has been demonstrated by a meta-analysis, in which AAI classifications have been found to be independent of verbal and performance IQ, autobiographical memory, social desirability, personality, and narrative style when discussing other topics (van IJzendoorn, 1995). One of the primary strengths of the proposed study is its use of the AAI over against self-report measures of feelings of attachment for adult partners. Attachment theory argues that individual differences in attachment style will be relatively stable over time in part because working models tend to function automatically and unconsciously, and because they serve to direct attention, as well as organize and filter new information (Bowlby 1988; Bretherton 1985; Collins and Read, 1994). The AAI interviews were analyzed by coders with the highest reliability ratings, and almost half were double-coded to ensure accuracy.

DATA ANALYSIS APPROACH

Preliminary Analysis

Descriptive Analyses. First, I present the means and standard deviations for each of the variables in this study: coherence, perceived control, coping, and health, as well as frequencies for the 3-way and 4- way adult attachment classifications and binary secure/insecure attachment classifications.

Data Reduction. I use exploratory factor analysis to determine whether any of the 14 coping scales could be combined into latent variables representing adaptive and

maladaptive coping (Carver, 1997). I evaluate the contribution of each scale to our health composite outcome. Though there are no specific hypotheses that some scales will mediate the perceived control to health outcomes relation better than others, we do expect some to be less powerful in a model that originates with attachment security. For example, attachment theory would suggest that greater security may be associated with greater use of support, active coping, planning and acceptance coping; it may be more weakly related to the use of self-distraction, denial, substance use, behavioral disengagement, or self-blame. Scales measuring the use of humor or religion were not expected to be associated with attachment representation at all.

Relations among Variables. Once the measures were compiled, I ran correlation coefficients between the predictor variables, coherence, perceived control, and coping to identify any covariance among them; I also ran the corresponding frequencies with the 3-way and 4- way adult attachment classifications and binary secure/insecure attachment classifications.

Finally, each of the hypotheses were tested. For each of the following analyses, I controlled for gender, current anxiety, and time since being administered the AAI, to confirm there are no patterns in association depending on these covariates.

Hypothesis Testing

Hypothesis 1. *Greater perceived control is associated with better health.* I employed a standard OLS regression of health onto the perceived control composite as the first part of a mediation model including coping. I evaluated each of the health items

– weight composite (waist-to-hip ratio x BMI), number of physical health diagnoses, number of mental health diagnoses – independently.

Hypothesis 2. *The relation between perceived control and health is at least partially mediated by coping strategy.* I use mediation analysis (Baron & Kenney, 1986) to determine whether coping strategy mediates the relation between perceived control and health. Perceived control may retain a direct effect on health as a method of stress-reduction, so I did not necessarily expect coping strategy fully to mediate any relation.

Hypothesis 3. *Adult attachment security as measured by the AAI is associated with greater perceived control and problem-focused coping strategies.* The best option using attachment classification as a predictor is to use the categorical indicators, as the insecure classifications codify very different representations of childhood experiences. Thus, when the 3-way or 4-way classifications were effective at explaining variance in perceived control, coping strategies, or health outcomes, only the classifications will be used in the analysis.

A limitation to using the 3-way and 4-way attachment classification is a reduction in power. However, it is necessary to use the 3-way and 4-way attachment classifications in order to look at the insecure classifications separately. An avoidant coping style, associated with a dismissing attachment representation (Schmidt, Nachtigall, Wuethrich-Martone, & Strauss, 2002), has very poor outcomes with respect to health. There is no hierarchy of attachment insecurity; each category characterizes a qualitatively different approach to vulnerability in adulthood. A binary secure vs. insecure indicator or the

continuous coherence scale may be a more powerful predictor, but the categorical analysis offers the greatest ecological meaning.

Results

This study tested the general model that subjects' representations of childhood, as measured with the Adult Attachment Interview, underlie their level of perceived control, which informs the coping strategies they use and ultimately the quality of their mental and physical health. Presented first are the data reduction results for the coping composite, as it is then used as an independent variable in subsequent regression analyses. All regression analyses include the three major control variables: gender, years since the Adult Attachment Interview was administered and recent symptoms of anxiety, unless stated otherwise. When these controls are significant, they are reported in the results tables. I will first present the proposed models and results associated with the mental health outcome, followed by those for the physical health outcomes.

Data Reduction. There are no standard composites of the 14 scales on the C.O.P.E. assessment; Carver (1997) encourages researchers to analyze any relations between the scales on a study-by-study basis. Thus I conducted an exploratory factor analysis using the C.O.P.E. scales, which yielded three factors. The humor and religion subscales were omitted because the items did not load on any factor at greater than the .30. The final rotated (varimax) factor loadings are in Table 1.

Table 1. Coping Factors: Rotated (varimax) Factor Pattern

	Factor 1: Approach	Factor 2: Support	Factor 3: Avoidance
C.O.P.E. Scales			
Active coping	.78	.14	.21
Planning	.77	-.04	.03
Acceptance	.55	.19	.25
Positive reframing	.46	.12	.08
Use of emotional support	.19	.91	.11
Use of instrumental support	.30	.78	.08
Venting	-.03	.53	.21
Self-blame	-.13	.20	.65
Self-distraction	.03	.17	.62
Denial	-.05	.07	.49
Substance use	.05	-.09	.46
Behavioral disengagement	-.27	-.01	.34

The instrumental support subscale met the .30 loading criterion for both the approach and support factors, therefore it was included in both. The factors were then assembled by standardizing each scale, applying the standardized scoring coefficient to each, and summing them. The names for each factor were based on the items that loaded together: "approach" coping items have in common that the subject endorsed engaging with the stressor itself; "support" coping scales describe engaging with another person; and "avoidance" scales seem to be strategies for directing one's attention away from the stressor.

Using the coping factors, correlations were conducted among all of the variables that will be used in subsequent analyses (see Table 2). Frequencies of the AAI 3-way and 4-way classifications are in Table 3.

Table 2. Correlation Coefficients among Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11
1 Perceived Health Control											
Coping Variables											
2 Coping Factor 1: Approach	.37**										
3 Coping Factor 2: Support	.18	.28*									
4 Coping Factor 3: Avoid	.19†	-	.23*								
Total Coping	.17	.56**	.75**	.49**							
Health Outcome Variables											
6 Weight Composite	-.58**	-†	-.16	-.04	-.16						
7 Mental Health Diagnoses	-.10	-	.30**	.47**	.39**	.06					
8 Physical Health Diagnoses	-.37**	-	-.08	.09	-.07	.54**	.35**				
Covariates											
9 Years since AAI	-.22†	.02	.07	-.05	.00	.32**	.18	.42**			
1 Gender (1=female; 0=male)	.05	.10	.20	-.03	.07	-.22*	.00	-.15	-.23*		
1 Anxiety	-.40**	-**	.07	.58**	.12	.08	.39**	.14	.21†		
AAI 3-way analysis:											
1 Secure (1) vs. Not secure(0)	.17	.24*	.25*	.13	.39**	-.20†	.14	-.09	-.08	.18	.07
1 Dismissing(1) vs. Not dismissing(0)	-.20†	-†	-.33**	-.17	-.39**	.27*	-.10	.21†	.20†	-.35**	-.09
14 Preoccupied(1) vs. Not	-.00	-.08	.02	.00	-.09	-.04	-.08	-.11	-.10	.14	.00
AAI 4-way analysis:											
1 Secure(1) vs. Not secure(0)	.08	.23*	.20†	.02	.28*	-.06	.00	-.08	-.00	.10	.01
16 Dismissing(1) vs. Notdismissing(0)	-.24*	-.23*	-.26*	-.11	-.36**	.18	-.10	.13	.21†	-.28*	-.01
17 Preoccupied(1) vs. Not	-.05	-.05	-.02	-.08	-.11	.03	-.12	-.10	.00	.09	-.08
18 Unresolved(1) vs. Not unresolved(0)	.17	-.04	.00	.13	.05	-.10	.16	.05	-.17	.05	.08
Mean	37.1	0.00	0.0	0.0	66.8	21.8	.67	.91	11.76	.92	11.81
Standard deviation	6.94	.85	.97	.70	8.58	5.56	1.0	1.1	7.83	.27	4.82

N=78. † $p < .10$ *$p < .05$ **$p < .01$ ***$p < .001$

Table 3. Frequency of 3-way and 4-way AAI Classification by Subject Pool

3-way Classification		4-way Classification	
Full Subject Pool; n=78			
Secure	49	Secure	40
Dismissing	15	Dismissing	12
Preoccupied	14	Preoccupied	7
		Unresolved	19
LEAHP Subjects (AAI in 2007-2011); N = 31			
Secure	21	Secure	16
Dismissing	3	Dismissing	2
Preoccupied	7	Preoccupied	3
		Unresolved	10
PPP Subjects (AAI in 1994); N = 47			
Secure	28	Secure	24
Dismissing	12	Dismissing	10
Preoccupied	7	Preoccupied	4
		Unresolved	9

Modeling Mental Health. To test the hypothesis that greater perceived control is directly associated with greater mental health, I regressed participants' lifetime total number of mental health diagnoses onto their perceived control. Perceived control was not directly related to total mental health diagnoses (Appendix D, Table D1). Rather, in the ordinary least squares regression with perceived control, the current anxiety covariate was the only significant predictor of mental health diagnoses ($b = .08$, $p < .001$). As the association was strong, I explored relations between perceived control and anxiety directly and found they were negatively associated ($b = -.26$, $p < .01$; Appendix D, Table D2). The number of years since the subject had been administered the AAI was not a predictor of the number of mental health diagnoses, i.e., greater age did not predict

increasing mental health diagnoses. In sum, the first hypothesis – that greater perceived control will be associated with better mental health – was not supported; rather, mental health diagnoses had the strongest association with anxiety, which was in turn associated with lower perceived control.

The second hypothesis was that the relation between perceived control and health would be partially mediated by an adult's coping strategy. As perceived control was not significantly directly related to mental health diagnoses, I did not test this hypothesis. However, consistent with the goal of this research I conducted a regression analyses to determine whether the three coping factors – approach, avoidance and support – were directly associated with the number of mental health diagnoses. As shown in Table 4, neither approach nor support coping bore a significant relation to the mental health outcome; avoidance coping alone significantly predicted mental health diagnoses (b = .35, $p < .05$). Though the anxiety control had been the only significant predictor of mental health diagnoses in a model with perceived control, it was not significant in a model with avoidance coping.

Table 4. OLS Regression: Number of Mental Health Diagnoses onto Coping Factors

	Approach + Support + Avoidance Coping
	b(SE)
Number of Lifetime Mental Health Diagnoses	
Intercept	.23(.28)
Approach	.04(.11)
Support	.10(.10)
Avoidance	.35(.15) *
R^2	.21

N=78. † $p < .10$ *$p < .05$ **$p < .01$ ***$p < .001$

It seemed reasonable to suppose that a person's anxiety level might influence the coping strategies she picks. Anxiety might prompt one to avoid stressors, for example. Considering that anxiety strongly predicted both the number of mental health diagnoses and avoidance coping, and that avoidance coping was also associated with number of mental health diagnoses, I examined whether avoidance coping mediated the relation between anxiety and mental health. Following mediation analysis steps (Baron & Kenny, 1986), I regressed number of mental health diagnoses onto anxiety ($b = .05$, $p < .01$), avoidance onto anxiety ($b = .09$, $p < .001$), and then mental health diagnoses onto avoidance, controlling for anxiety. With both predictors in the model, the relation with anxiety dropped by eighty percent ($b = .01$, n.s.) and the relation with avoidance was strongly significant ($b = .44$, $p < .01$). The Sobel test confirmed this mediation to $p < .01$. These results are shown in the mediation analysis portion of Figure 1.

To test the final hypothesis, that attachment security is related to perceived control, I used standard OLS regression of the perceived control composite onto both 3-way and 4-way adult attachment classifications, as shown in Table 5. Attachment classification, particularly dismissing speech (versus secure) was significantly associated with lower perceived control in the 3-way analysis ($b = -4.31$, $p < .05$), and showed a non-significant trend in the 4-way analysis ($b = -4.24$, $p < .10$). Attachment security added 9% to the variance explained to the 3-way model with anxiety alone ($r^2 = .14$) and 12% to the variance explained to the 4-way model with anxiety alone ($r^2 = .12$).

Table 5. OLS Regression of Perceived Health Control Composite onto Adult Attachment Classification

	Perceived Health Control Composite	
	b(SE)	*b(SE)*
3-way analysis; Secure is Baseline		*4-way analysis; Secure is Baseline*
Intercept	45.91(2.13)	45.18(2.14)
Dismissing	-4.31(2.00) *	-4.24(2.16) †
Preoccupied	-1.12(1.92)	-2.27(2.59)
Unresolved	--	1.49(1.77)
Controls		
Anxiety	-.57(.15) ***	-.57(.15) ***
R^2	.23	.24

N=78. † $p < .10$ *$p < .05$ **$p < .01$ ***$p < .001$

In summary, in testing the hypothesized associations using separate OLS regressions, the following relations with mental health diagnoses emerged (Figure 1).

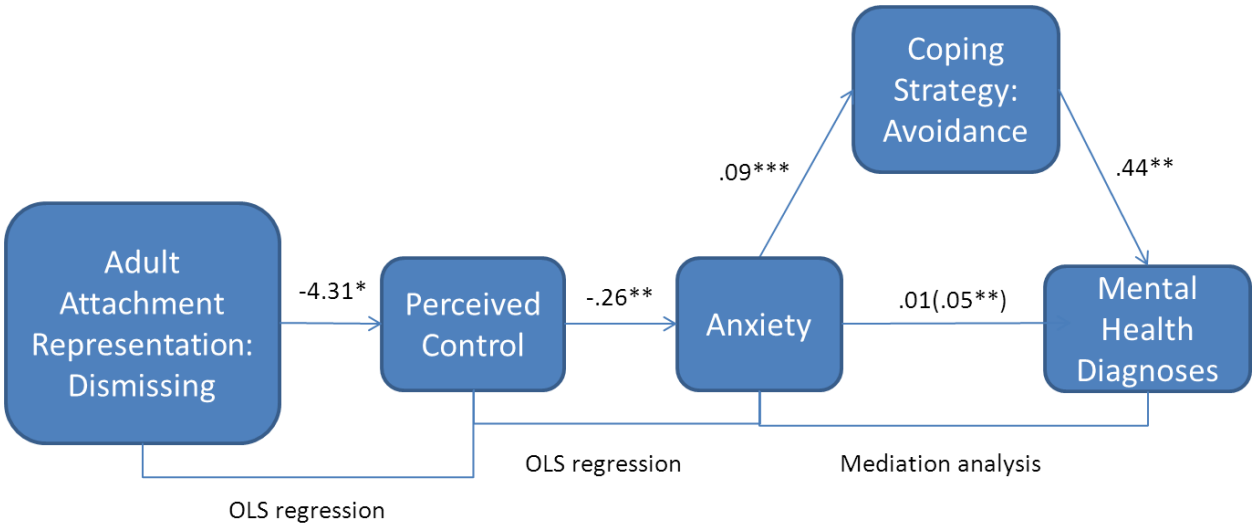

Figure 1. Relations among predictors of number of mental health diagnoses conducted in separate OLS regressions.

Modeling Physical Health. The next set of analyses evaluated the three hypotheses as they related to physical health outcomes. I used standard ordinary least squares regression in R v.2.11.1. to test the first hypothesis – that greater perceived health control will be associated with better physical health. Perceived health control was strongly negatively associated with both the weight outcome (waist-to-hip ratio by BMI) ($b = -.49$, $p < .001$) and the number of physical diagnoses reported by subjects ($b = -.05$, $p < .01$) (Appendix D, Table D.1). As expected, the years since taking the AAI was an important covariate, accounting significantly for increases in health diagnoses and weight associated with increasing age.

To test the second hypothesis, that coping strategies mediate the relation between perceived health control and health outcomes, I conducted a mediation analysis (Baron & Kenney, 1986). The next step was to test whether coping strategies were related to perceived health control. Table 6 shows the results of the regression models for each coping factor. Approach coping ($b = .04$, $p < .01$) and support coping ($b=.04$, $p < .05$) were both significantly related to perceived health control; avoidance coping was not. Avoidance coping showed a non-significant negative positive trend with the number of years since the administration of the Adult Attachment Interview ($b = -.02$, $p < .1$), suggesting that subjects might use that coping strategy less as they age. Avoidance coping was strongly associated with anxiety ($b = .09$, $p < .001$). Approach coping, on the other hand, showed a non-significant negative trend with anxiety ($b = -.04$, $p < .1$). Continuing to test a mediation model was thus supported only for approach and support coping.

Table 6. OLS Regression of Coping Factors onto Perceived Health Control Composite

	Coping Factor 1: Approach	Coping Factor 2: Support	Coping Factor 3: Avoidance
	b(SE)	*b(SE)*	*b(SE)*
Perceived Health Control Composite			
Intercept	-1.22(.29)	-1.84(.82)	-.99(.50)
Perceived Health Control	.04(.01)**	.04(.02)*	.00(.01)
Controls			
Years since AAI	.02(.01)	.02(.01)	-.02(.01)†
Gender	-.36(.34)	-.80(.41)†	.17(.25)
Anxiety	-.04(.02)†	.03(.02)	.09(.01)***
R^2	.20	.11	.37

N=78. † $p < .10$ *$p < .05$ **$p < .01$ ***$p < .001$

The third mediation step was to regress the outcome onto the mediator, controlling for the original predictor, here health outcomes onto the coping factors, controlling for perceived health control. The weight composite trended down as approach coping increased (b = -1.34, p < .1), but otherwise both physical health outcomes were predicted primarily by the years since the AAI had been administered. The influence of subjects' age on their weight and physical diagnoses may have been overshadowing any association with coping strategy. Although the second hypothesis was not supported for the entire subject pool, the mediation model was tested again with the older set of participants, who had taken the Adult Attachment Interview 18 years prior.

The relation between the physical health outcomes and the primary predictor, perceived health control, remained positive and significant. Table 7 shows the association between perceived control and the weight composite was $b = -.56$ ($p < .001$); and between perceived control and the other physical diagnoses was $b = -.06$ ($p < .05$).

Table 7. OLS Regression of Physical Health Composites onto Perceived Control Composite (Older Subjects Only)

	Weight Composite	# Physical Diagnoses
	b(SE)	*b(SE)*
Perceived Control Composite		
Intercept	45.43(4.46)	3.27(1.16)
Perceived Control	-.56(0.10)***	-.06(0.03)*
R^2	.46	.12

N = 47. † $p < .10$ *$p < .05$ **p<.01 ***p<.001

For the older subjects only, the relation between coping strategies and perceived health control also remained intact (Table 8). The association between perceived control and approach coping remained significant ($b = .05$, $p < .01$); that between perceived control and support coping dropped to marginal significance $b = .04$, $p < .1$). Similar to findings in the entire sample, avoidance coping was only predicted by anxiety ($b = .09$, $p < .001$) in the older subsample. Thus, for approach coping and marginally for support coping, the second mediation step succeeded in the older age group.

Table 8. OLS Regression of Coping Factors onto Perceived Control Composite (Older Subjects Only)

	Coping Factor 1: Approach	Coping Factor 2: Support	Coping Factor 3: Avoidance
	b(SE)	*b(SE)*	*b(SE)*
Perceived Control Composite			
Intercept	-1.4(.72)	-1.70(.95)	-1.15(.63)
Perceived Health Control	.05(.02)**	.04(.02)†	-.00(.01)
Controls			
Gender	-.37(.31)	-.78(.41)†	.16(.27)
Anxiety	-.31(.02)	.03(.03)	.09(.02)***
R^2	.34	.15	.39

N = 47. † $p < .10$ *$p < .05$ **p<.01

Step 3 in the mediation analysis examined whether there was a significant relation between the the mediator (approach coping) and physical health outcomes after controlling for the initial variable, perceived control. There was evidence of statistical mediation, but perceived health control mediated the influence of approaching coping on the weight composite, rather than the other way around, as proposed. Perceived control remained significant ($b = -.52$, $p < .001$) and approach coping dropped to $b = -.76$, n.s. Both predictors also showed a negative relation with number of physical diagnoses, but these relations were non-significant (Table 9).

Table 9. OLS Regression of Physical Health Composites onto Perceived Control Composite and Approach Coping (Older Subjects Only)

	Weight Composite	# Physical Diagnoses
	b(SE)	*b(SE)*
Perceived Control Composite		
Intercept	44.36(4.67)	2.94(1.21)
Perceived Control	-.52(.11)***	-.04(0.03)
Approach Coping	-.76(0.95)	-.23(0.25)
Controls		
Anxiety	-.22(.13)†	-.01(.03)
R^2	.47	.14

N = 47. † $p < .10$ *$p < .05$ **p<.01 ***p<.001.

Thus, the relation between the weight composite and approach coping was partially mediated by perceived health control (Sobel test p < .01; depicted in Figure 2).

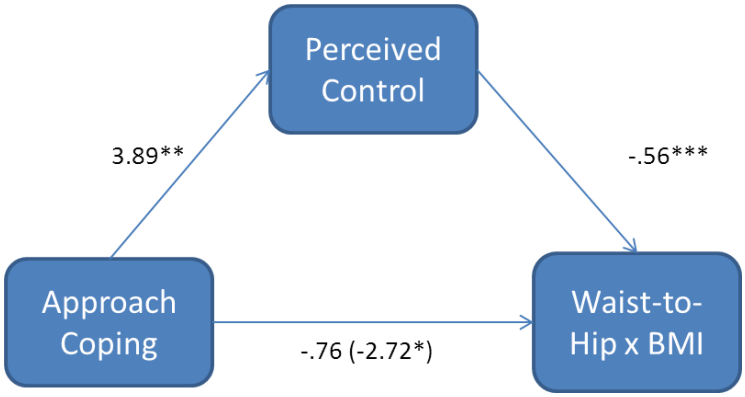

Figure 2. Perceived control statistically mediates the relation between approach coping and weight in the older cohort; the non-mediated coefficient in parentheses.

As perceived control and coping strategies were both related to physical health outcomes, I continued with testing the third hypothesis – that attachment classification is related to perceived control and coping strategies. A standard OLS regression was run,

limited to the older sample. In this smaller set of 47 subjects, dismissing speakers demonstrated significantly less approach coping in the 3-way analysis (b = -.77, p < .01), as shown in Table 10. This relation remained marginally significant in the 4-way analysis. Of interest was an additional finding that dismissing speakers endorsed less coping in general. If all the coping scales were summed and used as a total coping measure, dismissing speakers endorsed significantly less coping of any kind than did secure speakers (b = -10.45, p < .01; not shown.)

Table 10. OLS Regression of Coping Factors onto AAI Classification (Older Subjects Only)

	Factor 1: Approach	Factor 2: Support	Factor 3: Avoidance
	b(SE)	*b(SE)*	*b(SE)*
AAI 3-way Classification, Secure is Baseline			
Intercept	1.04(.30)	.27(.38)	-1.07(.25)
Dismissing	-.77(.27)**	-.68(.35)†	-.24(.23)
Preoccupied	.02(.31)	-.31(.40)	-.10(.26)
Controls			
Anxiety	-.06(.02)**	.01(.03)	.08(.02)***
R^2	.31	.16	.41
AAI 4-way Classification, Secure is Baseline			
Intercept	.95(.31)	.26(.37)	-1.15(.25)
Dismissing	-.59(.30)†	-.56(.37)	-.15(.24)
Preoccupied	-.11(.42)	-.92(.51)†	.04(.34)
Unresolved	-.17(.31)	.14(.37)	.17(.25)
Controls			
Anxiety	-.06(.02)**	.01(.03)	.08(.02)***
R^2	.24	.20	.41

N = 47. † p < .10 *p < .05 **p<.01 ***p<.001.

The associations among the dismissing attachment classification, approach coping, and perceived control prompted a final analysis – a regression analyses

examining whether past attachment status would forecast weight directly. As shown in Table 11, for both the full set of subjects and the older set, adults' dismissing attachment status marginally but directly predicted higher weight composite scores.

Table 11. OLS Regression of Weight onto 3-way Adult Attachment Classification; full sample and older subjects only

	Weight Composite Full Subject Pool	Weight Composite Older Subjects Only
	b(SE)	*b(SE)*
3-way Attachment Classification; Secure is Baseline		
Intercept	18.19(1.77)	20.21(2.30)
Dismissing	2.96(1.67) †	3.50(2.11) †
Preoccupied	.74(1.60)	1.89(2.42)
Controls		
Years since AAI	.18(0.08) *	--
N	78	47
R^2	.16	.11

The relations revealed by these independent OLS regressions between approach coping, perceived control, adult attachment classification, and weight is depicted in Figure 3.

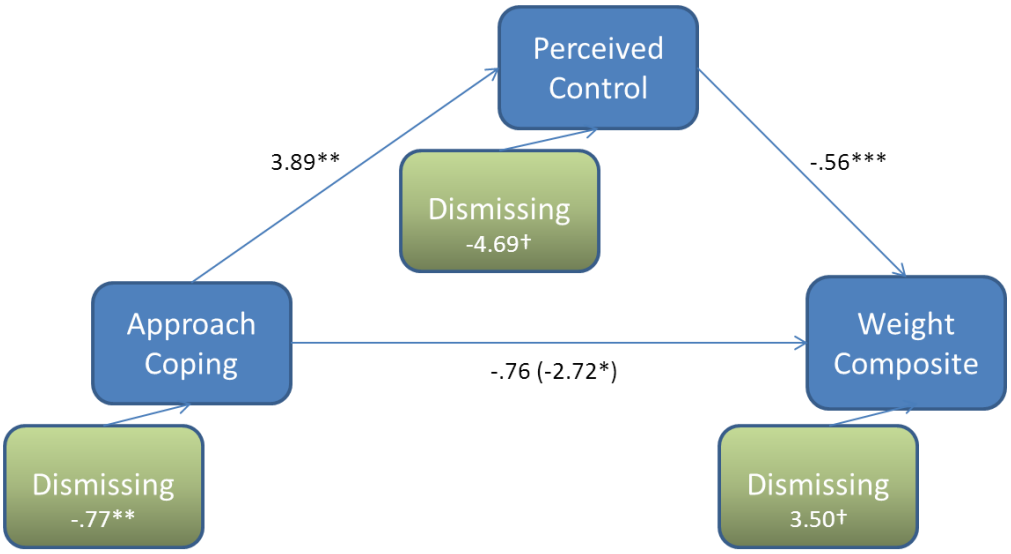

Figure 3. Dismissing attachment representation affects weight and its predictors in the older subject pool (N=47), in separate OLS regressions.

Discussion

This study demonstrated that the way adults described their earliest experiences of anxiety, care, soothing, and exploration 18 years ago forecasts current health. Adults who had minimized negative events and feelings related to their relationship with their parents in early childhood by idealizing their relationships with parents and stressing the normalcy and independence of their families, (i.e. dismissing speakers), perceived they had less control over their lives and health, coped less with stressors, and had worse mental and physical health outcomes than did secure speakers. Moreover, building upon previous research, this study identified coping processes that differentiate physical and mental health outcomes in midlife: whereas acknowledging and actively addressing stressors (approach coping) had the strongest relation with physical health, denying and disengaging from stressors (avoidant coping) was the primary predictor of mental health. I will begin by discussing the important role of perceived control and coping strategies in understanding the quality of adults' mental and physical health, followed by a discussion of why attachment security predicted adults' level of perceived control and coping strategies. Finally, the different pathways by which attachment representations may be affecting health will be elaborated.

It was necessary first to confirm that this sample of mostly middle-class, mostly white parents displayed the same relations between perceived control, coping strategies, and health outcomes that health psychologists have found in the past (Taylor, 1999). As expected, perceived control was strongly and directly negatively associated with the waist-to-hip ratio by BMI weight composite and lifetime physical health diagnoses, as

well as with lifetime mental health diagnoses, albeit via different mediational paths. Perceived control was also strongly associated with approach coping, contributing important evidence of the link between a belief in one's efficacy and action. These findings, together with prior research support Bandura's (1997) assertion that a sense of personal control motivates a person to act in her best interest, as she has an expectation that she can influence her life and health outcomes.

Indeed, the strong associations between persons' perception of control and their response to stress point to reciprocal influences; a pattern emerges of perceived control's fostering approach coping and preempting avoidance coping. As the relations among control, coping, and health were analyzed in separate OLS regressions of cross-sectional data, which of these constructs precedes or explains the others is not specified. Though perceived control statistically mediated the strong negative relation between approach coping and weight, researchers suspect (see Lachman & Prenda Firth (2004), for a review) that these covariates form a constellation of mutually-reinforcing patterns of thought and behavior. A cycle appears in which a person accepts and approaches stressors and solves problems actively, feelings of control rise, anxiety drops, healthy behaviors are feasible, stress drops, health improves, feelings of control rise further, etc. Clearly, perceiving control does not reduce weight and illness by itself. There are mediators in a health model – perceived stress, exercise, nutrition choices, regular doctor's visits and disease follow-up – the health behaviors that a person with a sense of efficacy is able to accomplish. As this study continues with more participants, these mediators and their interaction with coping strategies can be explored at greater length.

Though approach and avoidance coping are not on the same scale, both prevent adults from directly managing stressors – a handicap associated with both physical and mental health. Mental health was influenced by whether a person addressed stressors directly or used self-blame, distraction, denial, substances, or disengagement to avoid the problem. This avoidance coping factor emerged as the strongest predictor of number of lifetime mental health diagnoses. It might have been hypothesized that denying the existence of stressors and distracting oneself from them might act as a kind of cognitive buffer, reducing the effects of negative life events by engaging with less stressful activities. However, both avoidance coping (positively) and approach coping (negatively) were significantly related to anxiety in this study. Not managing stressors directly seems to emerge from fear, rather than from a resilient choice to be strong and move on. Anxiety, in turn, is strongly associated with perceived control. Though it could be that there are negative effects of grasping for control over essentially uncontrollable situations or confronting problems to the point of catastrophizing about them, and these should be studied, in general there appears to be a strong, direct, and positive association between the ability to confront problems directly and health. Thus, identifying the origin of this ability is of primary importance.

Attachment theory offers a developmental answer to this question. Certain hallmarks of attachment security are observed throughout the lifespan: the ability to tolerate anxiety, a sense of personal agency, the ability to mobilize support when necessary. On the other hand, insecure attachment patterns are marked by various defensive exclusions (Bowlby, 1980), very early adaptations to block perceptions from

awareness that are too painful or overwhelming for a child. There are many stages of information processing at which information may be retained or discarded. It is theorized that these patterns of rejecting information that cannot be managed are internalized as working models of efficacy, trust, and relationships. For example, a person may learn very early to discount his needs, if trying to get them met triggered parental rejection or shaming. Or he may keep his needs aroused, if constant stimulation increased the chances of otherwise inconsistent parental availability. This study begins to refine our understanding of relations between an adult's mental representations of childhood and his defensive adaptations.

This study shows that those representations, as measured with a past Adult Attachment Interview, predict current perceived control, strategies for coping with stress, and health outcomes. Bandura (1997) theorized that perceived control arises from one's experience of veridical control successfully executed in the past; this study is the first to attempt to test that hypothesis in an attachment theory framework. The Adult Attachment Interview, as an observational measure of the way adults represent their anxiety, agency, and support in childhood, may identify the developmental link between the care children experience and the way they then care for themselves as adults. The way adults speak about their earliest childhood during this interview has been associated in longitudinal studies with the way their parents treated them before they were 2 years old (Sroufe, 2005) and with how they, as parents, treat their own children (van IJzendoorn, 1995).

This study extended those findings to the way they treat themselves in adulthood. A stark contrast emerged between the way secure vs. dismissing adults perceive control

and cope with stress. Dismissing speakers perceived themselves to have less control over their health and their lives in general than did secure speakers. They also used less approach coping, less support coping, and less total coping than secure speakers. In low-risk samples, dismissing speech in adulthood has been correlated with having been rejected or neglected by the primary caregiver in childhood and with an avoidant attachment classification in infancy (Main, Hesse, & Kaplan, 2005; Waters, Merrick, Treboux, Crowell, & Albersheim (2000)). In higher-risk samples, trauma occurring between the time infant attachment status was assessed (Ainsworth Infant Strange Situation) and adult attachment stats was assessed (Adult Attachment Interview) has been associated with movement from secure to insecure classifications. But in this study of low-risk participants, it is expected that their dismissing status has been stable. Thus it is likely that in childhood, the dismissing speakers in this study were not able to exert influence over getting their needs met, mobilize support of parents, be soothed, or to return to safe exploration. They did not form a pattern of or belief in taking action to cope with stress. Analogous to the avoidant infant from whom these speakers (probably) grew into adulthood, they have not experienced direct problem solving to have been effective in the past; they consciously report *not* employing coping strategies – neither approach, nor support, nor avoidance – to handle stress. It had seemed plausible, because dismissing speakers tend to minimize childhood pain, idealize their parents, and report an upbringing that emphasized strength and independence, that they would also express strength and independence by endorsing greater control and problem-solving coping. However, it appears that their defensive exclusion occurs one step sooner than expected

in the threat appraisal process; that is, rather than representing that they cope actively, they do not acknowledge using coping strategies at all. Whether they do not acknowledge stress or do not believe coping strategies are meaningful options is a distinction for further study. Either way, speakers who minimize their earliest needs and idealize their early caregivers seem to be using those same techniques in their own self-care as adults – strategies that are yielding the poorest physical health outcomes relative to secure speakers.

It was interesting to find that adult attachment representation had a more distal influence on the mental than the physical health outcomes. Attachment, conceived as an emotional bond, seems essentially psychological in nature. Security is itself associated with the ability to integrate life's events, both positive and negative, and to tolerate (rather than suppress or over-activate) feelings. Dismissing speakers do not report feeling more anxiety, but this trend may be explained by dismissing speakers' tendency to suppress anxiety (Shaver, 2000). Thus we are given more clues as to the location of dismissing speakers' defensive exclusion: they are conscious of not feeling control and of not coping, but are not conscious of anxiety. It could be that their pattern of lack of control and inefficacy is so pervasive that they do not experience these states as anxiety-provoking, but rather as normal. If they suppress anxiety, do not cope with stressors, and perceive themselves not to exert control over their lives, pursuing assistance (and thus receiving diagnoses) from a mental health professional may not be in their pattern of response to stress. It is probably not the dismissing speakers for whom conscious anxiety predicts mental health diagnoses – but to determine the different paths to health outcomes

associated with different attachment classifications using class analysis, a larger sample will be required.

Remarkably, though dismissing speakers have been thought to be more actively blocking and more prone to demand characteristics, it was in fact the preoccupied speakers who were harder to distinguish from both dismissing and secure speakers on these conscious questionnaire measures. If they indeed retain patterns from childhood of heightened distress, dissatisfaction with problem resolution, and preoccupation with early parental relationships, we may find very different patterns of behavior, stress, and diagnoses. Measuring and modeling the impact of stress, identifying how each attachment classification perceives control and experiences and copes with stress, and observing behavioral mediators of those processes will further clarify how these mental patterns pervade adults' approach to health. As more than half of the variation in chronic disease is explained by behavioral choices, understanding the origin of those choices, and how they may be transmitted intergenerationally, remains critical. This study showed that an analysis of past speech about childhood predicts current health, providing support for a lifespan theory of control, coping, and well-being.

Appendix A: the Perceived Control composite.

Perceived Health Competency Scale. Please indicate how much you agree or disagree with the following statements, using this scale:

1	2	3	4	5
I disagree a lot	**I disagree a little**	**I neither agree nor disagree**	**I agree a little**	**I agree a lot**

1. I handle myself well with respect to my health.
2. No matter how hard I try, my health just doesn't turn out the way I would like.
3. It is difficult for me to find effective solutions to the health problems that come my way.
4. I succeed in the projects I undertake to improve my health.
5. I'm generally able to accomplish my goals with respect to my health.
6. I find my efforts to change things I don't like about my health are ineffective.
7. Typically, my plans for my health don't work out well.
8. I am able to do things for my health as well as most other people.

(reverse coded: 2, 3, 6, 7)

MIDUS general life control item. Using a -3 to +3 scale where -3 means "no control at all" and +3 means "very much control," how would you rate the amount of control you have over your life overall these days?

	-3	-2	-1	0	1	+1	+2	+3	
No control at all									Very much control

Appendix B

Brief COPE. These items deal with ways you cope with stress in your life. There are many ways to try to deal with problems. These items ask what you do to cope. Different people deal with things in different ways, but we're interested in how you deal with it. Each item says something about a particular way of coping. We want to know to what extent you do what the item says. How much or how frequently. Don't answer on the basis of whether it seems work or not—just whether or not you do it. Use these response choices. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

1 = I don't do this at all
2 = I do this a little bit
3 = I do this a medium amount
4 = I do this a lot

1. I turn to work or other activities to take my mind off things.
2. I concentrate my efforts on doing something about the situation I'm in.
3. I say to myself "this isn't real."
4. I use alcohol or other drugs to make myself feel better.
5. I get emotional support from others.
6. I give up trying to deal with it.
7. I take action to try to make the situation better.
8. I refuse to believe that it has happened.
9. I say things to let my unpleasant feelings escape.
10. I get help and advice from other people.
11. I use alcohol or other drugs to help me get through it.
12. I try to see it in a different light, to make it seem more positive.
13. I criticize myself.
14. I try to come up with a strategy about what to do.
15. I get comfort and understanding from someone.
16. I give up the attempt to cope.
17. I look for something good in what is happening.
18. I make jokes about it.
19. I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
20. I accept the reality of the fact that it has happened.
21. I express my negative feelings.
22. I try to find comfort in my religion or spiritual beliefs.
23. I try to get advice or help from other people about what to do.
24. I learn to live with it.

25. I think hard about what steps to take.
26. I blame myself for things that happened.
27. I pray or meditate.
28. I make fun of the situation.

Appendix C: Questions comprising health composites.

Please check any of the following conditions you yourself suffer or have suffered from:

____ Drug dependency
____ Alcoholism
____ Schizophrenia
____ Obesity/Overweight
____ Diabetes
____ Heart disease
____ Anxiety
____ Chronic sleeping problems
____ Recurring backache
____ High cholesterol
____ Stroke
____ High blood pressure/Hypertension
____ Emphysema, asthma, or lung disease
____ Liver disease
____ Bi-polar disorder
____ Depression
____ Arthritis/Rheumatism
____ Cancer
____ Persistent skin trouble (eczema, psoriasis, etc)

The next questions are about body measurements. The information will be more accurate if you follow these suggestions:

Use a measuring tape.
Make measurements while standing
Avoid measuring over clothing (even thin clothing can add a 1/4 inch)
Try to record answers to the nearest quarter (1/4) inch

What is your waist size -- that is, how many inches around is your waist? Please measure at the level of your navel. _____ inches

Please use a tape measure to measure your hips at their widest point. How many inches around are you at your hips? _____ inches
How tall are you? ____ feet ____ inches
How much do you currently weigh? _____ lbs.

Appendix D: Detailed Tables

Table D.1. OLS Regression of Health Outcomes onto Perceived Health Control Composite

	Weight Composite	# Mental Health Diagnoses	# Physical Health Diagnoses
	b(SE)	*b(SE)*	*b(SE)*
Perceived Health Control Composite			
Intercept	40.77(3.76)	-.99(.84)	2.32(.86)
Perceived Control	-.49(0.08) ***	.01(.02)	-.05(.02) **
Controls			
Years since AAI	.14(0.07) *	.02(.01)	.05(.02) **
Anxiety	-.23(0.11) *	.09(.02) **	-.01(.03)
R^2	.43	.17	.26

N=78. † $p < .10$ *$p < .05$ **$p < .01$ ***$p < .001$

Table D.2. OLS Regression of Perceived Control onto Anxiety (GAD7)

	Perceived Control
	b(SE)
Anxiety	
Intercept	-.53(.16) **
R^2	.18

N=78. † $p < .10$ *$p < .05$ **$p < .01$ ***$p < .001$

Table D.3. OLS Regression of Physical Health Composites onto Perceived Control Composite and Coping Factors (All Subjects)

	Weight Composite	# Physical Diagnoses
	b(SE)	*b(SE)*
Perceived Control Composite		
Intercept	45.43(4.46)	3.27(1.16)
Perceived Control	-.56(0.10) ***	-.06(0.03) *
R^2	.46	.12

N=78. † $p < .10$ *$p < .05$ **$p < .01$ ***$p < .001$

Table D.4. OLS Regression of Health Composites onto Coping Factors

	Weight Composite	# Mental Health Diagnoses	# Physical Health Diagnoses
	b(SE)	*b(SE)*	*b(SE)*

Coping Factor 1: Approach			
Intercept	19.67(1.73)	-.50(.32)	.2(.34)
Approach	-1.34(.74) †	.13(.14)	-.24(.14)
Controls			
Years since AAI	.22(.08) **	.01(.01)	.06(.02) ***
Anxiety	-.05(.13)	.09(.02) ***	.00(.02)
R^2	.16	.18	.21
Coping Factor 2: Support			
Intercept	18.73(1.70)	-.37(.30)	.05(.33)
Support	-.90(.64)	.29(.11) *	-.12(.12)
Controls			
Years since AAI	.21(.08) *	.01(.01)	.06(.02) ***
Anxiety	.04(.13)	.08(.02) **	.01(.03)
R^2	.15	.24	.19
Coping Factor 3: Avoidance			
Intercept	18.46(1.98)	.11(.33)	.25(.38)
Avoidance	-.50(1.09)	.60(.18) **	.19(.21)
Controls			
Years since AAI	.19(.08) *	.03(.01) †	.06(.02) ***
Gender	3.37(2.34)	-.23(.39)	.23(.45)
Anxiety	.07(.16)	.03(.03)	-.00(.03)
R^2	.17	.27	.19

Table N. OLS Regression of Coping Factors onto AAI Classification (All Subjects)

	Factor 1: Approach	Factor 2: Support	Factor 3: Avoidance
	b(SE)	*b(SE)*	*b(SE)*
AAI 3-way Classification, Secure is Baseline			
Intercept	.75(.27)	-.01(.31)	-.85(.19)
Dismissing	-.63(.25) *	-.80(.30) **	-.22(.18)
Preoccupied	-.31(.24)	-.15(.28)	-.05(.17)
Controls			
Anxiety	-.06(.02) **	.00(.02)	.09(.01) ***
R^2	.19	.14	.38
AAI 4-way Classification, Secure is Baseline			
Intercept	.72(.27)	.06(.32)	-.89(.19)
Dismissing	-.67(.28) *	-.73(.33) *	-.18(.20)
Preoccupied	-.40(.33)	-.29(.39)	-.08(.24)
Unresolved	-.17(.23)	-.14(.27)	.05(.16)

Controls			
Anxiety	-.06(.02)**	.01(.02)	.09(.01)***
R^2	.19	.12	.38

Summary of Weight Composite of All Subjects and Older Subjects

	All Subjects	Older Subjects
Minimum	13.4	13.8
Mean	21.8	23.3
Maximum	38.3	38.3
St Dev	5.6	5.8
BMI Classification		
Overweight	19	11
Obese	17	14

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