THE SILENT KILLER IN THE BOARDROOM: EXECUTIVE LEADERS' HEALTH HABITS AND THEIR RELATIONSHIP WITH METABOLIC SYNDROME, ENERGY, AND EFFECTIVENESS

by

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ABSTRACT

PAUL BENJAMIN SCHMIDT. The silent killer in the boardroom: Executive leaders' health habits and their relationship with metabolic syndrome, energy, and effectiveness. (Under the direction of DR. LINDA SHANOCK)

A model of executive leader health was proposed to investigate the extent to which executives' lifestyle behaviors related to their risk for metabolic syndrome (MetS, i.e., "The Silent Killer") and in turn, the extent to which the risk for MetS related to perceptions of leader energy and effectiveness. A sample of 380 executive leaders that attended a week-long leadership development seminar was used to examine: 1) the relationship between leaders' lifestyle behaviors and their physical health (i.e., risk for MetS) and; 2) the relationship between leaders' physical health and perceptions of their energy and effectiveness on-the-job. Data were collected from multiple sources, including self-report, objective health measures, and ratings from the leaders' subordinates and bosses. Findings demonstrated that lifestyle behaviors of executive leaders, including exercise habits and diet, related significantly with risk for MetS. Risk for MetS was also significantly related to perceptions of leaders' effectiveness, as rated by their bosses and subordinates. Further, leaders' energy levels, as rated by their subordinates mediated the relationship between risk for MetS and leader effectiveness. Exercise and diet appear to play an important role in the health and energy of executive leaders, which in turn relates significantly with their effectiveness on-the-job.

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CHAPTER 1: INTRODUCTION

Employee health and well-being has emerged as a popular field of study, with the idea that fostering and maintaining a healthy workforce has a positive impact on employee effectiveness, and ultimately the effectiveness of the organization itself (Wilson, DeJoy, Vandenberg, Richardson, & McGrath, 2004). Research on healthy work organizations and the work-health relationship has examined how organizations structure and manage various work processes such as job design, scheduling, organizational policies and procedures, as well as attributes contributing to the organizational climate (Wilson et al., 2004). Other studies have examined outcomes of poor organizational health and work systems such as employee strain, stress, and/or burnout (Golparvar, Kamkar, & Javadian, 2012; Richardson & Rothstein, 2008).

The common trend amongst these studies has been the examination of employee health and well-being as it relates to factors within the boundaries of the organization (e.g., job conditions, organizational policies). Interest in employee health and well-being and related fields such as occupational health psychology continue to grow, and researchers have expressed the need to expand work-health models to incorporate factors beyond the immediate job-worker interaction (Danna & Griffin, 1999; Macik-Frey, Quick, & Nelson, 2007; Wilson et al., 2004). Thus, one of the overall purposes of this study was to answer that call by proposing a model of employee health that examines predictors of health beyond the domain of the workplace.

Additionally, the present study focused specifically on the health of executive leaders, given their grueling job demands, long work hours, and the inherent challenges they face within their complex working environments (Kirkpatrick & Locke, 1999; Zaccarro & Klimoski, 2001). My study used multiple sources of data (objective health assessments, self-report, ratings from subordinates and bosses) to add to our understanding of how a healthy lifestyle has implications for the workplace. Furthermore, I examined how lifestyle behaviors of executives related to their physical health and how physical health translated into greater levels of energy in the workplace, with direct implications for perceptions of leader effectiveness.

1.1. Healthy Lifestyle Behaviors and Work Outcomes

The term *health* has been difficult to conceptualize, as studies over time have defined the construct in a variety of different ways. Emmet (1991), for instance, defined health as merely the absence of sickness and/or disease. Other definitions, however, view the construct of health from a much broader perspective. The World Health Organization (WHO) defines health as "a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity" (World Health Organization, 1946). Furthermore, health is conceptualized as a lifestyle that spans across all domains of an individual's life, and is not just an avoidance of sickness or disease (World Health Organization, 1946). For the purposes of this study, my conceptualization of health aligned with the definition put forth by the WHO. That is, one's lifestyle is a reflection of their overall health, and that health is not merely the presence or absence of illness and/or disease.

Based on this conceptualization of health, I posit that there are several key reasons for examining employee health outside the domain of the workplace. First of all, changes in society, such as rising health-care costs in the U.S., have brought a heightened sense of awareness for individual health and personal safety (Danna & Griffin, 1999). In 2010, the Surgeon General of the U.S. discussed plans for a healthier nation, citing the obesity problem in the U.S. and its implications for job performance, health-care costs, and general well-being of individuals (Department of Health and Human Services, 2010). The report called for increased participation in physical activity programs, as well the prevention of chronic health issues through proper nutrition and diet (Department of Health and Human Services, 2010). Several studies have also been conducted in recent years examining the increasing costs to U.S. healthcare as a result of poor employee health (Goetzel, 2005; Naydeck, Pearson, Ozminkowski, Day, & Goetzel, 2008). Taken together, these reports suggest that there is a need to improve physical health in individuals, and that a failure to do so could have costly implications for individual well-being.

Further evidence in support of promoting good physical health in employees comes from a recent review of the psychological literature. Walsh (2011) concluded that "health professionals have significantly underestimated the importance of lifestyle factors as contributors to and treatments for psychopathologies, for fostering individual well-being, and for preserving and optimizing cognitive functioning" (p. 579). Walsh goes on to recommend several lifestyle changes to help improve the quality of life and well-being of individuals, including regular exercise, proper nutrition (e.g. dietary supplements), and a healthy diet (i.e. healthy food choices). These lifestyle changes highlight the importance

of a healthy lifestyle in promoting good physical and psychological health in individuals, and that poor health has negative implications for cognitive functioning in individuals.

One final reason for examining employee health is that prior research on employee health and well-being has acknowledged that there is overlap between an individual's personal and work lives (Caudron, 1997; Conrad, 1988; Greenhaus & Powell, 2006; Zedeck & Mosier, 1990), and that the two are not separate entities but instead, "interrelated and intertwined domains having reciprocal effects on each other" (Dana & Griffin, 1999, p. 360). Furthermore, Greenhaus and Powell (2006) theorize that life experiences in one domain of life can have a positive impact on the quality of life in another domain. In their study, for example, one manager reported how her maternal role in the growth and development of her children taught her patience and other relevant skills for being an effective manager at work (Greenhaus & Powell, 2006).

These studies provided a basis in support of the idea that employee lifestyle behaviors outside the domain of work could very well relate to effectiveness in other life domains and roles (e.g., work). Thus, one of the contributions of this study was to expand on existing research on employee health and well-being to include the examination of lifestyle behaviors outside the domain of the workplace.

1.2. Examining Health in Executive-Level Leaders

Employee health may be especially important for employees at high-levels of the organization (i.e., leaders) whose jobs carry grueling demands and expectations of long work hours (Kirkpatrick & Locke, 1999). My study examined the health of high-level executive leaders across several different organizational industries and types. Although

there has been a considerable amount of research on employee health, few studies have examined this employee group exclusively (McDowell-Larsen et al, 2002; Neck & Cooper, 2000). This is a bit surprising considering the critical role(s) that an executive leader fulfills within their organization. Executive leaders occupy positions of high status and authority within an organization (Zaccarro & Klimoski, 2001). They tend to work in highly complex, unstructured, and uncertain environments, and are at the forefront of almost all critical decision-making that takes place within the organization (Zaccarro & Klimoski, 2001). The complexity in both environment and level of responsibility is what makes the work of executives "qualitatively different from work at other levels of the organization" (Hambrick, Finkelstein, & Mooney, 2005).

I believe there are several reasons for examining physical health in executive-level leaders. For one, the most fundamental role of a leader is to define organizational goals, formulate strategies to achieve those goals, and to allocate resources to execute stragegies successfully (Adair, 1983). One would expect that poor physical health would negatively affect a leader's ability to regularly perform these duties at a high level. Unfit leaders may also exhibit greater levels of absenteeism due to health issues. These consequences, in turn, negatively affect a leader's ability to carry out the demands of their job.

Organizational leaders are also in a position to influence those around them. Given their status in the organization, executives often set the culture, climate, and norms for behavior, and can drastically shape the day-to-day experiences and working environment for other employees (Barling & Carson, 2010; Kuoppala, Lamminpaa, Liira,

& Vainio, 2008). An unhealthy leader may miss a considerable amount of time and thus may not be able to positively contribute to the culture/norms of the organization.

Finally, replacing an executive can be very costly for an organization, and may be more likely to occur if the leader is not in good health and thus unable to fulfill the duties of the job. Estimates regarding the cost to replace a departed executive reach as high as $2.7 million dollars (Abbasi & Hollman, 2000; Muchinsky, 1997). The costs of executive turnover may come in the form of direct financial loss due to the costs of finding and training a replacement (Muchinsky, 1997). Executive turnover may also inflict indirect costs to the organization. Departing executives may take with them valuable knowledge and expertise, and their departure may also result in severed relationships with clients that have close personal relationships with that executive (Muchinsky, 1997). Executive turnover has also been found to create unrest and uncertainty among remaining employees regarding the future of the organization (Knudsen, Ducharme, & Roman, 2009). Organizations may be more likely to incur these negative outcomes if their executive-level leaders are too ill to come to work, or are forced to leave their positions due to poor health. Thus, poor health is not only a direct risk for the leader, as it may also be a risk to the effectiveness of the organization at large.

1.3. Executive Leader Health Outside of Work

As stated previously, little attention has been given to employee health outside the domain of the workplace, and few studies have examined executive leader health outside the workplace specifically. Neck and Cooper (2000) suggested that being ‘fit’ would enhance performance in executives. Their assertion was based on a series of anecdotal

interview data from various executives around the world, including Al Gore and George W. Bush – all of whom indicated that they believed that fitness impacted their ability to perform at a high level in their jobs. McDowell-Larsen, Kearny, and Campbell (2002) also found that regular exercise correlated with higher ratings of leadership ratings. Together, these studies underscore the idea that the health of leaders has a relationship with their ability to do their jobs effectively.

1.4. Linking Executive Leader Health with Effectiveness

Despite this recent trend in the literature, however, no study has yet to examine the possible mechanisms driving the relationship between leader health and effectiveness. This idea was suggested by McDowell-Larsen et al. (2002), who stated that "the connection between actual benefits of regular exercise and observer perceptions of leadership performance needs to be explored" (p. 324). Quick et al. (2000) also noted that, "…few published empirical studies have sought to understand the true nature of the relationship between leaders' health and leadership" (p. 41). Despite these calls for a deeper understanding of the processes that underlie the relationship between leaders' health and effectiveness, researchers have yet to answer the bell. Thus, another contribution of my study was the examination of a mechanism that explains the relationship between leader health and effectiveness.

CHAPTER 2: DEVELOPMENT OF HYPOTHESES

2.1. Assessing Health in Executive Leaders

I examined specific lifestyle behaviors that coincide with the interventions for improving individual health and well-being from Walsh (2011). These behaviors include the extent to which leaders engaged in regular exercise as well as their nutrition and dietary habits. These lifestyle behaviors have well-known associations with a growing health concern among U.S. workers, known as *The Metabolic Syndrome* (Alberti et al., 2009). Metabolic syndrome is a set of five health risk factors, which are summarized in Table 1. It is often referred to as "The Silent Killer", as many people at risk are not consciously aware of the risk factors or their effects on their individual health (Johnson et al., 2007). Individuals that meet the criteria for three or more of these risk factors are at increased risk for potentially life-threatening and long-term illnesses such as coronary artery disease, stroke, and type II diabetes (Alberti et al., 2009). Studies have shown the prevalence of metabolic syndrome to be as high as 34% among U.S. populations (Ervin, 2009).

In addition to the long-term health consequences, recent research on metabolic syndrome has also examined the short-term effects of metabolic syndrome. Studies have shown that being at risk for metabolic syndrome has implications for the day-to-day health of individuals (Capuron et al., 2008; Ervin, 2009; Maloney, Boneva, Lin, & Reeves, 2010). One study (Capuron et al., 2008), for instance, found a relationship

between individuals with metabolic syndrome and chronic fatigue syndrome, with individuals with metabolic syndrome reporting more frequent levels of chronic fatigue throughout the week. Other studies (Ervin, 2009; Maloney et al., 2010) have shown relationships between metabolic syndrome and various mental health outcomes such as frequent mood swings, depression, and increased anxiety and irritability. Thus, I believe the consequences of being at risk for metabolic syndrome can have a wide range of implications for executive leaders and their respective organizations. Leaders with metabolic syndrome could miss significant time at work and could be less effective on the job as a result of their poor health.

2.2. Lifestyle Behaviors and Risk for Metabolic Syndrome

Prior studies have established that an individual's daily lifestyle behaviors, such as exercise, smoking, and diet have direct implications for health and cognitive functioning (Hamer & Mishra, 2010; Lee & Paffenbarger, 2000). By examining health and its relationship to risk for metabolic syndrome, I am able to examine how lifestyle choices beyond the workplace play a role in a leader's health.

Regular Exercise. Figure 1 outlines my hypothesized model for this study. Abdominal obesity, hypertension, and high cholesterol have been shown to be the most commonly occurring risk factors in individuals with metabolic syndrome (Ervin, 2009). Studies, however, have consistently shown that individuals who engage in regular physical activity (e.g., aerobic exercise, sports) can reduce their risk levels on all three factors (Laaksonen, Hanna-Maaria, and Jukka, 2002; Ervin, 2009). Consistent with previous research, I would expect that executive leaders who engage in regular

physical activity will be healthier overall and thus would be at less risk for metabolic syndrome.

Hypothesis 1a: Physical activity will be negatively related to risk for metabolic syndrome.

Healthy Eating Habits. Research on diet and nutrition have shown that healthy eating also has positive implications for individual health (Grundy et al., 2005). Healthy diets are often recommended as an alternative or in conjunction with regular exercise to improve fitness levels and overall health. Studies on the benefits of a healthy diet also have implications for the three most frequently occurring metabolic syndrome risk factors (Grundy et al, 2005). Thus, I also expect that executives who engage in more healthy eating habits will be at less risk for metabolic syndrome. For the purposes of this study, healthy eating was measured using four independent self-report items including the amount of fruit and vegetable servings consumed per day, how often one eats breakfast throughout the week, and how often one consumes red meat throughout the week. Prior research has shown that these eating habits have direct relationships with individual health outcomes (Paquette, 2005).

Hypothesis 1b: Servings of vegetables per day will be negatively related to risk for metabolic syndrome.

Hypothesis 1c: Servings of fruit per day will be negatively related to risk for metabolic syndrome.

Hypothesis 1d: Number of days eating breakfast during the week will be negatively related to risk for metabolic syndrome.

Hypothesis 1e: Red meat consumption will be positively related to risk for metabolic syndrome.

Hypotheses 1a through 1e are mainly replicatations of what has been published on metabolic syndrome in samples of the general U.S. population. After examining the relationships between lifestyle behaviors and executive leader health, the next step in this study was to examine physical health and its relationship to leader effectiveness.

2.3. Physical Health and Effectiveness

Some studies have found support for the idea that physically fit executives can outperform unfit executives (Loehr & Schwartz, 2001; McDowell-Larsen, Kearney, & Campbell, 2002; Neck & Cooper, 2000; Neck et al., 2000). Neck and Cooper (2000), for instance posited that executives with optimal levels of physical fitness are better able to handle the grueling demands and travel schedules commonly found in executive level positions and are therefore able to be more effective than leaders who are less healthy. Thus, I argue that risk for metabolic syndrome, which is an objective, non-self-reported assessment of executive leader health will be a strong predictor in the relationship between executive leader health and effectiveness.

My conceptualization of leader effectiveness follows the definition put forth by Soski, Gentry, and Chun (2012). They defined effectiveness as in-role accomplishment of job tasks and responsibilities that are part of the formal job description, and also the

extent to which the leader contributes to the overall effectiveness of the organization. Overall, I believe that executives who meet the criteria for metabolic syndrome will be rated as less effective than leaders who do not meet the criteria for metabolic syndrome.

2.4. Linking Leader Health with Effectiveness through Energy

Research thus far has not included an examination of possible mechanisms responsible for the link between executive leader health and effectiveness. Leaders must be able to adapt and perform at a high level in the face of uncertain environments, grueling schedules and long work hours, all while managing groups of subordinates and overseeing the day-to-day operations of the organization (Neck & Cooper, 2000). I argue that good physical health gives leaders the stamina they need to meet the demands of their executive leader role(s). Several studies examining leadership effectiveness have identified specific trait-like individual differences as predictors of effective leadership (Bass, 2000; Daft, 1999; Hoffman, Kirkpatrick & Locke, 1991; Woehr, Youngjohn, & Lyons, 2011). Leader *Energy*, for instance, has frequently been hypothesized as an important predictor of effective leadership (Bass, 1990; Daft, 1999; Kirkpatrick & Locke, 1991; Yukl, 2006; Yukl & Van Fleet, 1992), and has been defined as "a high degree of stamina and ability to maintain a high rate of activity" (Hoffman et al., 2011). Studies have shown that leaders must maintain high levels of energy in order to effectively perform in the face of long hours and hectic schedules (Mintzberg, 1973; Howard & Bray, 1988).

Executive leaders' physical health possesses an inherent link with the existing research on energy as a predictor of leader effectiveness. As stated previously, recent

research on metabolic syndrome has begun to examine not just the long-term consequences (e.g., stroke), but also the day-to-day effects on an individual's physical and mental health. One major consequence of being at risk for metabolic syndrome is the tendency for the body to experience spikes in blood-glucose levels (Ervin, 2009). This in turn, has been shown to lead to frequent mood swings and feelings of fatigue throughout the day (Ervin, 2009). Further research has shown that individuals at risk for metabolic syndrome also report higher rates of chronic daily fatigue, depression, and feelings of anger and/or irritability (Capuron et al., 2008; Maloney et al., 2010). Thus, I expect that an executive at risk for metabolic syndrome would experience these same physical and mental effects (e.g. chronic fatigue, irritability) throughout the day. In turn, I would expect that this would interfere with the leader's ability to behave in a way that is consistent with effective leadership (e.g. maintain high levels of stamina and vitality; be electric, full of life and active, etc.). Thus, the role of metabolic syndrome is hypothesized to have a relationship with leader effectiveness due to the fact that metabolic syndrome would result in increased fatigue and decreased energy throughout the day. In turn, reduced leader energy will relate negatively with effectiveness on the job.

Hypothesis 2a: Executives at risk for metabolic syndrome will have lower levels of energy, as rated by their direct reports.

Hypothesis 2b: Levels of executive leader energy will be positively related to ratings of leader effectiveness.

Hypothesis 2c: Executive Leader energy levels mediates the relationship between metabolic syndrome and leader effectiveness.

CHAPTER 3: METHOD

3.1. Participants and Procedures

Data were collected from 380 executives who attended a senior leadership development program at an organization with headquarters in the Southeastern United States. The average age was 48.63 years (SD = 6.42 yrs); 80% of the participants were male and 76.55% were Caucasian/white. A variety of industries were represented, including manufacturing, retail, finance and insurance, automotive, energy, aerospace and defense, and telecommunications.

Prior to attending the development program, participants completed a health questionnaire that included questions about their exercise behavior, reasons for exercising or not exercising, as well as their nutrition and eating habits. In addition, health and fitness professionals collected physiological data on these individuals, including data on all five risk factors of metabolic syndrome. Executives were also interviewed about their exercise habits and routines, which included activities such as jogging, walking, gardening and other leisure activities around the house, as well as other strenuous activities such as competitive sports, biking, and aerobics classes.

As part of the leadership development process, each executive was rated on their effectiveness and energy levels by their subordinates, their bosses and a group of their peers. The executives were encouraged to choose raters who were likely to be honest and

who knew them well enough to provide accurate ratings. Executives were evaluated by each group of raters prior to attending the leadership development program.

3.2. Measures

Metabolic Syndrome. Certified fitness professionals measured each executive on each on the five risk factors for metabolic syndrome, including standard measures of blood pressure, blood-glucose levels, HDL and LDL cholesterol levels, and Triglyceride levels. Waist circumference, the fifth risk factor, was measured in centimeters using the Gulick Tape Measure, which ensures standard tension at the level of the umbilicus (Klein, Allison, Heymsfield, Kelley, Leibel, & Nonas, 2007).

Executives were labeled as being either *at-risk* for metabolic syndrome (i.e., met the criteria for 3 or more risk factors) or *not-at-all at-risk* for metabolic syndrome (i.e., met the criteria for less than 3 risk factors). This dichotomy is consistent with the standards of metabolic syndrome as outlined in a 2010 report by the National Cholesterol Education Program.

Physical Activity. Participants were asked to self-report the number of hours they engaged in both aerobic and resistance exercise per week. These data were combined with the responses given by executives during their interviews with the health professionals regarding the types of activities and exercise in which they engaged. The data were used to define those who were considered to be "regular" exercisers, versus those who were "non-regular" exercisers. Participants were classified into stages of exercise behavior according to Prochaska's model of stages of change: "pre-contemplative" (do not regularly exercise and don't intend to in the future),

"contemplative" (do not currently exercise, but am thinking about starting to exercise in the future), "action" (currently exercise but have been doing so for less than six months), and "maintenance" (currently exercise and have been doing so for more than six months, Prochaska & DiClemente, 1982). Executives in the action and maintenance stages were included in the "regular exercisers" group, while those in the contemplative and pre-contemplative stages were included in the "non-regular" exercisers group.

Another measure of physical activity was also used to determine if those who reported to be in the maintenance and action stages were achieving sufficient levels of physical activity. 'Kcal' intensity (U.S. Department of Health and Human Services, 1996) was calculated based on executives' reported levels of exercise, which represents the intensity at which an individual engages in regular exercise. Executives who reported levels of exercise at an intensity of 7kcal.min-1 or greater were considered as part of the "regular exercisers" group. This intensity is equivalent to someone who weighs 180 lbs., walking at a speed of 5.6km/h (McDowell-Larsen et al., 2002). According to the *1996 Surgeon's General Report*, the above level of intensity would be described as moderate physical activity. Using the measure of kcal intensity in combination with the self-reported hours of exercise ensured that participants who considered low intensity activities such as golf as aerobic exercise were not included in the "regular exercisers" group (McDowell-Larsen et al, 2002).

Healthy Eating Behaviors. Four self-report items were used to assess healthy eating habits of executives. These items asked participants to indicate how many servings of fruits and vegetables they ate per day, how often during a typical week that they ate breakfast, and whether their typical diet included consumption of red meat on a daily

basis. These items were selected based on a study of nutrition and perceptions of healthy eating that reviewed twenty years of literature on healthy eating habits of children, adolescents, adults, and health professionals. (Paquette, 2005).

Executive Leader Effectiveness. Executive leader effectiveness was assessed using the 'Executive Dimensions', which is a multisource instrument that measures leadership behaviors and managerial competencies considered to be important at the executive level, (Soski, Gentry, & Chun, 2011). The instrument identified relevant behaviors and competencies using prior literature on leadership, such as Borman and Brush's (1993) taxonomy of leadership performance and Yukl's (1989) taxonomy of behaviors related to managerial success. Ratings were collected from the target-executives' bosses or board members prior to the executive attending their leadership training program.

The five items were rated on a 5-point likert-type scale. Sample items from this measure included: (1) What is the likelihood this person will derail in the next five years? (reverse coded); (2) "To what extent does this individual contribute to the overall effectiveness of the organization?" Response anchors were rated on a 5-point likert-type scale (1 = not at all; 5 = Very great). Consistent with Soski et al., ratings for each item were summed to form the outcome measure of executive leader effectiveness ($\alpha = .90$).

Perceived Leader Energy. Executive leaders' energy levels, as rated by the leaders' direct reports, were assessed using the Campbell Leadership Index (CLI, Campbell, 1988), which provides feedback to the leader regarding personal

characteristics that relate directly to the nature and demands of being a leader. The measure captures self-ratings of leadership characteristics and ratings from selected observers, such as direct reports, peers, and bosses. Ratings of leader energy from direct reports were used in my analyses. Of the three observer groups (direct reports, peers, bosses), direct reports typically have the most day-to-day contact with the leader, thus making them the most appropriate party to observe and rate the leader on their energy orientation.

A subset of the measure called the *Energy Orientation Scale* was used to assess ratings of leader energy levels. This scale reflects the leader's physical energy, endurance, and the extent to which they lead a healthy lifestyle (CLI, Campbell, 1998). Sample items on this measure include: (1) This leader is: Active – in motion, on the go; (2) Hardy – Has lots of endurance, in good health. Response anchors were rated on a 5-point scale (1 = seldom; 5 = always). The reliability of this measure was assessed using Chronbach's alpha, and yielded a coefficient alpha of .81.

3.3. Justifying Aggregation.

Aggregating individual ratings from direct reports is logically justified as subordinates' ratings of leader energy levels are directed to their respective supervisors. In order to test whether there was agreement among each executive's direct reports, I used James, Demaree, and Wolf's (1984) procedure to estimate inter-rater agreement (IRA) of individual-level ratings for the variable of perceived leader energy. James et al.'s $r_{wg(j)}$ index was used as an estimate of IRA, as the variable of perceived leader energy was measured using multiple items. It has been common

practice for researchers to use an $r_{wg(j)}$ cutoff value of .70 in determining values that demonstrate adequate agreement (Biemann et al., 2012, Cohen et al., 2001; Lance, Butts, & Michaels, 2006; LeBreton & Senter, 2008). The mean $r_{wg(j)}$, when assuming a uniform null distribution across the direct reports, was .80 (SD = .18). Across the sample, $r_{wg(j)}$ values ranged from 0.19 – 1.00, and 84.47% of the $r_{wg(j)}$ values met the .70 cutoff threshold. Although several sets of leadership ratings had $r_{wg(j)}$ values less than .70, I retained all cases for analysis, as tests of my hypotheses after deleting leaders with low $r_{wg(j)}$ values resulted in substantively identical results. This practice of retaining cases that do not meet the .70 cutoff is consistent with recommendations made by Chen, Mathieu, and Bliese (2003). Based on these criteria, I concluded that the within-leader ratings by their various subordinates were homogenous enough to be aggregated to the group level.

CHAPTER 4: RESULTS

One interesting finding from this study was that the prevalence rate of metabolic syndrome in my sample was fairly consistent with prevalence rates of the general U.S. population. Ervin (2009) found that the rate of metabolic syndrome in a random sample of the general U.S. population was as high as 34%. Meanwhile, the percentage of executives in my sample with risk for metabolic syndrome was 28.94% (110 out of 380 executives). Thus, it appears that employees at the executive level are not immune to negative health outcomes such as metabolic syndrome.

Means, standard deviations, and inter-correlations among variables are reported in Table 2. As expected, the relationship between risk for metabolic syndrome and perceived leader energy levels is significant and negative ($r = -.18$, $p < .01$). The relationship between perceived leader energy levels and leader effectiveness was significant and positive ($r = .24$, $p < .01$).

4.1. Test of the Hypothesized Model

Figure 2 presents the hypothesized structural model and path estimates. The model showed adequate fit statistics with respect to the data: $\chi^2(84) = 193.54$; CFI = .96; TLI = .96; RMSEA = .05. Consistent with Hypotheses 1a,1b, 1d, and 1e, fitness level, servings of vegetables, breakfast, and red meat consumption were all statistically significant in the hypothesized directions. Specifically, the relationship between leaders' fitness level and metabolic syndrome was statistically significant and negative ($\beta = -.19$,

p<.05), and three of the four healthy eating indicators: 1) servings of vegetables (β = -.10, p < .05); 2) number of days per week eating breakfast (β = -.09, p < .05); 3) and red meat consumption (β = .08, p < .05), were also statistically significantly related to risk for metabolic syndrome in the hypothesized directions. Servings of fruit per day did not show a statistically significant relationship with risk for metabolic syndrome (β = .01). Thus Hypothesis 1c could not be confirmed. One reason for this finding could be due to the fact that fruits are generally high in sugar, and thus might have a negative effect on the risk factor of blood-glucose levels.

Mediation Analyses. Structural Equation Modeling (SEM) using the steps for mediation as outlined by Kenny, Kashy, and Bolger (1998) were conducted to test the mediation hypothesis. SEM provides a more definitive test of mediation in comparison to a traditional multiple regression approach (Baron & Kenny, 1986) as both direct and indirect effects can be specified simultaneously using the same model.

Consistent with the Kenny et al. (1998) approach, the test of the mediation hypothesis required the following steps to be satisfied: (1) The independent variable must be significantly related to the mediator variable; (2) The mediator variable must be significantly associated with the dependent variable when controlling for the independent variable. In support of these steps, both direct relationships were statistically significant. Leaders' risk for metabolic syndrome was negatively related to perceived leader energy levels, as rated by the leader's subordinates (β = -.11, p < .05). Thus, my findings show evidence in support of Hypothesis 2a. In addition, perceived leader energy level was statistically significant and positively related to perceived leader effectiveness (β = .17, p

<.05), as rated by the leaders' bosses. Thus, Hypotheses 2b was also supported by my findings.

I used Preacher and Hayes' (2004) bootstrapping techniques to estimate the size and significance of the indirect effects in my mediated hypothesis. The results of my bootstrapping analysis indicate that the indirect effect in my mediated hypothesis is statistically significantly different from zero ($\beta = -.04$, $p < .05$, 95% CI = -.08 to -.01). Thus, I concluded that the relationship between metabolic syndrome and leader effectiveness is fully mediated via perceptions of leaders' energy levels.

4.2. Influence of Risk Factors of Metabolic Syndrome

The risk factors associated with metabolic syndrome, with the exception of one, are not directly observable by looking at an individual's outward appearance. That is, waist circumference is the only risk factor that can be observed in an individual's outward physical appearance, while the other risk factors (e.g., blood pressure and cholesterol levels) are internal and can only be assessed via medical tests. In this study, raters were not given information regarding leaders' internal health risk factors. Thus, one could argue that any relationship between health and effectiveness could primarily be due to judgments of the leaders' outward physical appearance (i.e., waist size).

To overcome this notion and demonstrate that the effectiveness findings are due not only to visual cues, I separated the risk factors of metabolic syndrome into two categories: (1) external factors and; (2) internal factors. Leader waist circumference was the only risk factor in the external category, while the internal factors consisted of the remaining four risk factors of metabolic syndrome, blood pressure, blood glucose levels,

cholesterol, triglyceride levels. A multiple regression analysis was conducted to examine the variance explained by the internal vs. external risk factors in the relationship between metabolic syndrome and perceived leader energy. In my regression model, waist circumference was entered first. Results showed that the external risk factor of waist circumference was statistically significant ($\beta = -.01$, $p < .05$) and accounted for 3% of the variance in the model ($R^2=.08$, $p < .01$). The four internal risk factors of metabolic syndrome were entered next into the model. Results of this analysis showed that each of these four internal risk factors were statistically significant ($p < .01$), and accounted for an additional 10% of the variance explained, ($\Delta R^2=.10$). Based on the results of these analyses, I concluded that there was sufficient evidence to support the use of the four internal risk factors of metabolic syndrome, and that the external risk factor of waist-circumference was not the sole predictor of perceived levels of energy in leaders.

CHAPTER 5: DISCUSSION

The present findings used multiple sources of data to show support for a model of executive leader health and effectiveness. The lifestyle behaviors that leaders engage in outside the domain of work appear to have a significant relationship with their physical health, as indicated by their risk for metabolic syndrome. In turn, whether or not an executive meets the criterion for metabolic syndrome has a significant relationship with leaders' effectiveness on the job, through the leaders' energy levels. To the best of my knowledge, this is the first study to show evidence of a mechanism that explains the relationship between leaders' health and their effectiveness, and expands our limited knowledge of how behaviors outside the workplace may have an effect on employees' behavior on the job.

5.1. The Role of Lifestyle Behaviors in Employee Health and Effectiveness

The examination of lifestyle behaviors and their relationship to health and effectiveness has theoretical implications for research on employee health and well-being. By incorporating factors outside the domain of work into work-health models, researchers can gain a better understanding of the role that physical health plays in promoting outcomes such as energy and effectiveness on the job. This study is a good first step to showing that lifestyle behaviors outside of work have positive outcomes for employees in the workplace. Future research should include studies that incorporate both the factors typically studied in the work domain (e.g., job conditions, work hours) and

lifestyle factors that employees engage in outside the workplace. A comprehensive model of this nature could then potentially examine how the combination of job characteristics and work schedules contribute to health and well-being of employees.

In terms of practical implications, this study highlighted the positive benefits of having a healthy workforce within an organization. This concept is not overly novel, as many organizations today actively encourage their employees to be more aware of their health and consider healthier lifestyle choices to improve the quality of their life, both at work and in their personal lives (Waller & Moten, 2012). Google, for instance, implemented a program called *Google Nudges*, which was designed to encourage their employees to make healthier choices with respect to their diets and snacking habits (Richard, 2012). For example, hard candy found in break-rooms was no longer stored in clear hanging dispensers, and was instead placed in opaque bins. The switch led to a 9% drop in caloric intake from candy in just one week (Richard, 2012). Other forms of organizational health and wellness initiatives include discounted gym memberships for employees, free health screenings and immunizations, seminars and workshops on healthy eating and nutrition, and company-sponsored weight-loss challenges (Capps & Harkey, 2008; Waller & Moten, 2012).

Despite the positive benefits of encouraging employees to live healthier lifestyles, these implications are not without controversy. I would like to note that this study is by no means suggesting that organizations *require* employees to be more fit and healthy, nor should they monitor or deliberately try and intervene in employees' personal lives. Rather, I posit that organizations can commit resources towards health and wellness programs as a form of organizational support, emphasizing the positive benefits for the

employee and that the organization cares about the health and well-being of its employees.

5.2. Healthy Leaders and their Effectiveness at Work

An emerging trend in leadership research has placed an emphasis on leader health and its relationship with effectiveness (McDowell-Larsen et al., 2002; Neck & Cooper, 2000; Quick et al., 2000). To the best of my knowledge, this study is the first to deepen our understanding of leader health and effectiveness, by examining a leader's energy as a mechanism that explains the relationship between leader health outside the domain of work and effectiveness on the job. Leaders that engage in healthy lifestyle behaviors should see increases in energy levels throughout the day, which in turn will allow them to actively engage in their day-to-day work routines, as well as handle the stress and demands of their jobs with resiliency and vitality.

Future research should continue to explore other mechanisms to expand our understanding of the relationship between executive leader health and effectiveness at work. In their meta-analysis on traits of effective leaders, Hoffman et al. (2011) highlighted several trait-like behaviors of leaders beyond energy, such as the extraversion of a leader or their ability to influence and inspire commitment in others. These traits could also be examined as mechanisms to explain the relationship between health and effectiveness, and should be explored in future studies linking health outside the domain of work and effectiveness on-the-job.

5.3. Self-Regulation Theory and Effectiveness

Having found evidence for the link between health and effectiveness, future research could seek to provide a more robust theoretical framework for why this relationship exists. Self-regulation theory, for instance, suggests that individuals can help themselves through self-management processes, which include things like setting goals, self-observation, self-reward, and self-punishment (Manz, 1986). By engaging in these self-management processes, individuals can develop stronger self-control behaviors and are better able to manage their cognitive resources throughout the day (Kanfer & Karoly, 1972). These principles could be applied to an organizational setting that wants to advocate the adoption of healthier lifestyle choices by its leaders, or employees. It is quite possible that healthy lifestyle habits such as taking the time to engage in regular exercise and eat healthy could be viable strategies for building up one's capacity to self-regulate on a variety of levels, such as cognitive resource management, emotion regulation, and stress management. Adoption of these strategies, in-turn, can help employees better manage their workloads and day-to-day job stress, thus making them more effective employees in the long-run.

The health of executive leaders has numerous practical implications for employees and organizations. As the results of my study demonstrate, leaders with metabolic syndrome were rated as less effective leaders by their bosses. In other words, metabolic syndrome appears to have some implications for leader effectiveness. Thus, executive leaders should be aware of the risk factors of metabolic syndrome and might consider getting regular health check-ups to assess their risk levels for the five risk factors of metabolic syndrome.

Healthy executives could have a positive influence on those around them, including their peers and subordinates. Given that leaders are in a strong position to influence and enact change, a healthy leader may encourage those around them to engage in more healthy lifestyle habits, which in turn could enhance the effectiveness of the workforce overall. Also, I expect healthier leaders to be less prone to some of the negative physical and mental health effects associated with metabolic syndrome (e.g., chronic fatigue, depression, frequent mood swings/irritability). In turn, this could have positive implications for leader/subordinate relationships, as one would expect that healthy leaders would behave in a more engaging, energetic, and positive manner towards their subordinates.

Conversely, unhealthy leaders might not show as much energy and enthusiasm towards their employee group, and subordinates might develop negative attitudes towards a leader who is more prone to mood swings and irritability. Future research could test this idea and examine whether healthy leaders have more positive relationships with their subordinates, and whether or not this in turn has a relationship with the performance, effectiveness, and/or satisfaction levels of subordinates.

5.4. Limitations and Future Research

One limitation of my study is the use of self-report data on healthy eating and exercise habits of organizational leaders. Similar measures, however, have been used in other studies looking at the effects of exercise and diet on individual health (McDowell-Larsen et al., 2002; Schatzen et al., 2001). Practically speaking, it would be difficult to directly observe the eating and exercise habits of individuals, given that these behaviors

take place in a variety of different locations. Furthermore, close observation of these habits from outside observers would likely infringe upon the privacy of an individual's personal life, unless they were observed by an individual's spouse or significant other. Conversely, a strength of this study was the objective measurement of leader health, using physiological health measures in assessing metabolic syndrome and health, as well use of leadership ratings from two different sources (i.e., subordinates and bosses).

I also used single-item predictors of metabolic syndrome for this study. Assessing the healthy eating habits of vegetables, fruits, breakfast, and red meat consumption could potentially be combined to form an aggregate measure of healthy eating. The correlations between these four items, however, were relatively weak ($r < .40$), and thus I did not have sufficient evidence to combine the four healthy eating habits into one latent measure of healthy eating. Conceptually, it may be more appropriate to measure healthy eating items separately. One wouldn't necessarily expect, for instance, that patterns of eating breakfast would necessarily correlate strongly with how many servings of vegetables that an individual consumes per day. Future research could look at validating some type of healthy eating profile for researchers to use going forward.

Finally, my study used the Energy Orientation Scale from the Campbell Leadership Index, which was the measure available to us in this data set. To the best my knowledge, this study was the first to examine the role of leader energy as a mechanism for explaining the relationship between leader health and effectiveness. Energy seems promising as a mechanism for explaining the relationship between leader health and effectiveness, thus future research should perhaps include studies concerned with developing and validating the construct of leader energy further.

CHAPTER 6: CONCLUSION

The current study highlighted the importance of examining leader health outside the domain of work, and its relationship with effectiveness on the job. Lifestyle behaviors of leaders can have a significant impact on health that may spill over into their work lives, thus affecting their ability to perform their job duties effectively. While my results certainly have implications for improving leader health and effectiveness, they could also generalize other employee populations at lower levels of the organization. Overall, I believe this study broadens our understanding of employee health and well-being, as well as our understanding of factors that have a relationship with leadership effectiveness. I hope that future research on leadership effectiveness, the work-health relationship, and employee health and well-being will continue to incorporate lifestyle behaviors beyond the domain of work.

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APPENDIX A: FIGURE 1 – HYPOTHESIZED MODEL

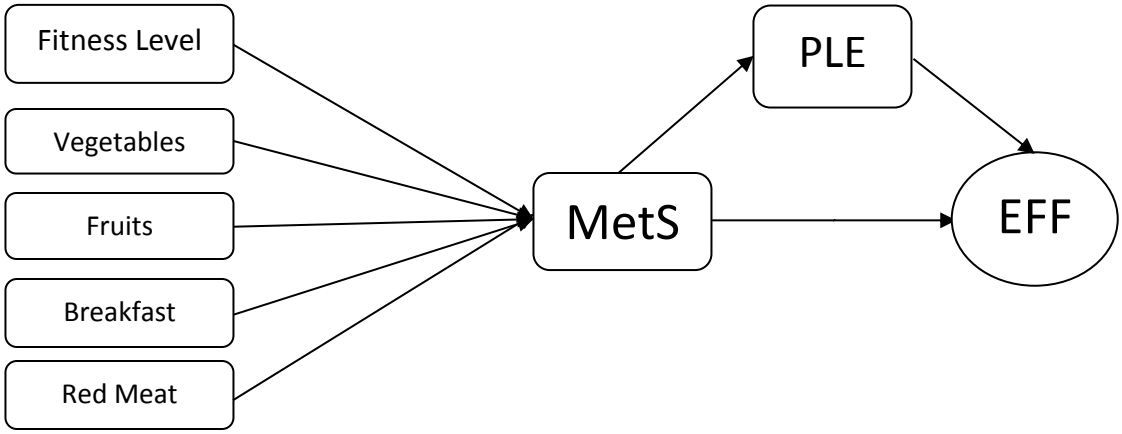

Figure 1. Hypothesized model. Vegetables=Number of servings of vegetables consumed per day. Fruits=Number of servings of fruit per day. Breakfast=How many days during the week do you eat breakfast?. Red Meat=How often do you consume red meat? MetS=Risk for metabolic syndrome. PLE=Perceived Leader Energy. Eff=Perceived Leader Effectiveness.

APPENDIX B: FIGURE 2 – STRUCTURAL MODEL

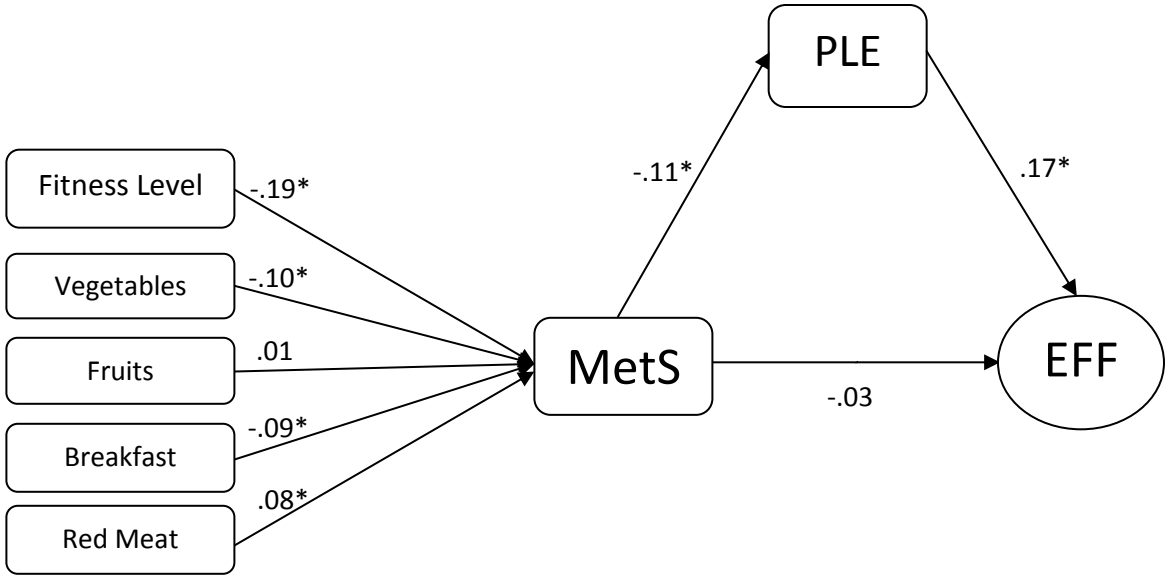

Figure 2. Structural model of the hypothesized relationships (standardized path coefficients). *Indicates relationships are significant at $p < .05$. Vegetables=Number of servings of vegetables consumed per day. Fruits=Number of servings of fruit per day. Breakfast=How many days during the week do you eat breakfast? Red Meat=How often do you consume red meat?. Metabolic syndrome=Risk for metabolic syndrome. PLE=Perceived Leader Energy. Eff=Perceived Leader Effectiveness.

APPENDIX C: TABLE 1 – RISK FACTORS OF METABOLIC SYNDROME

Table 1. Risk factors of metabolic syndrome.

Risk factor	Criteria
Blood Pressure	Equal or higher than 130/85 mmHg
Blood Sugar (Glucose)	Equal or higher than 100 mg/dL
Large Waist Circumference (Length around the waist)	Men: 40 inches or more Women: 35 inches or more
Low HDL Cholesterol	Men: Under 40 mg/dL Women: under 50 mg/dL
Triglycerides	Equal or higher than 150 mg/dL

Note. Individuals that meet the criteria for three or more risk factors are considered to be "at-risk" for metabolic syndrome.

APPENDIX D: TABLE 2 – DESCRIPTIVE STATISTICS

Table 2. Descriptive statistics and zero-order correlations between executive lifestyle behaviors and metabolic syndrome

Variable	M	SD	1	2	3	4	5	6	7	8	9
Gender	0.80	0.40									
Age	48.63	6.42	-.02								
Exercise	0.59	0.49	-.025	-.07							
Servings of vegetables	2.21	1.15	-.26*	.06	.05						
Servings of fruit	1.56	1.07	.02	.05	.00	.22*					
Red meat consumption	0.62	0.49	.15*	-.13*	-.01	-.09	-.05				
Breakfast per week	5.45	2.15	-.10	.04	.10*	.11*	.20*	-.09			
Metabolic Syndrome	0.29	0.05	.30*	.11*	-.14*	-.19*	-.07	.14*	-.13*		
Leader Energy	5.18	0.63	.01	-.02	.17*	-.10	.10*	-.02	.18*	-.18*	
Leader Effectiveness	3.71	0.49	.08	.12*	-.05	-.01	.07	-.08	.02	-.10	.24*

N=380. *Correlations significant at p<.05 level