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Project Duration, Budget, Individual Role, and Burnout Among Construction Managers

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Walden University
2015

Abstract

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by

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MBA, Ottawa University, 2008

BSME, University of Toledo, 2002

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

August 2015

Abstract

Professionals who experience burnout are less productive and lead to decreases in both profitability and human resource (HR) capital. The purpose of this correlational study was to examine the relationship between construction project duration; project budget; an individual's role on a project; and Maslach's three dimensions of burnout, (a) professional efficacy, (b) emotional exhaustion, and (c) cynicism, for the target population of construction management team members working within the Midwestern United States. Using data from an online survey, a multiple linear regression analysis was used, along with a separate multiple linear regression model, to quantify the relationship of each dimension of the burnout syndrome with the independent variables. Results suggested that there was no statistically significant relationship between the independent variables and burnout, but statistical significance existed with project budget predicting the burnout dimension of cynicism $F(2,136) = 6.395$, $p = 0.013$, $R^2 = 0.05$, suggesting that the larger the project budget, the more susceptible the individual to cynicism. Past research has found that increased levels of cynicism in project team members can lead to feelings of alienation and disengagement from the job role. The implications for positive social change include increased awareness of burnout within the construction context and potential modification of existing business practices and operating procedures to avoid employee burnout of project management team members. Business leaders expanding their understanding about predictors of burnout may lead to lower turnover and turnover intentions while increasing productivity and profitability of their organizations.

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Dedication

I would like to dedicate this study to my wife, Amy. Without your support and encouragement, I do not know if I would have ever started this journey, and now it is finished. I could not have done it without all of your loving support along the way. You are my best friend, and I love you so incredibly much! I know that I am not always the best about expressing my admiration, appreciation, and love to you, but hopefully having it published for eternity will be a good start.

And to my four children: Grayson, Logan, Peighton, and Ella. I hope I can always be there to support you and encourage you never give up on your dreams and never stop learning. I know that I will not always be able to be there, physically, but hope that I can always be an emotional support and your biggest cheerleader. I love you very much.

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I would like to thank all of the brilliant professors and academics that guided and shaped this study, including Dr. Savard, Dr. Turner, Dr. Prince, Dr. Pinto, Dr. Dunfee, and Dr. Fisher-Blando. Your willingness to give of your time, resources, and expertise proved invaluable in this journey. I would not have had the same experience without you.

I also thank Dr. Reggie Taylor for taking the time one-on-one to help design the study and assist along the way. Your expertise in methodology and quantitative analysis is inspiring, and I know that without your help, I would not have the kind of study I do. I enjoyed the opportunity we had to spend time together in Phoenix.

Moreover, I would like to extend heartfelt gratitude and thanks to my chairperson and mentor, Dr. Cheryl Lentz. Thank you for all of your time, support, encouragement, and at times, prodding. You are an inspiration, and I cannot thank you enough. Your invaluable insights and suggestions helped make this study what it is. For Dr. Lentz and the others who had a hand along the way, I thank you for being the giants in my journey whose shoulders I humbly stand.

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Section 1: Foundation of the Study

Burnout is a popular research topic in occupational health psychology (Bakker & Costa, 2014). The job performance of employees who are at risk for burnout may negatively affect the organization's financial strength (Bakker, Demerouti, & Sanz-Vergel, 2014). Leung, Chan, and Dongyu (2011) described the construction industry as challenging, continually changing, and stressful because of high demands and low control. Burnout exists among construction project managers because of the unique combinations of (a) high job demands, (b) perceptions of low control, and (c) a lack of social support (Pinto, Dawood, & Pinto, 2014). The purpose of this study was to determine if the independent predictor variables of construction project duration, budget, and an individual's role on the project correlated with a measurement of burnout of construction project team members in the Midwestern United States.

Background of the Problem

Construction projects are temporary efforts undertaken to build, modify, repair, or replace a functional end product (i.e., road, bridge, building, treatment plant, school, or church; Project Management Institute [PMI], 2008). For the purpose of this study, construction project team members are a number of stakeholders representing the end user, the contractor, the construction manager, and the engineering firm involved with the development or administration of a project. Construction managers must effectively manage project duration, budget, quality, and safety to deliver a successful project (An, Zhang, & Lee, 2013). Construction project team members commonly experience high stress levels and burnout (Bowen, Edwards, Lingard, & Cattell, 2014; Lee, Jin, & Park,

2012; Mostert, 2011; Pinto et al., 2014). Burnout among project team members often prevents such success, leading to increased turnover intentions, lack of productivity, and loss of organizational profitability (Lee et al., 2012; Lin, Jiang, & Lam, 2013; Mostert, 2011; Sun, 2011).

Direct relationships exist between organizational performance and employees affected by burnout (Park & Shaw, 2013). With projected employment growth of 16% in the United States for construction managers by the year 2020, employers need to understand the factors that contribute to employee burnout within the industry (U.S. Department of Labor, Bureau of Labor Statistics, 2014). The purpose of this quantitative correlational study was to analyze the relationship between the independent variables of project duration, budget, and individual's project role on a measure of burnout of team members within the United States.

Problem Statement

As of July 2014, the estimated annual construction spending for the year in the United States is $981 billion with the projected outlook continuing to grow through 2020 (U.S. Census Bureau, 2014c). The construction industry is a project and portfolio based industry with construction project managers leading the individual efforts with projected hiring growth in the United States increasing 16% by 2020 (U.S. Department of Labor, Bureau of Labor Statistics, 2014). The general business problem is that organizations experience losses including human resource (HR) capital and financial losses, because burned out workers lose focus and productivity (Lee et al., 2012; Mostert, 2011). The specific business problem is that some construction business leaders in the United States

do not understand the relationship between project duration, project budget, an individual's role on a project, and burnout.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between construction project duration, project budget, an individual's role on a project, and burnout using multiple linear regression analysis. The target population included project team members in the construction industry in the Midwestern United States. The independent variables were project duration, project budget, and the individual's role on a project. The dependent variable was a measurement of burnout.

The social change implications included the potential to provide valuable information regarding predictors of burnout among construction professionals in the Midwestern United States. Business leaders in the construction industry may be able to take the information learned in this study and directly affect the productivity of construction managers within their organizations. Understanding and eliminating the causes of burnout for construction project team members may directly affect their morale; focus; and the bottom line profitability of the organization (Mostert, 2011).

Nature of the Study

The strategy for the examination of the research study was through a quantitative method. Foundational components of the study included definitive terms, numerical data, objectivity, and statistics, which aligned with a quantitative method (Labaree, 2011). Deductive reasoning and data analysis was the basis of testing of the hypotheses, not a subjective interpretation of the data (Wisdom, Cavaleri, Onwuegbuzie, & Green, 2012).

A quantitative research method was the best approach instead of a qualitative method because of the intent to study the relationship of construction project factors on the burnout of construction project team members analyzing numerical data through statistical means.

Specifically, the study's design was correlational. Conducting an examination of relationships between construction project factors and burnout of construction project team members without manipulation or treatment to the dependent variable aligned with a correlational design (Gerring, 2011). Additionally, surveying a defined target population without the use of random selection aligns with a correlation study (Gerring, 2011). Therefore, the experimental and quasi-experimental designs lacked validity for this study.

Research Question

RQ: Is there a statistically significant relationship between project duration, project budget, project role, and burnout?

Hypotheses

$H1_0$: There is no statistically significant relationship between project duration and burnout.

$H1_a$: There is a statistically significant relationship between project duration and burnout.

$H2_0$: There is no statistically significant relationship between project budget and burnout.

$H2_a$: There is a statistically significant relationship between project budget and burnout.

$H3_0$: There is no statistically significant relationship between an individual's role and burnout.

$H3_a$: There is a statistically significant relationship between an individual's role and burnout.

Theoretical Framework

The theoretical framework for this study included three factors purported to predict burnout among construction project team members: (a) project duration, (b) project budget, and (c) individual role. A multidimensional model of burnout developed by Christina Maslach and Susan Jackson (1981) was the model used for the dependent burnout variable for this study. The burnout model has three components that constitute the burnout syndrome, (a) emotional exhaustion, (b) cynicism, and (c) reduced personal efficacy (Maslach & Jackson, 1981). Since the inception of the multidimensional model in the early 1980s, this model of burnout, coupled with the associated Maslach Burnout Inventory (MBI) is the most popular model and instrument to assess burnout (Qiao & Schaufeli, 2011).

The Maslach Burnout Inventory–General Survey (MBI-GS) is a modification of the original assessment focused on all professions, not just the people-service industry (Schaufeli, Leiter, Maslach, & Jackson, 1996). Using the model of burnout developed by Maslach and Jackson, the three independent variables will theoretically directly influence

the components making up the burnout syndrome. Figure 1 depicts a graphical model of the theoretical framework proposed to predict burnout.
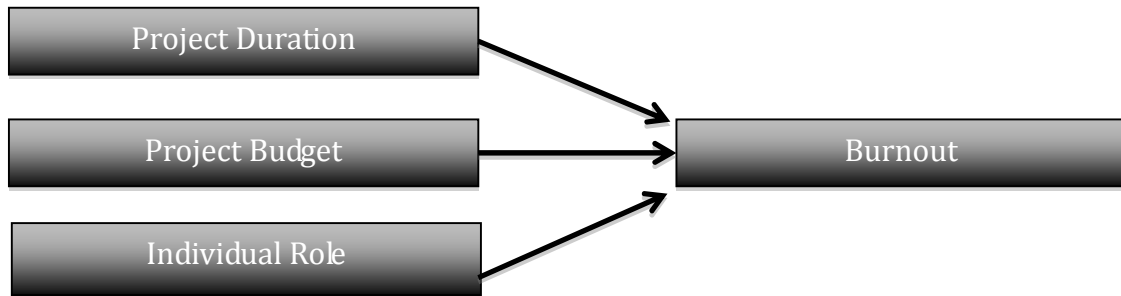
Figure 1. Graphical model of the theoretical framework proposed to predict burnout.

Definition of Terms

This section includes definitions of terms used throughout this study not found in the common dictionary. The terms defined in this section may not be commonly understood by the reader. The purpose of this section is to define ambiguous terms or terms used within this study that could have various meanings within different contexts.

Burnout. Burnout is a response syndrome of exhaustion, depersonalization (or cynicism), and reduced personal accomplishment (Borgogni, Consiglio, Alessandri, & Schaufeli, 2011).

Cynicism. Cynicism is a dimension of burnout related to alienation and disengagement from the job role (Borgogni et al., 2011).

Depersonalization. Depersonalization is a dimension of burnout characterized by the treatment of clients and peers as objects rather than people, a display of detachment, and emotional callousness (Bektas & Peresadko, 2013).

Emotional exhaustion. To be overextended, where the emotional demands of one's work depletes their resources is emotional exhaustion (Al-Dubai, Ganasegeran, Perianayagam, & Rampal, 2013).

Midwestern United States. The group of states defined as Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin (U.S. Census Bureau, 2014b).

Project. A temporary effort undertaken to achieve a unique result (PMI, 2008).

Project manager. The person assigned to achieve project objectives by the controlling organization (PMI, 2008).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions include items that may influence the researcher's true understanding of the study (Böhme, Childerhouse, Deakins, & Towill, 2012). The first assumption made in this study was that the primary research instrument, an online survey, would allay participant concerns about the potential discomfort of voicing their opinion in an open forum or survey by mail. I also assumed that the participants of the study could complete an online survey instrument because they had access to the Internet. In addition, an assumption was that the participants would report their responses accurately and objectively, permitting meaningful data collection despite the limitations and challenges in self-administered survey research (e.g., Persson et al., 2012).

Limitations

Limitations are internal threats to the validity of the study (Ellis & Levy, 2009). The research study was descriptive and correlational. The online survey was the data collection method, and the participants needed access to the Internet. Access to the Internet limited the number of potential participants. Participants made a choice to participate, which limited the participants and presented the possibility of self-selection bias. Some researchers believed the reliability of an online survey limited the validity of the results (Campos, Zucoloto, Bonafé, Jordani, & Maroco, 2011). Sadeghi and Pihie (2012) mitigated the limitation by using a validated, widely accepted survey, also used in this study. Time was a limitation of this study. The single collection survey limited the collection of burnout measurements over the life-cycle of an entire project.

Delimitations

Delimitations affect the scope of the study (Vladu, Matiş, & Salas, 2012). A delimitation of this study was that study participants were full-time construction project professionals with current experience in their field. Projects last a designated period, typically a few months to a few years (PMI, 2008). The goal of the survey instrument was to assess participant responses in a one-time nature, which meant that environmental factors external to the project may have affected survey results. Additionally, various items were outside of the scope of this study, including (a) the influence of extreme external conditions such as national economic conditions, or (b) extreme home-life situations, such as, divorce, moving, or births and deaths within the family context that could affect burnout and stress levels.

Significance of the Study

Contribution to Business Practice

Business owners and employers may gain insight into the causes of burnout of construction managers in the United States. Business leaders can assist personnel that may be suffering from the burnout syndrome to address productivity issues by understanding the factors related to burnout. Mitigation of the factors related to burnout or providing coping strategies to employees may result in lower turnover rates, increased productivity, and higher profit margins (Mostert, 2011).

Implications for Social Change

Emelander (2011) found that a significant population of the project management community may experience high levels of burnout. The effects of burnout in the workplace carried into heightened work-life and work-home conflicts and increased turnover intentions (Devi & Kiran, 2014; Mostert, Peeters, & Rost, 2011). The construction industry is socially marked as masculine and assisting employee needs in highly gendered terms is an issue (Duke, Bergmann, Cunradi, & Ames, 2013). Society accepts nurturing and social support as feminine, and masculine industries do not include these constructs (Duke et al., 2013). The results of this study may allow changing of the typical social constructs within the masculine construction industry. In identifying the factors that contribute to burnout of employees, business leaders may implement mitigation efforts and coping strategies to reduce the incidence of burnout of construction managers.

A Review of the Professional and Academic Literature

In this literature review, I discuss, in detail, the context of the research by examining and conveying the synthesis of the main topic areas building up to the central research topic. The purpose of this quantitative correlational study was to examine the relationship between construction project duration, project budget, an individual's role on a project, and burnout. The target population comprised project team members in the construction industry in the Midwestern United States. The independent variables were project duration, project budget, and the individual's role on the project. The dependent variable was a multidimensional measurement of burnout. The central research topic was whether there was a statistically significant relationship between project duration, project budget, project role, and burnout. The study hypotheses included whether a statistically significant relationship existed between each independent variable and burnout.

The five topic areas included in this literature review are (a) the theoretical framework, (b) rival theories and opponents of the theoretical framework, (c) the measurement instrument, (d) the independent and dependent variables within the context of burnout, and (e) the research methodologies used by previous researchers in conducting burnout studies. The parameters for the research conducted in this section included seminal research on the theoretical framework and peer-reviewed journals published within the past 5 years. Appendix A includes a breakdown of references and sources contained in this literature review and the study. My strategies for searching the professional and academic literature in creation of this literature review included (a) searching academic databases available through the Walden University library, (b)

searching dissertations and theses through the ProQuest and UMI databases, (c) searching and accessing peer-reviewed journals through the Walden University library and the homepages of the various publications, and (d) using the searching and alert functions through Google Scholar.

This doctoral study included 132 sources, with 64 sources included in the literature review. Peer-reviewed sources constituted 113, or 85.6%, of the sources in the study, and 59, or 92.2%, contained in the literature review. Doctoral studies must contain references from current sources when applied practice is the focus. For the purposes of this study, a source with a publication date within 5 years of anticipated Chief Academic Officer approval is current. This doctoral study included 119 current sources or 90.15%, and the literature review included 56 current sources, or 87.5%.

Theoretical Framework

Three factors purported to predict the multidimensional components of burnout among construction project team members using the Maslach burnout model was the theoretical framework for this study. The three factors included (a) project duration, (b) project budget, and (c) an individual's role on a project and were the independent variables in this study. The Maslach Burnout Inventory-General Survey (MBI-GS) administered via an online survey, measures burnout and was the dependent variable.

Hypotheses

$H1_0$: There is no statistically significant relationship between project duration and burnout.

$H1_a$: There is a statistically significant relationship between project duration and burnout.

$H2_0$: There is no statistically significant relationship between project budget and burnout.

$H2_a$: There is a statistically significant relationship between project budget and burnout.

$H3_0$: There is no statistically significant relationship between an individual's role and burnout.

$H3_a$: There is a statistically significant relationship between an individual's role and burnout.

Project duration. Project duration is the length of a project, typically measured in months or years (PMI, 2008). Pinto, Dawood, and Pinto (2014) questioned if project duration had a relationship with burnout among construction project team members. Pinto et al. believed that the longer the project duration, the more susceptible the individual to experience burnout.

Project budget. Project budget is the cost of the construction project to the client or end user (PMI, 2008). Larger projects, with higher budgets, are more complex (Bowen, Edwards, & Lingard, 2012). Pinto et al. (2014) questioned if project budget had a relationship with burnout among construction project team members.

Individual role. Pinto et al. (2014) questioned whether an individual's role on a project had a relationship with burnout. Pinto et al. believed that certain roles would experience more burnout because of increased demands and lower support. In this study,

the project manager role is left out of the leave-one-out analysis because researchers study project managers more often than other roles (Emelander, 2011; Leung et al., 2011).

The Maslach Burnout Inventory-General Survey (MBI-GS)

A multidimensional model of burnout developed by Christina Maslach and Susan Jackson was the instrument used for this study (Maslach & Jackson, 1981). The measurement of experienced burnout has three components that constitute the burnout syndrome, (a) emotional exhaustion, (b) cynicism, and (c) reduced personal efficacy (Maslach & Jackson). Since the 1980s, this model of burnout, coupled with the associated Maslach Burnout Inventory (MBI) is the most popular model and instrument to assess burnout (Qiao & Schaufeli, 2011). The Maslach Burnout Inventory–General Survey (MBI-GS) is a modification of the original assessment focused on all professions, not just the people-service industry (Schaufeli et al., 1996). As the model and the instrument measuring experienced burnout developed, since its inception in the early 1980s, additional models and theories emerged.

Rival Theories

As the MBI developed into fields outside health and human services, the instrument expanded into education, and general profession (Schaufeli et al., 1996). As the adaptations developed beyond health and human services and the native languages of the original creators, researchers began to develop alternative instruments for their research and languages of the participants (Carlotto, Gil-Monte, & Figueiredo-Ferraz, 2015; Figueiredo-Ferraz, Gil-Monte, & Grau-Alberola, 2013; Gil-Monte & Figueiredo-

Ferraz, 2013; Gil-Monte, Figueiredo-Ferraz, & Valdez-Bonilla, 2013; Moncada et al., 2014). The Spanish Burnout Inventory, the Copenhagen Psychosocial Questionnaire II, and the Oldenburg Burnout Inventory failed to gain popularity beyond their native regions (Gil-Monte & Figueiredo-Ferraz, 2013; Lundkvist, Stenling, Gustafsson, & Hassmén, 2014; Moncada et al., 2014). Additionally, fields of study beyond health and human services, education, and general industry have also developed instruments to measure burnout in their respective fields similar to the Athlete Burnout Questionnaire used in sports study (Raedeke, Arce, De Francisco, Seoane, & Ferraces, 2013).

Independent and Dependent Variables

The work by Pinto et al. (2014) confirmed the pursuit of this topic of study. Pinto et al. identified project duration and project budget as desired independent variables in future research. Additionally, Pinto et al. questioned whether an individual's role on their respective projects and within their organizations played a part in experienced burnout. A multidimensional measurement of burnout using the MBI-GS is one instrument used in the Pinto et al. study, but is also the dependent variable in many additional studies related to stress and burnout (Bria, Spânu, Băban, & Dumitraşcu, 2014; Mészáros, Ádám, Szabó, Szigeti, & Urbán, 2014; Moore & Loosemore, 2014).

Stress and burnout. Herbert J. Freudenberger (1974) created the term *burnout* and its application to the stress syndrome. Freudenberger noted the general circumstances leading to symptoms of burnout among professional staff, namely overwork and emotional strain. Developed from initial observations in a free-clinic human services environment during the 1960s, Freudenberger documented results of continuous demands

on caregivers, including himself (Freudenberger & Richelson, 1980). Stress can both positively and negatively affect an individual. Beheshtifar and Omidvar (2013) questioned why some workers report negative consequences from stress while others in the same organization flourish. Work-related stress is a growing concern and causing increased research around the world to find solutions to the nature, causes and legal requirements relating to implementation and control within the workplace (Desa, Yusooff, Ibrahim, Kadir, & Rahman, 2014).

The premise of the conservation of resources theory is that individuals strive to collect, construct, and protect that which they value (Alarcon, 2011). A demand is a loss, whether the threat or actual loss, of resources after an investment (Alarcon, 2011). As resources diminish and demands increase, the more maladaptive coping will take place, which leads to burnout (Alarcon, 2011). Organizations need to attempt to keep burnout under control consistently through an advanced detailed program and to intervene through certain preventative methods when required (Beheshtifar & Omidvar, 2013). Reduced desperation, lower intentions to leave and increased performance are outcomes of successful coping (Hätinen, Mäkikangas, Kinnunen, & Pekkonen, 2013).

A psychological response to job stress is burnout (Beheshtifar & Omidvar, 2013). Organizations cannot afford the cost effects of the negative consequences of job burnout (Beheshtifar & Omidvar, 2013). Work-life balance is a concept that evolved from the acknowledgment that a person's work-life and home-life potentially exert conflicting demands on each other (Devi & Kiran, 2014). Organizations need to implement effective individual and managerial strategies to control the burnout of employees (Beheshtifar &

Omidvar, 2013). Management needs to have clear and precise understanding of the job

burnout process and development of its various stages (Naveed & Saeed Rana, 2013).

Burnout affects job satisfaction negatively, and fosters low organizational commitment

(Ashill & Rod, 2011).

The job demands-control (JDC) and job demands-control-support (JDCS) models

are the two most commonly used frameworks for relating job factors and personal health

and wellness (Johnson & Hall, 1988; Karasek, 1979; Karasek & Theorell, 1990). A

limitation of the original JDC model is the lack of social influence at the group and

individual level (Karasek, 1979). The JDCS model filled the gap in the JDC model by

providing a mechanism to evaluate support from both a coworker and supervisor context

(Johnson & Hall, 1988; Karasek & Theorell, 1990).

The job demands-resources (JD-R) model is a theoretical framework that attempts

to integrate two independent research traditions: the stress research and motivation

research traditions (Demerouti & Bakker, 2011). The model used to investigate the

influence of job characteristics on burnout, and work engagement is the JD-R model

(Mostert et al., 2011). Study results suggested that the JD-R model can predict the

experience of burnout and work engagement (Demerouti, Bakker, Nachreiner, &

Schaufeli, 2001).

A premise of the JD-R model is that two psychological processes factor into the

development of job-related strain and motivation: health impairment and motivational

(Demerouti & Bakker, 2011). The health impairment process stated that chronic job

demands (e.g., work overload or emotional demands) exhaust employees' mental and

physical resources and deplete energy that leads to health problems (Demerouti &

Bakker, 2011). In the motivational process, job resources lead to high work engagement,

low levels of cynicism, and excellent performance is an assumption (Demerouti &

Bakker, 2011). When employees experience high work demands and insufficient

resources to deal with these needs, the employee's home domain suffers because the

combination will likely result in the building up of negative reactions (Mostert et al.,

2011). When employees' job resources adequately meet their needs (e.g., autonomy and

social support), they may have more positive experiences at work, which helps to enrich

home life, further building vigor and dedication (Mostert et al., 2011).

One influential theory in the occupational health area compared to the numerous

theories proposed to explain how work characteristics relate to organizational and

employee outcomes is the job demands –control-support (JDSC) model (Luchman &

González-Morales, 2013). Age, project budget, and project duration had no significant

effects on any of the dimensions of burnout (Pinto et al., 2014). Consequently, gender

showed significant effects in the dimension of personal exhaustion suggesting that

women experience the burnout effect of exhaustion more than men (Pinto et al., 2014).

High control and high coworker support can effectively offset the influences of high job

demands on the emotion exhaustion dimension (Pinto et al., 2014). Consequently, project

managers working in demanding situations with low control and high supervisor support

rated high in the cynicism dimension (Pinto et al., 2014).

The model most frequently used and tested as a theoretical foundation for

research is the JDSC model (Luchman & González-Morales, 2013). Substantial research

stemmed from the JDSC model in the areas of nursing, psychology and epidemiology

inspired the Job-Demands Resources (JD-R) model (Luchman & González-Morales,

2013). Despite the extensive evidence of predictive validity for the JDSC model, little

research has attempted to characterize the interrelationships among the work

characteristics: demands, control and support (Luchman & González-Morales, 2013).

Both the JDSC and JD-R models are multivariate, thus understanding the predictor

interrelationships are critical for accurate characterization of the effect of any one

predictor (Luchman & González-Morales, 2013). With information, practitioners and

organizations can prioritize resources for interventions to enhance employee wellness

(Luchman & González-Morales, 2013).

Luchman and Gonzalez-Morales (2013) conducted a meta-analysis review of the

interrelationships between the work characteristics comprising the JDSC model. The data

for empirical support for the JD-R model versus an independent resource concept,

implied by the JDSC model, in a set of competing meta-analytical structural equation

models predicting wellness (Luchman & Gonzales-Morales, 2013). Some studies omitted

the discussion of the interactive, buffer hypothesis focused on the prediction of strain-

related outcomes (Luchman & González-Morales, 2013).

The independent resource model, implied by the JDSC theoretical framework, fit

better to the data and produced fewer counterintuitive effects, which concludes that

resource-like work characteristics in the JDSC model should be treated independently

(Luchman & González-Morales, 2013). Additionally, the task-related demands like

workload and time pressure had, on average, no bivariate effect with job control, whereas

supervisor and coworker support did have a negative relationship with demands (Luchman & Gonzalez-Morales, 2013). Luchman and Gonzalez-Morales noted that the moderator effect discovered in the exploratory analysis of the demand-control relationship showed that mainly female participants showed negative demand-control correlations whereas mainly male participants showed positive correlations, uncovering the need for future research into why a gender composition effect would occur. Finally, task-related demands were the strongest predictor of burnout; thus, reducing these task-related demands is the most effective way that an organization can mediate high levels of burnout (Luchman & Gonzalez-Morales, 2013).

Burnout in other industries. Common topics of research included (a) the causes of stress and burnout in the workplace, (b) the effects on work productivity, and (c) personal factors that influenced the positive or negative effects on the individual. Initially developed in the medical field, an abundance of academic literature exists on the topics of stress and its effects within the medical context (Taft, Keefer, & Keswani, 2011; Tei et al., 2014; Trivellas, Reklitis, & Platis, 2013; van der Riet, Rossiter, Kirby, Dluzewska, & Harmon, 2014; Westermann, Kozak, Harling, & Nienhaus, 2014; Wisetborisut, Angkurawaranon, Jiraporncharoen, Uaphanthasath, & Wiwatanadate, 2014; Wu et al., 2011). Subsequently, the fields of teaching and academia studied stress and burnout (Farshi & Omranzadeh, 2014; Ullrich, Lambert, & McCarthy, 2012; Unterbrink et al., 2012; Van Droogenbroeck, Spruyt, & Vanroelen, 2014), as well as the military (Serec, Bajec, Petek, Švab, & Selič, 2012), personal selling and sales (Choi, Cheong, & Feinberg, 2012; Nalatelich, Sager, Dubinsky, & Srivastava, 2014; Shepherd, Tashchian,

& Ridnour, 2011), banking and finance (Okonkwo, Echezona-Anigbogu, Okoro, Eze, & Azike, 2014; Yavas & Babakus, 2011), and manufacturing (Agyemang, Nyanyofio, & Gyamfi, 2014).

Farshi and Omranzadeh (2014) conducted a study to evaluate the effect of gender, education level, and marital status on the burnout level of teachers. Some studies viewed the syndromes of emotional exhaustion, depersonalization, and personal accomplishment (Farshi & Omranzadeh, 2014). A demographic questionnaire and the Maslach Burnout Inventory was the data collection instrument (Farshi & Omranzadeh, 2014).

Farshi and Omaranzadeh (2014) found that no significant relationship between burnout and gender existed. The findings by Farshi and Omaranzedeh contradicted previous studies conducted on service professionals, including teachers and construction professionals, which indicated that female professionals experienced a higher level of emotional exhaustion than their male coworkers (Luchman & González-Morales, 2013; Pinto et al., 2014). Farshi and Omaranzadeh found no significant statistical relationship between married and single teachers, which is in accordance with other studies conducted on the topic (Okonkwo et al., 2014).

Burnout in construction and project management. The most threatening circumstance faced by managers are those of high job demands, low perception of control, and lack of social support (Pinto et al., 2014). Social support or a socially supportive network provides a modifying factor of the relationship job demands and control to the burnout syndrome (Pinto et al., 2014). The research study limited the population to field managers and workers working on Korean construction sites of the top

30 Korea construction companies (Zhang, Lee, Choi, & An, 2013). The researchers selected the top-30 construction companies because the job stress can be different depending on the company size (Zhang et al., 2013). Many previous stress management studies focus on either field managers or individual workers (Abbe, Harvey, Ikuma, & Aghazadeh, 2011; An et al., 2013; Bowen et al., 2012; Leung, Chan, & Yu, 2012; Leung et al., 2011); however the stress level experienced by field managers can be different from that of trade workers, even in the same construction site (Zhang et al., 2013). Zhang et al. (2013) found that the stress levels of field managers was considerably lower than that of the average job stress of Korean men, which was assumed to be the case because of the high level of autonomy because of the ability to make decisions about working time and workload; which directly contrasts other construction related stress management studies (Bowen et al., 2012; Mostert, 2011; Pinto et al., 2014).

Turner and Lingard (2014), along with previous work by Lingard et al. (2012), focused on the Australian construction context. Chan et al. (2014) conducted research in Hong Kong on the construction industry. Aside from the Pinto et al. (2014) study, current research in the realm of stress and burnout within the construction context takes place outside of the United States, and is an identified gap in the existing literature (Chan, Leung, & Yuan, 2014; Ding, Ng, Wang, & Zou, 2012; Leung, Bowen, Liang, & Famakin, 2015).

Method

The leave-one-out cross-validation method is popular among researchers (Josse & Husson, 2012). For this study, the individual's project role independent variable used the

leave-one-out cross validation. As used in previous studies, one potential role is left out as an option when creating the predictor variables in the SPSS 21 software (Kim, Ali, Sur, Khatib, & Wierzba, 2012; Yuan, Liu, & Liu, 2012; Zollanvari, Braga-Neto, & Dougherty, 2012).

Transition and Summary

In Section 1, I presented a foundation for analysis and examination of a potential relationship between construction project factors and burnout experienced by construction project team members within the United States. Topics covered in this section included (a) an overview of the construction industry, (b) project management context within the industry, (c) and a look into the background of the problem that factors of construction projects at times produce negative outcomes. The following section includes the components and processes of the approach to the examination of the potential correlation between construction project factors and burnout including (a) the role of the researcher, (b) in-depth discussions about the research method and design, (c) discussions about the target population and sample, (d) ethical research considerations, and (e) validity and reliability of the study.

Section 2: The Project

This section of the study includes the details about the role of the researcher, the chosen design and method, and the population and sample that constituted the study. This section includes a discussion about the development of the sample size, the demographic factors of the participants, and the details of how the data collection and analysis took place.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between construction project duration, project budget, an individual's role on a project, and burnout using multiple linear regression analysis. The target population included project team members in the construction industry in the Midwestern United States. The independent variables were project duration, project budget, and the individual's role on a project. The dependent variable was a measurement of burnout.

The social change implications included the potential to provide valuable information regarding predictors of burnout among construction professionals in the Midwestern United States. Business leaders in the construction industry may be able to take the information learned in this study and directly affect the productivity of construction managers within their organizations. Understanding and eliminating the causes of burnout for construction project team members may directly affect their morale; focus; and the bottom line profitability of the organization (Mostert, 2011).

Role of the Researcher

The Belmont Report (1978) defined and described the roles and responsibilities of researchers conducting studies involving human participants. The three components of (a) respect, (b) beneficence, and (c) justice are the core components of the Belmont Report. The role of the researcher is to acknowledge and minimize, as much as possible, any bias that could potentially affect data collection or analysis (Marshall & Rossman, 2011). While conducting research and reporting data, separating personal perceptions, beliefs, and morals are important (Ben-Ari & Enosh, 2011; Tufford & Newman, 2012). Personal beliefs, principles, and values influence even the best-intentioned researcher, making objective research difficult (Chapman & Schwartz, 2012).

With almost 20 years of experience in the industry, personal bias existed about the working environment of construction. Maintaining objectivity and remaining impartial in the data collection process were factors that influenced the selection of quantitative research method (Wahyuni, 2012). Eliminating the interaction with the participants through an online survey helped eliminate bias and provided a mechanism for participants to express their views in a safe and simple way (Bowen et al., 2012).

Participants

People working in supervisory or support functions on construction projects in the Midwestern United States were the eligible participants in this study. Construction project team members included (a) project managers, (b) project superintendents, (c) project administrators, (d) project engineers, (e) construction management or design consultants, and (f) others who did not fall into the aforementioned categories (Bowen et

al., 2012; Bowen, Edwards, Lingard, & Cattell, 2013b; Pinto et al., 2014). The selection of participants included systematic random sampling to gain access and narrow the participant pool of completed questionnaires. SurveyMonkey® Audience is a pay for use service where SurveyMonkey® links researchers with potential participants. Invitations for the online questionnaire were distributed by SurveyMonkey® Audience based on responses to the questionnaire they filled out when becoming members of SurveyMonkey® Contribute. SurveyMonkey® employs random sampling of participants based on demographic information that matches the target population for this study (SurveyMonkey® Audience, 2014).

Research Method and Design

Method

In this study, I relied on data and analysis without subjective interpretation because of my personal worldview of positivism (Cole, Chase, Couch, & Clark, 2011). An assumption of positivism is that scientific research is objective (Henderson, 2011). From a positivist perspective, subjective, qualitative methods lower the study reliability because of the potential for increased researcher bias to enter the study (Malina, Nørreklit, & Selto, 2011). The quantitative method was the selected research method because of the intent to examine relationships between variables (Luyt, 2012). When a desire to obtain objective, unbiased, scientific and credible results exists, researchers use the theoretical framework most often associated with quantitative studies, positivism (Yost & Chmielewski, 2013).

Positivism is a philosophy of science in which human interaction is objectively studied using quantitative methods, where researchers establish causes to answer research questions using credible evidence (Thyer, 2012). The positivism theory was a framework with which to establish the hypotheses and allowing examinations to determine relevant outcomes. Thyer (2012) provided insight into the selection of the quantitative method over qualitative or mixed methods, stating that subjective content and cognitive influences best fit with qualitative and mixed methods while quantitative methods present a logical approach.

The positivist theory traditionally deals less in causality and more on correlation or the relationship between events (Tsang, 2013). Social researchers criticized positivism as too rigid and confining, however, the use of this framework provided the quantification of results through yielding objective results (Cohen, Manion, & Morrison, 2011). Numeric values for relating to trends and outcomes comprised the basis of quantitative research regardless of survey design, experimental, or quasi-experimental (Handley, Schillinger, & Shiboski, 2011).

The quantitative approach, incorporating a statistical model, permitted me to make a potential generalization across a larger population beyond the study sample (e.g., Handley et al., 2011). Studies conducted to explore feelings and evaluate perceptions or attitudes in social research benefited from the qualitative methods (Goldblatt, Karnieli-Miller, & Neumann, 2011). Researchers use quantitative methods when analyzing objective aspects of social research, relying on more empirical methods than interactive (Thyer, 2012).

Research Design

Specifically, the research design selected for this study was a correlational design. Correlational design suited this study because examining the relationship of independent variables and the dependent variable was the objective of this study (Russo, 2011). Experimental and quasi-experimental designs use randomized experimentations or develop alternative structures to determine causation (Handley et al., 2011). Conducting an examination of relationships between variables without manipulation or treatment to the dependent variable aligns with a correlational design (Gerring, 2011). Surveying a defined target population without the use of random selection aligns with a non-experimental study (Gerring, 2011). Therefore, the experimental and quasi-experimental designs were not appropriate for this study.

Population and Sampling

In 2012, the U.S. Department of Labor identified over 485,000 construction managers working in the United States (U.S. Department of Labor, Bureau of Labor Statistics, 2014). Construction project team members are not unique to any particular gender, race, religion, geographic location, or education level. Most construction project team members have a minimum of (a) a bachelor's degree in construction management, (b) construction engineering technology, (c) an engineering discipline related to the construction industry, or (d) have a high school diploma and equivalent experience in the industry (U.S. Department of Labor, Bureau of Labor Statistics, 2014). Construction project team members enter into the industry upon completion of a college degree or

promotion through the labor trades into management and will comprise age ranges of 18 to 65.

I used G*Power software version 3.1.9 to determine the appropriate sample size range with which to collect the data. G*Power is a statistical software package used to conduct an a priori sample size analysis (Faul, Erdfelder, Buchner, & Lang, 2009). Seven predictors were entered into the a priori power analysis, assuming a medium effect size (f = 0.15), $\alpha = 0.05$, indicated a minimum sample size of 103 participants by the software to achieve a power of 0.80. Increasing the sample size to 203 increased power to 0.99. Therefore, the sample size range was between 103 and 203 participants for the study (see Figure 2). The seven predictors were (a) project budget, (b) project duration, (c) the MBI-GS score, and (d) the five categorical indicator variables making up project role were (e) project manager, (f) project superintendent, (g) project engineer, (h) project administrator, and (i) construction manager or design consultant. The other role category was left out per the leave-one-out method, thus becoming the control group.
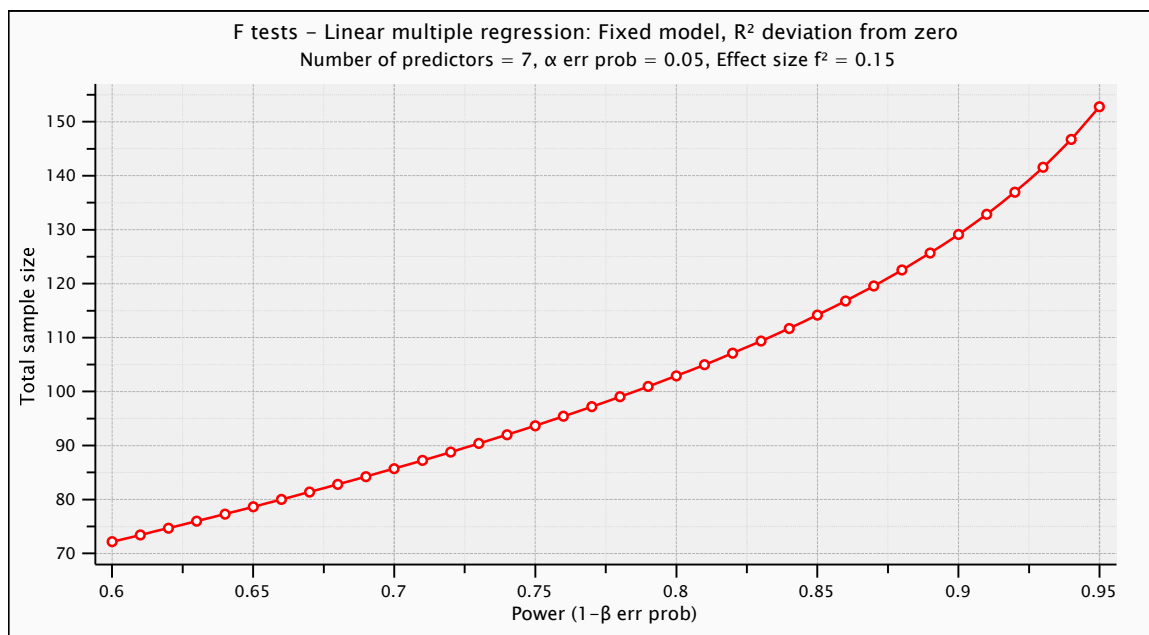
Figure 2. Power as a function of sample size.

 The effect size for this study was medium. Typically, effect sizes for similar studies were small ($R^2 \leq 0.02$), especially in non-experimental studies (Bakker, ten Brummelhuis, Prins, & van der Heijden, 2011). However, support existed for the role stress model with large effect sizes (Okonkwo et al., 2014).

 Purposive sampling is a nonprobabilistic sampling procedure where participants are selected based on their fit with the purpose of the study using specific inclusion and exclusion criteria. Purposive sampling allows a researcher to make generalizations based on the sample that is studied (e.g., Agyemang et al., 2014). Internal bias by the researcher is a weakness of purposive sampling that may exist (Campos et al., 2011). Utilizing the SurveyMonkey® Audience service eliminated the potential researcher bias, because there was no identifying information transmitted with the survey data.

The SurveyMonkey® Audience service provided access to more than 30 million potential participants based on demographic information provided by the respondents with the ability to filter based on inclusion and exclusion criteria (SurveyMonkey® Audience, 2014). SurveyMonkey® Audience used simple random sampling to obtain a sample of potential participants who met the initial inclusion criteria (SurveyMonkey® Audience, 2014). Other services considered for data collection and survey distribution included Qualtrics® and Survata®. The costs associated to use the service and access to a participant pool large enough to ensure data saturation were factors in deciding to use SurveyMonkey® Audience. Additionally, the use of SurveyMonkey®Audience as a data collection technique in previous graduate studies and peer-reviewed publications added to the level of comfort with the service (Hughes, Rostant, & Curran, 2014; Massie, 2013; Schlieper, 2014; Schoettle & Sivak, 2013; Streller, 2013)

Ethical Research

Ethical issues need to be considered by researchers when research involves human participants (Goldblatt et al., 2011; Mitchell & Wellings, 2013). I completed a certification course with the National Institute of Health to protect the rights, dignity, and privacy of human research participants in conducting this research study (see Appendix B). Yin (2012) suggested disclosing all aspects of the research study to the potential participants. Wisdom, Cavaleri, Onwuegbuzie, and Green (2012) also validated the disclosure of research aspects to potential participants. Research using online surveys involves human participants (Goldblatt et al., 2011). The introduction to the online survey instrument was an informed consent letter detailing the precautionary measures to

ensure the application of ethical procedures during the research study (see Appendix C).

The informed consent in the introduction to the online survey notified participants that

moving beyond the information screen constituted acceptance of the informed consent.

The precautionary measures included (a) using an assigned identifier to identify

participants instead of using participant names because no personal identifying

information existed, (b) using the assigned participant identifier to label participant data,

and (c) using the assigned identifier to reference participants in the research results

(Sherrod, 2011). Some inherent risks exist in all research studies (Goldblatt et al., 2011;

Guthrie & McCracken, 2010). Mitigation of the potential for harm through ethical

assurances by obtaining informed consent, protecting participants' rights to privacy,

confidentiality, and maintaining honesty are all necessary (Xie, Wu, Luo, & Hu, 2010).

Keeping the names of any participants, their managers, and organizations

confidential protected the privacy of those involved in the survey (Mitchell & Wellings,

2013; Sherrod, 2011). The online survey instrument included my contact information in

case a participant had questions, comments, or concerns about the study. Unless a

participant contacted me directly, there was no direct contact with the study participants.

Participation in the study did not offer incentives. Members of SurveyMonkey®

Contribute constituted the potential pool of study participants. Membership in

SurveyMonkey® Contribute is voluntary, with potential participants invited via email to

take the online survey, with no obligation for potential participants to participate in the

study. Study participants could withdraw from the study by contacting SurveyMonkey®

Contribute (SurveyMonkey® Audience, 2014). The data collected while conducting the

study is stored in a lockable file cabinet for a minimum of 5 years and then destroyed

using a shredding method to protect the privacy of participants and responses to the

survey instrument (e.g., Luo, 2011).

Data Collection

Instrument

The Maslach Burnout Inventory-General Survey (MBI-GS) was the selected

survey instrument because of prior validation and wide acceptance in the research

community, especially within the construction context (Leung et al., 2011; Luchman &

González-Morales, 2013; Naveed & Saeed Rana, 2013; Pinto et al., 2014). The MBI-GS

is an iteration based on the original Maslach Burnout Inventory developed and published

in 1981 (Schaufeli et al., 1996). The original instrument focused on experiences

involving interactions between social-service workers and their clients (Bakker et al.,

2011). The burnout inventory originally contained 47 questions, eventually reduced to 16

statements with three subscales, (a) exhaustion, (b) cynicism, and (c) professional

efficacy, based on findings of confirmatory analysis (Schaufeli et al., 1996). Since its

development, Mind Garden Inc., the publisher of the MBI-GS assists researchers in the

fields of medicine, nursing, sports, engineering, and construction (Bowen, Edwards,

Lingard, & Cattell, 2013a; Doolittle, Windish, & Seelig, 2013; Pinto et al., 2014;

Westermann et al., 2014).

The MBI-GS used Likert-type scales ranging from 0 = *never* to 6 = *everyday*.

Five items measured exhaustion, including *I feel burned out from my work* and *I feel tired*

when I get up in the morning and have to face another day on the job (Schaufeli et al.,

1996). Five items measured cynicism as well. Six items measured professional efficacy, including *I feel I am making an effective contribution to what this organization does* and *In my opinion I am good at my job* (Schaufeli et al., 1996). While some researchers advocated for higher standards, 0.7 is an acceptable alpha coefficient (Jiménez-Barrionuevo, García-Morales, & Molina, 2011; Wheeler, Vassar, Worley, & Barnes, 2011). Ahola, Hakanen, Perhoniemi, and Mutanen (2014) conducted the MBI-GS three separate times over a 7-year study finding Cronbach's alphas for the entire instrument of 0.89 to 0.90. Bria et al. (2014) conducted confirmatory factor analysis for validity of the MBI-GS ranging between 0.99 and 0.97.

Researchers questioned whether a relationship existed between response burden and questionnaire length with inconclusive results (Rolstad, Adler, & Rydén, 2011). There were no concerns with response burden associated with the length and duration of this survey instrument. According to Schaufeli et al. (1996), the self-administered survey takes about 5 to 10 minutes to complete.

High scores in the emotional exhaustion and cynicism subscales and a low score in the professional efficacy subscale indicated a high-degree of burnout (Schaufeli et al., 1996). The MBI-GS categorized burnout as either (a) high, (b) average, or (c) low, depending on the combined summation of the numerical values of each of the subscale responses (Schaufeli et al., 1996). Raw data from the online survey is included in Appendix D. Appendix E includes the permission from Mind Garden, Inc. to use the survey instrument for this study.

Data Collection Technique

This section includes the outline of the several steps involved in the data collection process. Mind Garden, Inc provided licenses for the MBI-GS on a per-use basis. The survey participants accessed The MBI-GS via SurveyMonkey®. SurveyMonkey® is a company that allows researchers to conduct surveys online. SurveyMonkey® Audience is a service provided by SurveyMonkey®, for a fee, to contact potential participants from a potential pool of over 30 million respondents (SurveyMonkey® Audience, 2014). Potential survey participants from SurveyMonkey® Audience joined SurveyMonkey® Contribute where every survey they fill out earns $0.50 to the charity of the participant's choice, paid by SurveyMonkey® Contribute (SurveyMonkey® Audience, 2014).

SurveyMonkey® Audience contacted potential participants based on demographic information provided by the respondents (SurveyMonkey® Audience, 2014). SurveyMonkey® Audience continued to send randomized emails to respondents that met the criteria until the number of successfully completed surveys matched the desired sample size (SurveyMonkey® Audience, 2014). Additionally, the use of SurveyMonkey®Audience as a data collection technique was valid because previous graduate studies and peer-reviewed publications used the service (Hughes et al., 2014; Massie, 2013; Schlieper, 2014; Schoettle & Sivak, 2013; Streller, 2013). I conducted the analyses in SPSS using data from the online surveys downloaded directly into the software.

Advantages and disadvantages existed for this data collection technique. The advantages of this data collection technique included (a) minimizing potential researcher bias by avoiding contact with participants, (b) ease of access to available participants, (c) ease of data organization upon survey completion, and (d) efficiency of conducting the data collection portion of the study. The largest disadvantage of this data collection technique was the cost associated with using the account services through the SurveyMonkey® Audience program.

Data Organization Techniques

The SurveyMonkey® Audience online program collected and distributed data via an encrypted website (SurveyMonkey® Audience, 2014). Extracts from the SurveyMoneky® website and data output files from the SPSS statistical analysis tool provided the organization for the data. The data extracts and raw data files, as well as the SPSS datasets, were encrypted and securely stored for at least 5 years after graduation. Only I have access to this data and will purge any data, including backup files, once a need for the data no longer exists past the 5-year timeline.

<div align="center">

Data Analysis Technique

</div>

Whether there was a statistically significant relationship between project duration, project budget, project role, and burnout was the central research question in this study.

$H1_0$: There is no statistically significant relationship between project duration and burnout.

$H1_a$: There is a statistically significant relationship between project duration and burnout.

$H2_0$: There is no statistically significant relationship between project budget and burnout.

$H2_a$: There is a statistically significant relationship between project budget and burnout.

$H3_0$: There is no statistically significant relationship between an individual's role and burnout.

$H3_a$: There is a statistically significant relationship between an individual's role and burnout.

Statistical analysis, among other data analysis techniques, used within the positivism framework use control to normalize and measure data (Henderson, 2011). Inferential statistics provided information to describe the data and relationships between the variables to test hypotheses and predict outcomes (Marshall & Jonker, 2011). Data analysis for this research study involved performing exploratory data analysis, verifying missing data, conducting reliability analysis, and verifying all statistical assumptions were met. Bootstrapping was performed on the data to eliminate issues associated with not meeting statistical assumptions (Green & Salkind, 2014). Last, I used multiple linear regression using the leave-one-out method for examination of the potential relationships between the independent and dependent variables using. Statistical analysis software, SPSS 21, facilitated the data staging and analysis.

Exploratory Data Analysis

Exploratory data analysis consists of descriptive statistics performed on the variables. Exploratory data analysis also establishes many of the statistical assumptions

underlying multiple linear regression, as discussed below. Using visual inspections of the variable's histograms, in addition to formal statistical procedures, determined the presence or absence of normality and kurtosis. Using the Shapiro-Wilk normality test analyzed assumptions concerning the normality of scores on a variable. Procedures available in SPSS 21 provided for the testing of kurtosis (Green & Salkind, 2014).

Missing Data

Participants needed to answer all research questions presented to them in the survey instrument. The informed consent presented at the beginning of the online survey and the invitation email from SurveyMonkey® Contribute informed the participants that all questions on the survey needed to be completed. The informed consent form also indicated that all data collected was completely confidential and included no identifying information. The data set does not contain any surveys with missing information or unanswered survey questions.

Assumptions of the Statistical Model

Green and Salkind (2014) identified four assumptions commonly associated with linear regression analysis that included (a) independence, (b) linearity, (c) normality, and (d) homoscedasticity of error variance. Additionally, Green and Salkind provided potential solutions for not meeting the assumptions. Other researchers identified outliers and multicollinearity as threats to multiple regression models (Kock & Lynn, 2012).

The first assumption was that the data introduced into the regression equation was independent. This research study did not include a time component or variable, effectively eliminating the possibility that scores on a variable at one time were also

associated with scores on that same variable later. Because there was no time component, this study required no autocorrelations.

Data introduced into the regression equation was linearly related was the second assumption. Plotting the observed values versus the predicted values tested this assumption. Predicted values that did not align closely with observed values constituted a violation of linearity.

A normal distribution of data was the third assumption. A visual inspection of the histograms for each variable identified potential outliers in the data to test this assumption. Visual inspections additionally identified the degree to which the data displayed kurtosis. The Shapiro-Wilk test analyzed whether the normal distribution of data in each variable existed. The bootstrapping function using SPSS 21 applied corrections when the data failed to meet the statistical assumption of normality.

The fourth assumption for the regression model was that the variance of error for the variables was constant. Plotting standardized residuals against the standardized regression predicted values detected homogeneity. A violation of homogeneity existed when a nonrandomly scattered data pattern appeared. Additionally, the Goldfeld-Quandt tested for homogeneity of variance (Green & Salkind, 2014).

The threat of outliers is a potential issue of multiple regression analysis. Outliers in data tend to pull the trend line toward the outlier and away from the rest of the data set (Green & Salkind, 2014). Checking the data for univariate outliers in the dependent variable and multivariate outliers in the dependent variable using scatterplots eliminated the threat.

An additional threat of multiple regression modeling is multicollinearity. Multicollinearity exists when a possible predictor-predictor redundancy phenomenon occurred (Kock & Lynn, 2012). Using a normal probability plot (P-P) of the regression standardized residual tested for multicollinearity (Green & Salkind, 2014).

Multiple Linear Regression Analysis

Multiple linear regression was the selected method to test the study hypotheses. The regression equation had variables entered at the same time. The first set of variables included the numerical variable for project duration, entered as months. The second set of variables included the numerical variable for project budget, entered as U.S. dollars. The third set of variables included the five components of the leave-one-out cross-validation variable for the individual's project role. The five components of the cross-validation variable included (a) project manager, (b) project superintendent, (c) project engineer, (d) project administrator, and (e) construction management or design consultant. Each data set included the two numerical components for project duration and budget, and then five numerical components making up the individual's project role. Leaving the *other* category out of the leave-one-out cross-validation established that category as the baseline for the regression model. A completed survey by an individual with a project role of *other* had all five predictor variables of the individual's role as zeros. Any other role had a numerical one in the category representing their project role (Josse & Husson, 2012).

F-tests determined if the addition of each set of variables constituted an improvement in the proportion of variance explained by the model. T-tests determined

the statistically significant relationships. Some researchers question whether an $p = 0.07$ level is a better predictor of significance than the accepted 0.05 level (Zollanvari et al., 2012). For all tests of statistical significance, I used a $p < 0.05$ level as significant, as no results had p-values between 0.05 and 0.07.

Reliability and Validity

Reliability

The primary issue for this study was the accuracy of the data collected. Reliability implies accuracy. Accuracy is required in the measurement or reporting of the data collected. Respondents unintentional, or intentional, errors in answering survey questions posed a potential threat to reliability (Campos et al., 2011).

Validity

The degree with which conclusions based on how correct or reasonable the relationships between variables is statistical conclusion validity (Kratochwill & Levin, 2014). Two types of statistical conclusion validity exist. Type I errors occur when no real conclusion, difference, or correlation exists, but one is made to exist (Kratochiwill & Levin). Type II errors occur when the researcher finds no difference when one exists (Kratochwill & Levin). Some common threats to statistical validity include (a) low statistical power, (b) violated assumptions of the test statistics, and (c) unreliability of measures, and (d) heterogeneity of the units under study (Kratochwill & Levin).

The quantitative research method required the use of statistical testing to reject or support the hypotheses (Marshall & Jonker, 2011). Using a proven data analysis program, SPSS 21, for analyzing the data, and identification of potential variation caused by

external factors diminished the threats to the external validity (Marshall & Jonker, 2011).

Selecting a widely accepted instrument and model increased the internal validity

(Demerouti & Bakker, 2011). Inadequate sample size threatens the statistical conclusion

validity by under-powering the study. Using a participant pool in SurveyMonkey®

helped to eliminate the threat of inadequate sample size. The MBI-GS is the most popular

instrument for measuring the burnout syndrome in professional practice (Roelen et al.,

2015). No filtering of participants based on demographics other than project role took

place in the study. By not limiting the types of projects and the personnel involved in the

study, may allow generalization to the general population of the United States.

Transition and Summary

Section 2 included further detail concerning the quantitative method and

correlational design, as well as the rationale for this selection. Section 2 also included (a)

details into the population, (b) sample, (c) participants, (d) data collection method, (e)

methodology of the analysis of data, (f) the instrument used to conduct the research, (g

the role of the researcher, and (h) ethical considerations that I used to protect participants

and reduce researcher bias. Section 3 contains (a) the results of the analysis, (b) my

interpretation of the research findings, (c) and the application of these findings to the

research context, (d) my recommendations for action and for future research, and (e)

summary conclusions for the study.

Section 3: Application to Professional Practice and Implications for Change

Section 3 includes (a) an overview of this study, (b) the presentation of the results of the research, (c) a discussion of how these results pertain to professional practice in business, and (d) reflection of how the findings of this study may influence business leaders in the construction industry. This section also includes (e) evidence-based recommendations for action and (f) opportunities for future research building upon these research finding. In this section, I also present a summary of my findings and final conclusions of the study.

Overview of Study

The purpose of this quantitative correlational study was to examine the relationship between construction project duration, project budget, an individual's role on a project, and burnout using multiple linear regression analysis. Multiple linear regression analysis testing suggested no statistically significant relationship between project duration, project budget, an individual's role on the project and the three subscales of burnout. Following recommendations from results that are statistically significant, I set the p-value for these tests at 0.05 (e.g., Berben, Sereika, & Engberg, 2012). Some researchers questioned whether an $p < 0.07$ level is a better predictor of significance than the accepted 0.05 level, but the results of this study did not have p-values between 0.07 and 0.05 (e.g., Zollanvari et al., 2012).

According to the results of this study, no statistically significant relationship between project duration, project budget, an individual's role on the project and the three subscales of burnout, (a) professional efficacy, (b) exhaustion, and (c) cynicism existed.

A statistically significant relationship between project budget and the burnout subscale of cynicism existed ($p = 0.031$). No other statistically significant relationships between independent variables and the dependent variable existed when analyzed independently.

Presentation of the Findings

Research Question and Hypotheses

The central research question was whether a statistically significant relationship between project duration, project budget, project role, and burnout existed. Multiple linear regression models examined the statistical significance of the relationships between the three independent variables of (a) project duration, (b) project budget, and (c) an individual's role on the project, as well as the three dependent subscales of burnout (a) professional efficacy, (b) exhaustion, and (c) cynicism using SPSS 21 software. The hypotheses I developed to explore the central research question were:

$H1_0$: There is no statistically significant relationship between project duration and burnout.

$H2_0$: There is no statistically significant relationship between project budget and burnout.

$H3_0$: There is no statistically significant relationship between an individual's role and burnout.

Descriptive Statistics

SurveyMonkey® Audience service provided the survey respondents for this study. A total of 1,098 respondents engaged the online questionnaire with 136 respondents completing the questionnaire answering all of the questions. The power for

this study is 0.92 based upon the G*Power software calculation using 136 respondents.

The dataset did not include surveys with missing information. Table 1 includes the

descriptive frequencies and percentages of the demographic information from the

respondents. Table 2 includes the frequencies and percentages for the predictor variables.

Appendix D includes the raw data for the study.

Table 1

Population Frequencies

Category	n	%
Gender		
Female	47	34.6
Male	89	65.4
Age		
18 to 24	22	16.2
25 to 34	22	16.2
35 to 44	33	24.3
45 to 54	24	17.6
55 to 64	30	22.1
65 to 74	4	2.9
75 or older	1	0.7
Education		
GED	4	2.9
High school	25	18.4
Some college	38	27.9
Associates degree	19	14.0
Bachelors degree	28	20.6
Some graduate school	5	3.7
Masters degree	13	9.6
Terminal degree (Ph.D., DBA, JD, etc.)	4	2.9
Company size – salaried employees		
0-50	82	60.3
51-99	19	14.0
100-199	18	13.2
200-499	5	3.7
500 or more	12	8.8

Note. $N = 136$.

Table 2

Variable Frequencies

Category	n	%
Project duration		
< 3 months	33	24.3
Between 3 months and 6 months	31	22.8
Between 6 months and 1 year	35	25.7
Between 1 and 2 years	18	13.2
More than 2 years	19	14.0
Project budget		
< $1 million	56	41.2
Between $1-10 million	43	31.6
Between $10-50 million	27	19.9
Between $50-100 million	5	3.7
More than $100 million	5	3.7
Individual's project role		
Project manager	42	30.9
Project superintendent	14	10.3
Project engineer	11	8.1
Project administrator/clerk	18	13.2
Design or management consultant	16	11.8
Other team member not included above*	35	25.7

Note. $N = 136$; *control group for leave-one-out method.

Statistical Model Assumption Testing

Previously identified in the data analysis section in Section 2 of this study, the assumptions of linear regression are (a) independence, (b) linearity, (c) normality, and (d) homoscedasticity. Two threats to multiple linear regression models are outliers and multicollinearity. This section includes discussion about each of the assumptions and threats associated with multiple linear regression analysis and the testing involved addressing each assumption.

The first assumption was that the data introduced into the regression equation was independent. This research study did not include a time component or variable, effectively eliminating the possibility that scores on a variable at one time were also associated with scores on that same variable later. This study required no autocorrelations because no time component existed.

The second assumption was that data introduced into the regression equation was linearly related. Plotting the observed values versus the predicted values tested this assumption. Predicted values that did not align closely with observed values constituted a violation of linearity. Figures 3, 4, and 5 are P-P plots to test for linearity for the professional efficacy, exhaustion, and cynicism subscales of burnout, respectively.

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Professional Efficacy
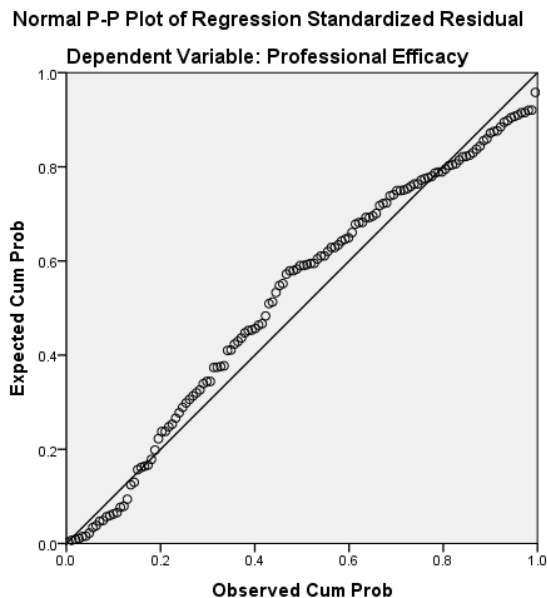
Figure 3. P-P scatterplot for linearity for project duration, project budget, and individual's project role in predicting professional efficacy.

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Exhaustion
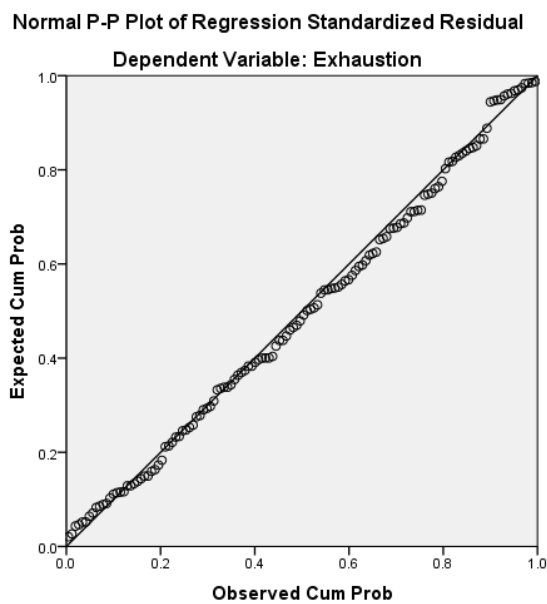
Figure 4. P-P scatterplot for linearity for project duration, project budget, and individual's project role in predicting exhaustion.
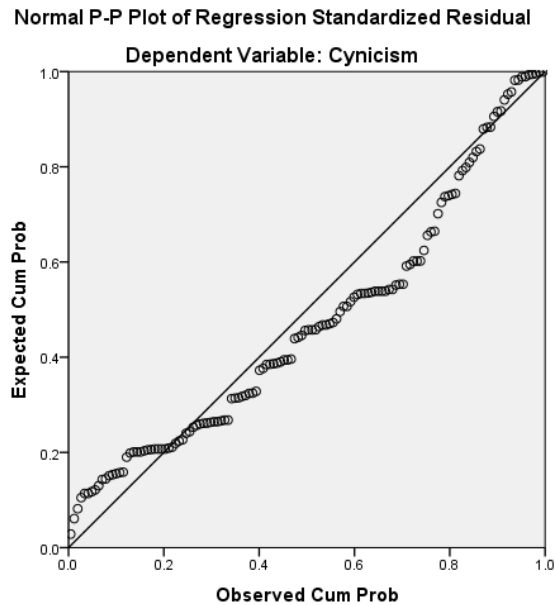
Figure 5. P-P scatterplot for linearity for project duration, project budget, and individual's project role in predicting cynicism.

A normal distribution of data was the third assumption. A visual inspection of the histograms for each variable identified potential outliers in the data to test this assumption. A visual inspection of the histograms for each variable identified the degree to which the data displayed kurtosis. The Shapiro-Wilk test analyzed whether the normal distribution of data in each variable existed. The bootstrapping function using SPSS 21 applied corrections when the data failed to meet the statistical assumption of normality (Green & Salkind, 2014). Figures 6, 7, and 8 Q-Q plots to test for normality in the professional efficacy, exhaustion, and cynicism subscales of burnout, respectively.
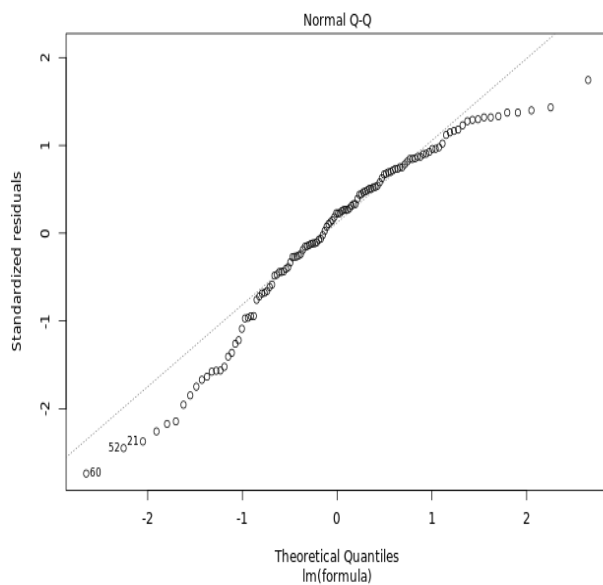
Figure 6. Q-Q scatterplot for normality for project duration, project budget, and individual's project role in predicting professional efficacy.
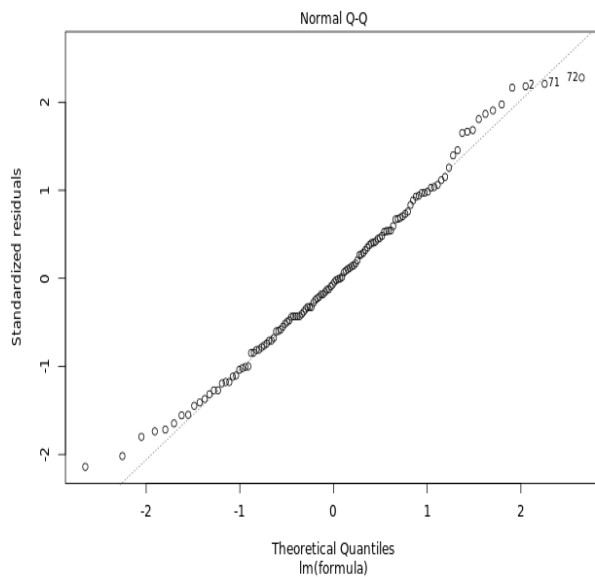
Figure 7. Q-Q scatterplot for normality for project duration, project budget, and individual's project role in predicting exhaustion.
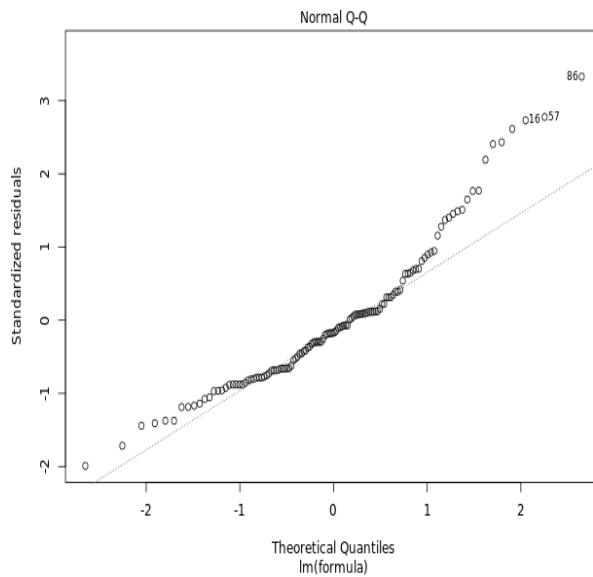
Figure 8. Q-Q scatterplot for normality for project duration, project budget, and an individual's project role in predicting cynicism.

The fourth assumption for the regression model was that the variance of error for the variables was constant. Plotting standardized residuals against the standardized regression predicted values detected homoscedasticity. A violation of homoscedasticity existed when a non-randomly scattered data pattern appeared. Additionally, the Goldfeld-Quandt tested for homogeneity of variance (Green & Salkind, 2014). Figures 9, 10, and 11 are plots to test for homoscedasticity for the professional efficacy, exhaustion, and cynicism subscales of burnout, respectively.
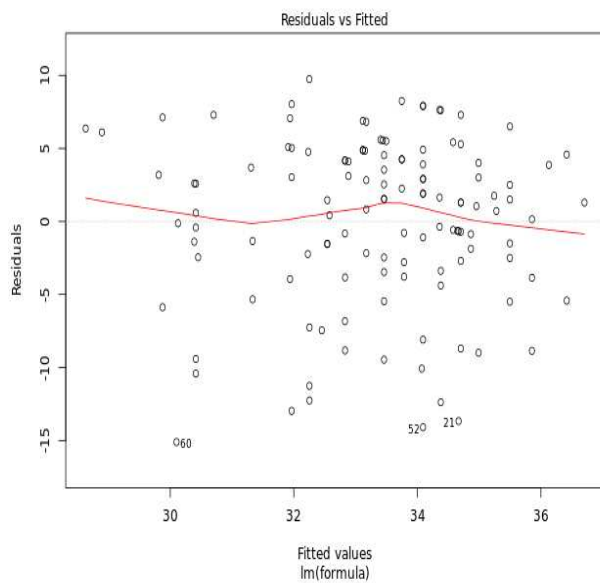
Figure 9. Residuals scatterplot for homoscedasticity for project duration, project budget, an individual's project role in predicting professional efficacy.
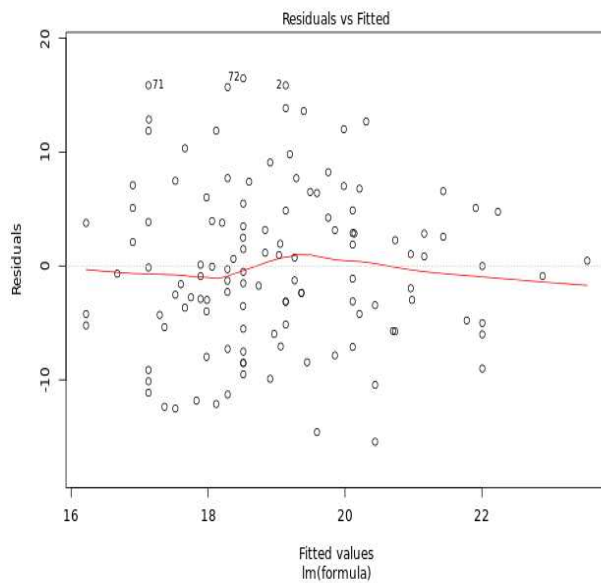
Figure 10. Residuals scatterplot for homoscedasticity for project duration, project budget, an individual's project role in predicting exhaustion.
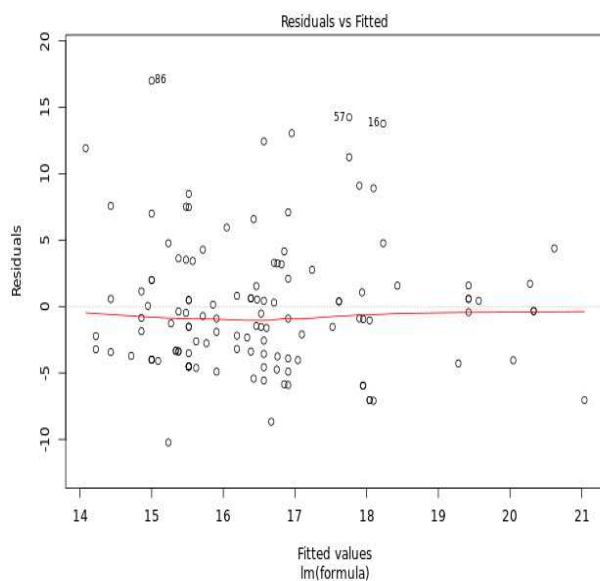
Figure 11. Residuals scatterplot for homoscedasticity for project duration, project budget, an individual's project role in predicting cynicism.

The threat of outliers was the first threat to multiple regression models. Outliers in data tend to pull the trend line toward the outlier and away from the rest of the data set (Green & Salkind, 2014). Checking the data for univariate outliers in the dependent variable and multivariate outliers in the dependent variable using scatterplots eliminated this threat (Green & Salkind, 2014).

The second threat to multiple regression models was multicollinearity. Multicollinearity existed when a possible predictor-predictor redundancy phenomenon occurred (Kock & Lynn, 2012). Using a normal probability plot (P-P) of the regression standardized residual tested for the assumption of multicollinearity (Green & Salkind, 2014). An additional method for checking for multicollinearity is by checking the Pearson Correlation coefficients (Green & Salkind, 2014). Tables 3, 4 and 5 include the

Pearson Correlations for the professional efficacy, exhaustion, and cynicism subscales for burnout, respectively.

Table 3

Pearson Correlations for the Professional Efficacy Subscale of Burnout

Variable	1	2	3	4	5	6	7	8
Prof. efficacy	1.000	0.010	-0.164	0.017	-0.133	-0.109	-0.026	0.138
Duration	0.010	1.000	0.383	-0.123	0.022	-0.054	0.088	0.167
Budget	-0.164	0.383	1.000	-0.088	0.102	0.034	-0.093	0.076
Project Mgr	0.017	-0.123	-0.088	1.000	-0.226	-0.198	-0.261	-0.244
Superintendent	-0.133	0.022	0.102	-0.226	1.000	-0.100	-0.132	-0.124
Engineer	-0.109	-0.054	0.034	-0.198	-0.100	1.000	-0.116	-0.108
Administrator	-0.026	0.088	-0.093	-0.261	-0.132	-0.116	1.000	-0.143
Consultant	0.138	0.167	0.076	-0.244	-0.124	-0.108	-0.143	1.000

Note. $N = 136$.

Table 4

Pearson Correlations for the Exhaustion Subscale of Burnout

Variable	1	2	3	4	5	6	7	8
Exhaustion	1.000	0.036	0.141	0.034	0.122	-0.029	-0.101	0.074
Duration	0.036	1.000	0.383	-0.123	0.022	-0.054	0.088	0.167
Budget	0.141	0.383	1.000	-0.088	0.102	0.034	-0.093	0.076
Project Mgr	0.034	-0.123	-0.088	1.000	-0.226	-0.198	-0.261	-0.244
Superintendent	0.122	0.022	0.102	-0.226	1.000	-0.100	-0.132	-0.124
Engineer	-0.029	-0.054	0.034	-0.198	-0.100	1.000	-0.116	-0.108
Administrator	-0.101	0.088	-0.093	-0.261	-0.132	-0.116	1.000	-0.143
Consultant	0.074	0.167	0.076	-0.224	-0.124	-0.108	-0.143	1.000

Note. $N = 136$.

Table 5

Pearson Correlations for the Cynicism Subscale of Burnout

Variable	1	2	3	4	5	6	7	8
Cynicism	1.000	0.080	0.213	-0.037	0.116	-0.054	-0.033	0.025
Duration	0.080	1.000	0.383	-0.123	0.022	-0.054	0.088	0.167
Budget	0.213	0.383	1.000	-0.088	0.102	0.034	-0.093	0.076
Project Mgr	-0.037	-0.123	-0.088	1.000	-0.226	-0.198	-0.261	-0.244
Superintendent	0.116	0.022	0.102	-0.226	1.000	-0.100	-0.132	-0.124
Engineer	-0.054	-0.054	0.034	-0.198	-0.100	1.000	-0.116	-0.108
Administrator	-0.033	0.088	-0.093	-0.261	-0.132	-0.116	1.000	-0.143
Consultant	0.025	0.167	0.076	-0.224	-0.124	-0.108	-0.143	1.000

Note. $N = 136$.

Inferential Statistics

To examine the research question, three separate multiple linear regression models examined the subscales of burnout: professional efficacy, exhaustion, and cynicism using the independent predictor variables of project duration, project budget, and an individual's role in the project. No statistically significant relationship based on the results of the three multiple linear regression models. The result of the model of professional efficacy was $F(7,136) = 1.57$, $p = 0.167$, $R^2 = 0.08$, which suggested that project duration, project budget, and an individual's role on the project did not predict the professional efficacy subscale of burnout.

Table 6 represents the results of the multiple linear regression model for the professional efficacy subscale of burnout. The result of the model for exhaustion was $F(7,136) = 0.936$, $p = 0.481$, $R^2 = 0.05$, which suggested that project duration, project budget, and the individual's project role did not predict the exhaustion subscale of burnout. Table 7 represents the results of the multiple linear regression model for the exhaustion subscale of burnout. The result of the model for cynicism was $F(7,136) = 1.115$, $p = 0.358$, $R^2 = 0.06$, which suggested that project duration, project budget, and the individual's role on the project did not predict the cynicism subscale of burnout. Table 8 represents the results of the multiple linear regression model for the cynicism subscale of burnout.

Table 6

Results for Multiple Linear Regression in Predicting the Professional Efficacy Subscale

of Burnout

						95% C.I.	
Variable	*B*	*SE*	β	*t*	*p*	Lower	Upper
Prof. efficacy	35.46	1.52	-	23.38	0.000	32.457	38.458
Project duration	0.28	0.41	0.07	0.69	0.491	-0.526	1.089
Project budget	-1.05	0.52	-0.19	-2.02	0.045*	-2.081	-0.023
Project manager	-0.58	1.32	-0.05	-0.44	0.663	-3.186	2.032
Superintendent	-2.62	1.82	-0.14	-1.44	0.153	-6.231	0.985
Project engineer	-2.59	1.99	-0.12	-1.30	0.196	-6.522	1.351
Administrator	-1.38	1.69	-0.08	-0.82	0.415	-4.718	1.959
Consultant	1.598	1.76	0.09	0.91	0.364	-1.875	5.072

*Note. $F(7,136) = 1.57$; $p = 0.167$; $R^2 = 0.08$; *$p < 0.05$.*

Table 7

Results for Multiple Linear Regression for Predicting the Exhaustion Subscale of

Burnout

						95% C.I.	
Variable	*B*	*SE*	β	*t*	*p*	Lower	Upper
Exhaustion	16.06	1.96	-	8.21	0.000	12.187	19.923
Project duration	-0.11	0.53	-0.02	-0.22	0.829	-1.154	0.927
Project budget	0.93	0.67	0.13	1.39	0.166	-0.392	2.260
Project manager	1.51	1.70	0.10	0.89	0.376	-1.853	4.873
Superintendent	3.41	2.35	0.14	1.45	0.149	-1.239	8.062
Project engineer	0.18	2.56	0.01	0.07	0.944	-4.895	5.253
Administrator	-0.60	2.18	-0.03	-0.28	0.783	-4.904	3.702
Consultant	2.40	2.26	0.11	1.06	0.290	-2.076	6.880

Note. $F(7,136) = 0.936$; $p = 0.481$; $R^2 = 0.05$.

Table 8

Results for Multiple Linear Regression for Predicting the Cynicism Subscale of Burnout

						95% C.I.	
Source	*B*	*SE*	β	*t*	*p*	Lower	Upper
Cynicism	14.53	1.44	-	10.07	0.000	11.673	17.386
Project duration	-0.02	0.39	-0.01	-0.06	0.951	-0.792	0.745
Project budget	1.08	0.50	0.21	2.18	0.031*	0.101	2.060
Project manager	-0.12	1.26	-0.01	-0.10	0.925	-2.602	2.365
Superintendent	1.57	1.74	0.09	0.90	0.368	-1.867	5.001
Project engineer	-1.09	1.89	-0.06	-0.58	0.565	-4.841	2.653
Administrator	-0.15	1.61	-0.01	-0.10	0.925	-3.330	3.025
Consultant	0.19	1.67	0.01	0.11	0.912	-3.121	3.493

Note. $F(7,136) = 1.115$; $p = 0.358$; $R^2 = 0.06$; $*p < 0.05$.

Project duration and the individual's role in the project had no statistically significant relationship with any of the three subscales of burnout. Project budget was statistically significant for professional efficacy and cynicism. Recalculation of the regression model took place by removing the two insignificant independent variables.

The result of the model for professional efficacy was $F(2,136) = 3.705$, $p = 0.056$, $R^2 = 0.03$, which suggested that a statistically significant relationship existed for project budget predicting the professional efficacy subscale of burnout. A review of the confidence intervals for this model had zero between the upper and lower limits, which negated any significance in this model. Table 9 represents the results of the multiple linear regression model for the professional efficacy subscale of burnout with only project budget as the predictor variable.

Table 9

Results for Multiple Linear Regression in Predicting the Professional Efficacy Subscale

of Burnout

						95% C.I.	
Variable	*B*	*SE*	β	*t*	*p*	Lower	Upper
Prof. efficacy	35.29	1.06	-	33.37	0.000	33.200	37.384
Project budget	-0.913	0.47	-0.16	-1.925	0.056	-1.851	0.025

Note. F(2,136) = 3.705; *p* = 0.056; R^2 = 0.03.

The result of the model for cynicism was F(2,136) = 6.395, p = 0.013, R^2 = 0.05,

which suggested that a statistically significant relationship existed for project budget

predicting the cynicism subscale of burnout. A review of the confidence intervals for this

model did not have zero between the upper and lower limits, which validated the

significance in this model. Table 10 represents the results of the multiple linear regression

model for the cynicism subscale of burnout with only project budget as the predictor

variable. The positive slope for project budget indicated that for each unit change in

budget, cynicism increased by 1.12. The predictive equation for cynicism is as follows:

Cynicism = 14.427 + 1.12(project budget)

Table 10

Results for Multiple Linear Regression in Predicting the Professional Efficacy Subscale

of Burnout

						95% C.I.	
Variable	*B*	*SE*	β	*t*	*p*	Lower	Upper
Cynicism	14.427	0.99	-	14.62	0.000	12.475	16.378
Project budget	1.12	0.44	0.213	2.53	0.013	0.244	1.995

Note. $F(2,136) = 3.705$; $p = 0.056$; $R^2 = 0.03$.

Analysis Summary

The purpose of this study was to examine the potential relationship between

project duration, project budget, and the individual's role on a project with the three

dimensions of burnout: professional efficacy, exhaustion, and cynicism. Multiple linear

regression models tested for significance between the independent and dependent

variables for each of the three dimensions of burnout. Testing for the assumptions and

threats of multiple linear regression analysis returned no apparent violations. The

regression models for the three dimensions of burnout yielded no statistically significant

relationships. The three models initially had statistically significant results for project

budget with the burnout dimensions of professional efficacy and cynicism. The

professional efficacy relationship with project budget was not significant after analyzing

the confidence intervals of the model results. In the final model, project budget provided

statistically significant predictive information about the cynicism dimension of burnout

($β = 0.213$, $p = 0.013$).

The definition of burnout is the combination of reduced professional efficacy,

increased exhaustion, and increased cynicism (Schaufeli et al., 1996). For a predictor

variable to have a statistically significant relationship with burnout all three dimensions need to be predicted (Roelen et al., 2015). Based on the regression modeling, $H1_0$ is accepted: There is no statistically significant relationship between project duration and burnout. Finding no statistically significant relationship between project duration and project budget coincides with the results of Pinto et al. (2014). Pinto et al. hypothesized that while their study had no significance with project budget, there was a limitation in their study because of the incredibly large sizes of the projects. This study provided information that various sizes of project budget had no statistically significant relationship between the three dimensions of burnout, and thus hypothesis $H2_0$ is accepted: There is no statistically significant relationship between project budget and burnout. Additionally, Pinto et al. questioned the significance of an individual's role on a project, as most studies focus only on project managers (Emelander, 2011; Leung et al., 2011). This study provided information that various individual roles of construction project team members no statistically significant relationship between the three dimensions of burnout. With this information, hypothesis $H3_0$ is accepted: There is no statistically significant relationship between an individual's project role and burnout.

Applications to Professional Practice

The general business problem was that organizations experience losses including human resource (HR) capital and financial losses, because burned out workers lose focus and productivity (Lee et al., 2012; Mostert, 2011). The specific business problem was that some construction business leaders in the United States do not understand the relationship between project duration, project budget, an individual's role on a project,

and burnout. Burnout contributes negatively to business functions and profitability and while no direct relationship exists between project duration, project budget, and an individual's role on a project to burnout, the results of this study suggest that the larger the project budget, the more cynical the individual. Cynicism is only one dimension of the burnout syndrome (Schaufeli et al., 1996), but business leaders may understand that the larger the project, the more susceptible to burnout their employees may become. Additionally, business leaders and researchers may be able to continue the study of predictors of burnout beyond this study to further the academic knowledge of the construction industry.

Implications for Social Change

In 2012, the U.S. Department of Labor identified over 485,000 construction managers working in the United States (U.S. Department of Labor, Bureau of Labor Statistics, 2014). Based on 2014 data from the U. S. Census Bureau, this population represents 0.15% of the country's inhabitants (U.S. Census Bureau, 2014a). With global generalization, the potentially impacted population includes approximately 105 million people (U.S. Census Bureau, 2014a). Identifying relationships between predictors and burnout may help businesses modify their existing business practices to increase construction manager productivity and efficiency through enhanced quality of life (Bowen et al., 2013b, 2014; Mostert, 2011; Mostert et al., 2011; Pinto et al., 2014).

Recommendations for Action

Several recommendations for construction industry business leaders in the Midwestern United States flowed from results of this study. Despite the lack of a

statistically significant relationship between the three independent predictor variables of

project duration, project budget, and an individual's role on the project with the three

dimensions of burnout, business leaders should note the statistically significant

relationship between project burnout on the cynicism dimension. Based on the generally

accepted definition burnout of low professional efficacy, high emotional exhaustion, and

high cynicism (Bria et al., 2014), burnout occurred in approximately 40% of the survey

respondents. Business leaders in the construction industry should support additional

research on predictors of burnout to understand the significant factors that contribute to

the syndrome. Additional investigation may uncover ways for leaders to address burnout

and facilitate change within their organizations.

The results of this study and the recommendations generated from the results

should be of interest to construction industry business leaders and those in the academic

community pursuing the ongoing understanding of burnout in all industries. The plan to

disseminate the results of this research includes the intention to submit the results of this

work to the scholarly journal, *International Journal of Project Managment*. Additionally,

I will present these results at one or more construction industry symposiums on

construction leadership and management similar to the *Construction Management*

Association of America (CMAA) National Conference and Trade Show; *The Ohio*

Construction Conference; and *The Michigan Construction and Design Tradeshow*.

Recommendations for Further Study

The geographic location for this study was the Midwestern United States. Future

research could replicate the study in other geographic regions to learn whether regional

factors play a role in the results of this study. Simply duplicating this study in different regions and comparing the results could provide valuable information about regional factors associated with experienced burnout.

This study did not have a time component and because of the limitations of time and scope. This study leaves out the potential for perceived response to project factors over time to change because of the limitation. A longitudinal study examining the responses over the course of a project lifecycle could provide valuable information to understand these independent predictors as related to the dimensions of burnout (Pinto et al., 2014). The stress levels in construction projects change over time and capturing the spectrum of emotional response would provide valuable information.

The inclusion of only the largest project budget and longest project duration in the dataset is a limitation in the scope of this study. An additional predictor for future research should be the number of projects an individual is concurrently assigned. I question whether stress level would be directly proportional to the number of projects concurrently assigned.

Some studies suggested that gender plays a role in stress and burnout while others did not (Bowen et al., 2014; Devi & Kiran, 2014; Pinto et al., 2014). A future gender-based burnout study in the United States could provide valuable information into the ways that different genders handle and cope with stress and how that impacts business functions. Standard operating procedures could be created, or existing protocols modified, based on the information gained in a gender-based study.

Zhang, Lee and An (2013) that found that stress levels varied directly with company size. An additional area of future research is conducting a burnout study with various construction company sizes within the United States and compares the findings with Zhang et al. Researchers may achieve a global generalization on the topic of company size predicting burnout by conducting similar studies in multiple geographic locations.

Lastly, the independent variables in this study of project budget and duration were ordinal variables. In future studies recreating this work, I recommend using interval variables for project budget and duration. The potential numerical difference between the largest and smallest project budget as an ordinal variable in this study was four, while the actual dollar value was potentially more than $100 million. The use of interval variables in lieu of ordinal variables may affect the statistical significance of the results.

Reflections

This study of the relationship of project duration, project budget, an individual's role on the project, and burnout offered new insights and reinforced the findings of previous studies regarding the burnout syndrome. I chose the burnout syndrome in construction management as a research topic after having observed and experienced burnout in the workplace. This experience led to personal assumptions and bias about what causes stress on construction projects that lead to burned out employees. Conducting quantitative analysis using an anonymous online survey helped to remove the personal bias and any potential influence on the study participants.

The existing literature helped make the choices of independent predictor variables, but the personal assumptions aligned with the literature that relationships between project duration, project budget, an individual's role on the project may exist with the burnout syndrome. Throuhout this process, personal reflection occurred about experiences on many different projects of various sizes, durations, and the individual role on each project as it related to the stress levels experienced. Realization occurred that reglardless of the individual role, the project duration, or budget, construction projects are extremely stressful. These observations aligned with the study results.

Summary and Study Conclusions

In this quantitative correlational study, I examined the relationship between project duration, project budget, an individual's role on the project and the three dimensions of the burnout syndrome: professional efficacy, exhaustion, and cynicism. Data collection used an online questionnaire using the SurveyMonkey® Audience service to collect demographic information and responses to the Maslach Burnout Inventory-General Survey. Multiple linear regression models for each of the dimensions of burnout using SPSS 21 software was the data analysis mechanism of the study.

The assumptions and threats of multiple linear regression analysis suggested no violations in the dataset. The results of the data analysis led to the acceptance of the three research hypotheses. A positive correlation and significant relationship between project budget and the cynicism dimension of burnout suggested that as the budget of a project increases, the individual becomes more susceptible to burnout. The burnout syndrome in construction is a valid threat to business function and profitability. I would encourage the

professional and academic communities to continue to further the exploration into the

predictors, causes, and coping mechanisms associated with the syndrome.

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Appendix A: Breakdown of References

Table A1

Breakdown of References

Source	Quantity	Percent of total
Peer-reviewed publications	113	85.61%
Non-peer-reviewed publications	7	5.30%
Books	8	6.06%
Doctoral dissertations	4	3.03%
Government websites	4	3.03%
Age of resources		
Current within 5 years (2011-2015)	119	90.15%
Noncurrent (>2010)	13	9.85%
Total	132	100%

Appendix B: National Institute of Health Certification

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Matthew Motil** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 01/18/2014

Certification Number: 1355517

Appendix C: Informed Consent

Participant Consent Form

My name is Matthew Motil, and I am a doctoral candidate in business administration at Walden University. You have been invited to participate in this study on predictors of burnout in construction management based on information you provided on your profile with SurveyMonkey® Contribute. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

Data Collection Procedure:
You are being asked to take part in a research study about the burnout syndrome, which is brought on as a result of continued stress with diminished coping resources within the construction industry context. An electronic questionnaire is used to collect data for this study and is expected to take no more than 10 minutes in time to complete.

Purpose of the Research:
The purpose of this research study is to examine predictors of burnout for construction management team members as a partial requirement for the completion of the degree of doctor of business administration. Previous studies have shown that construction is a stressful industry and that construction managers are susceptible to burnout. This study aims to determine if project duration, project budget, and the individual's role on the project have an effect on a multi-dimensional measurement of experienced burnout.

Voluntary Nature of the Study:
Your participation in this study is voluntary. This means that everyone will respect your decision of whether or not you chose to be in the study. If you chose to join the study now, you could still change your mind during the study. There is no penalty for refusing or discontinuing your participation in this study.

Risks and Benefits of Participating in the Study:
There is a risk of experiencing a minimal amount of stress by filling out an online survey. Some people may experience slight anxiety, which may affect their ability to complete the survey.

If you decide to participate in this research, you will be helping the construction industry to understand the causes of burnout among project leaders. By understanding these effects, organizations can create the necessary programs to reduce the causes of burnout and provide resources to assist in coping with the factors that contribute to burnout.

Compensation:

While there is no compensation for your participation, I, as well as the construction industry, will be grateful for your selflessness and decision to participate in this short survey.

Confidentiality:
Any information you provide will be kept confidential. I will not use your information for any purposes outside of this research project. I will not have access to nor include any personal identifying information in, or anything associated with, this study. You participation in this survey has no connection to your employer, and everything involved is confidential.

Contacts and Questions:
If you have questions or concerns about participating in this study, you may contact me via email: xxxx.xxxx@xxxx.xxx or mobile phone: (xxx) xxx-xxxx. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 1-800-xxx-xxxx ext xxxx or directly at (xxx) xxx-xxxx. Walden University's approval number is 03-27-15-0468630 and it expires March 26, 2016.

Implied Consent to Participate:
To protect your privacy, signatures are not being collected. Proceeding with the survey indicates consent to participate.

This form may be printed or a copy can be made of this form by highlighting the entire form (ctrl + A, then ctrl + c, and then ctrl+v in MS Word, or other word processing software).

I have read the above information, and I feel I understand the study well enough to make a decision about my involvement.

I understand and agree with these statements. By taking the survey, I acknowledge that I am currently employed in the construction industry in a project role as a part of the construction project management team, (i.e. project manager, superintendent, engineer, administrator, designer, construction manager, or other leadership or support roles). I further acknowledge that I work for an organization that has a physical location in the United States, and I am associated with one or more projects located within the Midwestern United States, defined as Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

By continuing on with the survey, I agree to statements listed above.

Appendix D: Raw Data from the Survey Instrument

Raw data accumulated via the survey instrument is included in this appendix.

Table D1

Raw Survey Data

ID	Region	Years	Size	Ed.	Age	Gender	Role	Duration	Budget	PE*	EXH*	CYN*
3886260904	2	3	1	2	4	1	1	3	1	21	18	5
3885964489	2	5	1	3	5	1	4	3	2	31	17	8
3886004183	2	5	1	4	6	2	6	4	2	36	5	11
3886150157	2	3	1	2	4	2	1	1	2	36	5	11
3885706107	2	5	1	8	5	1	3	1	1	39	5	11
3886296103	2	2	3	7	2	2	1	2	3	40	5	11
3887188267	2	5	1	2	7	2	6	2	2	42	5	11
3871345301	2	5	1	3	6	1	4	1	1	34	6	11
3886069376	2	4	1	3	4	2	1	4	1	36	6	11
3885921818	2	1	1	2	2	2	6	1	1	36	7	11
3871330756	2	5	1	3	7	2	6	1	1	26	8	11
3882866320	2	5	1	5	7	2	1	4	2	42	9	11
3887083736	2	1	4	2	5	1	4	3	4	35	10	11
3886412148	2	3	1	3	4	1	1	1	1	36	10	11
3887086349	2	3	1	3	5	1	4	5	3	36	10	11
3885776214	2	5	1	2	6	2	1	1	1	37	10	11
3871335979	2	5	1	1	5	2	6	5	1	36	11	11
3886464289	2	2	1	2	2	2	5	3	2	42	13	11
3874847234	2	5	1	5	6	2	1	3	2	35	16	11
3885980621	2	4	1	3	4	2	6	3	1	36	16	11
3886444890	2	3	2	1	4	2	1	2	3	35	17	11
3886131262	2	3	1	3	4	2	1	1	1	42	17	11
3885860833	2	5	1	2	5	2	1	1	1	36	20	11
3886352760	2	5	1	2	4	2	6	1	1	42	21	11
3885962932	2	3	3	7	3	2	5	4	3	40	22	11
3885119535	2	5	4	2	6	2	1	2	1	42	7	12
3886379236	2	2	1	3	2	2	1	2	1	22	11	12
3886244740	2	1	1	5	3	1	3	1	1	28	12	12

(table continues)

3886323946	2	1	1	3	2	2	1	1	1	33	13	12
3886468423	2	4	3	3	5	2	4	3	1	38	14	12
3873183046	2	4	5	5	5	2	5	5	3	33	15	12
3886051149	2	1	3	5	3	2	2	4	2	37	15	12
3885808310	2	3	1	4	4	2	1	3	2	35	16	12
3884999708	2	5	1	4	6	1	5	3	2	37	19	12
3886016407	2	2	1	7	3	1	3	2	3	33	27	12
3885723764	2	4	2	2	4	1	4	3	1	38	28	12
3885934641	2	2	2	3	3	2	6	2	2	33	10	13
3875048356	2	4	1	3	6	2	2	3	1	32	12	13
3886095338	2	4	5	4	4	2	6	5	2	34	13	13
3887593030	2	5	1	5	6	2	1	2	2	39	16	13
3885714279	2	3	3	4	3	2	5	3	2	30	17	13
3885041580	2	1	1	3	2	1	4	5	2	38	17	13
3886198266	2	4	1	3	6	1	1	3	2	36	24	13
3885829713	2	1	1	5	3	1	6	2	1	38	24	13
3885124869	2	4	3	2	4	1	4	1	1	31	30	13
3884769312	2	4	1	1	4	2	2	1	1	42	33	13
3874997330	2	5	1	3	6	2	1	1	1	37	9	14
3886300861	2	1	2	2	2	1	6	2	2	31	14	14
3885187753	2	5	1	6	5	2	1	3	2	38	14	14
3880018918	2	5	5	4	5	1	3	3	2	35	15	14
3885911304	2	1	1	3	2	2	6	2	1	26	19	14
3886053011	2	1	1	3	2	2	6	1	2	39	22	14
3885969689	2	1	1	3	5	2	2	1	4	35	24	14
3886536704	2	4	3	1	3	2	1	1	1	39	24	14
3886083815	2	1	2	3	2	2	6	4	2	42	25	14
3887226669	2	5	1	5	6	2	6	1	1	29	9	15
3885977310	2	1	1	2	2	2	3	3	3	15	12	15
3886208602	2	5	1	7	6	2	6	5	1	27	12	15
3887037036	2	5	4	5	5	2	3	2	1	34	13	15
3885848199	2	3	3	5	3	2	4	4	2	29	15	15
3886171476	2	3	1	3	5	1	4	2	1	31	15	15
3885988539	2	2	1	2	5	1	6	4	2	34	15	15
3887227590	2	5	1	3	6	2	6	1	1	38	15	15
3874981001	2	5	3	3	6	2	1	5	1	37	16	15
3875056111	2	5	1	2	6	2	2	4	3	38	17	15
3886978297	2	4	2	5	4	1	3	2	1	34	18	15
3875047118	2	5	2	4	5	1	5	2	1	41	18	15

(table continues)

3887367633	2	5	5	4	6	2	5	4	2	41	18	15
3886866384	2	1	3	6	5	1	6	5	3	39	19	15
3884626155	2	2	1	7	3	1	3	4	3	29	20	15
3886093674	2	4	1	2	5	2	1	2	1	31	34	15
3885960753	2	2	2	3	2	2	1	1	1	26	11	16
3874800486	2	5	3	6	6	2	6	3	5	28	18	16
3886175963	2	2	2	5	4	2	4	4	2	24	21	16
3886268150	2	2	1	2	2	2	6	2	3	33	21	16
3886284064	2	4	1	2	4	2	6	2	1	39	22	16
3885798340	2	1	1	4	6	2	5	3	2	34	25	16
3885940596	2	2	1	8	6	1	5	1	1	40	26	16
3885891154	2	3	1	5	4	2	1	1	1	38	35	16
3874996374	2	5	1	3	6	2	6	1	1	36	6	17
3886079413	2	2	2	7	2	2	1	2	3	19	10	17
3885996540	2	1	3	7	2	2	1	3	3	25	16	17
3874966930	2	4	1	3	4	1	4	5	2	40	16	17
3886013843	2	2	1	3	2	2	6	1	1	34	17	17
3885936297	2	5	1	4	6	2	1	2	2	40	17	17
3884920767	2	3	1	2	4	1	4	5	2	38	18	17
3886186394	2	3	1	5	5	1	5	5	3	34	23	17
3886200724	2	2	3	2	4	2	6	2	2	30	24	17
3886131737	2	2	1	2	4	1	1	3	2	28	33	17
3875061284	2	5	1	5	7	2	2	5	1	39	33	17
3869191861	2	3	5	7	4	2	3	4	3	33	22	18
3885761534	2	5	1	5	6	2	1	5	3	37	24	18
3886115691	2	4	5	3	6	2	1	5	3	37	28	18
3885844532	2	2	3	5	2	1	2	3	3	20	13	19
3875039114	2	3	1	5	4	1	4	2	1	37	18	19
3871004080	2	5	1	5	6	2	5	3	1	38	20	19
3885883658	2	2	2	3	2	2	5	3	2	33	23	19
3871134360	2	4	1	4	4	1	3	3	4	35	23	19
3871357681	2	2	1	5	6	1	1	2	1	30	26	19
3874900168	2	5	1	3	6	2	6	5	4	37	11	20
3886119299	2	4	4	7	4	2	4	2	2	20	13	20
3885863025	2	4	3	8	8	1	2	3	3	30	17	20
3886278108	2	3	1	5	3	1	1	2	2	36	17	20
3886247897	2	4	2	3	6	1	5	2	1	31	20	20
3865882432	2	3	2	5	2	2	2	3	3	31	22	20
3886276511	2	3	2	6	2	1	1	3	1	34	22	20

(table continues)

3885970285	2	2	2	4	3	2	2	3	1	26	23	20
3886094571	2	4	5	2	4	2	6	1	5	37	24	20
3873167850	2	5	1	3	5	1	6	4	3	38	26	20
3886515417	2	3	3	5	3	1	2	2	3	30	27	20
3886155394	2	2	2	4	2	1	6	1	5	24	28	20
3886117500	2	4	1	3	5	2	2	3	3	21	16	21
3886208959	2	2	2	4	3	2	1	1	2	37	26	21
3886048954	2	3	1	3	4	2	6	3	2	24	15	22
3886218477	2	4	1	3	3	2	6	5	1	32	20	22
3885886152	2	2	3	4	3	2	1	5	5	33	27	22
3885904597	2	1	1	2	5	1	6	1	1	40	33	22
3886036223	2	2	1	3	3	1	4	2	1	30	17	23
3866570099	2	5	1	2	5	2	1	1	1	42	22	23
3865877027	2	1	2	3	5	2	2	2	2	26	24	23
3886182069	2	4	5	4	4	2	1	4	2	36	28	23
3886027075	2	1	1	5	3	1	1	1	1	20	18	24
3887683627	2	5	4	6	6	1	6	5	4	34	21	24
3886127816	2	5	1	4	6	2	5	3	2	38	22	24
3886130482	2	4	1	8	4	2	5	5	5	25	22	25
3886316173	2	1	5	5	2	1	3	2	1	30	30	26
3864053166	2	4	5	7	3	2	5	4	3	34	19	27
3866021456	2	4	5	5	5	2	1	3	3	21	27	27
3887057352	2	4	1	5	4	1	4	3	1	29	7	28
3865609221	2	4	5	7	3	2	1	4	3	31	27	29
3886571138	2	3	2	3	3	2	1	3	2	24	35	29
3886471434	2	3	1	4	4	2	4	1	2	37	29	30
3886294547	2	3	1	5	4	2	2	2	2	30	22	32
3885711980	2	1	1	4	6	1	6	1	1	32	29	32
3885990839	2	4	3	7	3	2	1	4	3	34	32	32
3887032186	2	5	1	7	4	1	6	3	2	31	32	34

Note. N = 136; *PE = professional efficacy; EXH = exhaustion; CYN = cynicism.

Appendix E: Permission to Use the MBI-GS

Permission to use the MBI-GS instrument granted from Mind Garden, Inc..

mind garden

www.mindgarden.com

To whom it may concern,

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