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WORKPLACE AGGRESSION, SAFETY PERFORMANCE, AND SAFETY OUTCOMES, MEDIATED BY BURNOUT AND MODERATED BY PSYCHOLOGICAL CAPITAL (PSYCAP)

by

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THESIS

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of Wayne State University

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Approved by:

__________________________
Advisor

__________________________
Date
DEDICATION

To my beautiful wife. Without your love and support this wouldn’t have been possible.
ACKNOWLEDGMENTS

I would like to express my special appreciation and thanks to my advisor Dr. Alyssa McGonagle, your guidance and assistance has been instrumental in my success. I would also like to thank my committee members, Dr. Boris Baltes and Dr. Marcus Dickson, for your brilliant comments and suggestions. I would also like to thank Dr. Lisa Kath for her enduring and unstoppable mentorship and guidance. Finally, thank you to Dr. Sandy Hershcovis and Dr. Andrew Neal for providing survey materials and pointing me in the right direction.

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CHAPTER 1 Introduction

Workplace safety should be a critical concern for any organization. According to the United States Department of Labor: Bureau of Labor Statistics (BLS), over 3.7 million work-related injuries and accidents were reported for 2012 in the United States alone (BLS: Injury and Illness Data, 2013). With 4,383 fatalities (BLS: Fatal Injuries, 2013) and over 1.1 million accidents, this led to a median of nine lost workdays per incident (BLS: Injuries and Illnesses, 2013). Average total compensation rates for civilian occupations in 2012 reveal that each employee’s total cost to the organization yielded an average of a little over $30 per hour of work (BLS: Costs for Compensation, 2013). Thus, the estimated total cost to an organization, when based on median lost days from employee accidents and injuries, was $2,160 per incident in the U.S., with a total estimate of over 2 billion dollars lost due to workplace accidents and injuries for 2012 alone. This estimation does not consider other factors that may inflate this figure (e.g., temporary replacement, worker’s compensation, or reassignment). It is imperative that the mechanisms involved in accidents and injuries be investigated in order to prevent these detrimental safety incidents.

The purpose of the current study is to investigate some of the factors associated with workplace accidents and injuries (i.e., safety outcomes). The operationalization of safety outcomes comes from Smecko and Hayes (1999), who describe safety outcomes as any adverse workplace event which is reported by the participant and a) required limited medical attention such as a cut, scrape, or bruise (i.e., a minor accident), b) resulted in any lost time from work (i.e., a major accident), or c) the individual perceived that direct bodily harm or personal injury may have occurred (i.e., a near miss). Although there are many more criteria which could have been included, the current study is based on individual perceptions and accounts of personal injury and does not
include these items. With similar operationalizations and the same goal, many researchers have investigated a wide variety of possible direct antecedents to safety outcomes in the workplace.

Due to the plethora of information available, Christian, Bradley, Wallace, and Burke (2009) utilized meta-analytic techniques to consolidate some of the numerous empirically investigated behavioral antecedents into an overarching term, safety performance. They describe safety performance as a general term for safety behaviors on the job. The authors concluded, “Conceptualizing safety performance as individual behaviors provides researchers with a measurable criterion, which is more proximally related to psychological factors than accidents or injuries [i.e., safety outcomes]” (p. 1104).

One of the most relevant and widely-studied psychological factors attributed with poor safety performance and increases in safety outcomes is burnout. Burnout has been shown to be a mediating mechanism between higher levels of job demands and higher levels of safety outcomes (i.e., accidents and injuries) via the Job-Demands Resources Model (JD-R; Nahrgang, Morgeson, & Hofmann, 2011). The current study sought to replicate this relationship and expand upon it; I did so by investigating the effects of burnout as it related to safety performance and safety outcomes through the JD-R Model and Conservation of Resources (COR) Theory (Hobfoll, 1989).

This study is novel in that I added to the previously established relationship by simultaneously measuring a specific job demand, workplace aggression, which I propose leads to burnout. I also analyzed the direct relationships between workplace aggression and both safety performance and safety outcomes. The direct relationship between workplace aggression and safety outcomes has been previously studied, with mixed results (Haines, Stringer, & Duku, 2007; McGonagle, Walsh, Kath, & Morrow, 2014; Sabbath et al., 2014). However, no other study has
been published to date that supports burnout as a mediating mechanism of the relationships between workplace aggression, safety performance, and safety outcomes.

The current study sought to further extend the previous literature linking workplace aggression directly to safety, by providing another example in support of the proposed relationships. To add to the direct effects model, I also hypothesized that burnout mediates the relationship between workplace aggression and safety performance and that burnout mediates the relationship between workplace aggression and safety outcomes. Similar to the current study’s proposed model, in his overview of workplace violence leading to safety as an outcome, Barling (1996) also provided an additional model where a possible moderating mechanism was hypothesized to exist within the mediation.

Barling (1996) observed that certain “hardy individuals” experienced lower detrimental effects from incidents of workplace violence (i.e., negative emotional responses, distraction, and stress) and bounced back sooner than less “hardy” people (p. 45). The current study answers his call stating, “research is needed to focus on factors that would help in reducing or preventing the likelihood of workplace violence and on helping the direct and indirect victims” (p. 46). In light of this, the current study sought to investigate the potential of a modifiable individual level construct. Lazarus and Folkman’s Transactional Theory (1987) was used to support the model and propose Psychological Capital (PsyCap; Luthans, Youssef, & Avolio, 2007) as a moderating mechanism that explains both “optimism” and “hardiness” as part of the originally proposed mediation’s mitigating factors (Barling, 1996, p. 40). No prior research has investigated the moderating effect of PsyCap in the context of a unique mediational model as in the current study. Only one other study has examined PsyCap as a moderator; Cheung, Tang, and Tang (2011) found PsyCap moderated the relationship between emotional labor and burnout and moderated the
relationship between emotional labor and job satisfaction. In the current study, PsyCap was found to be a significant moderator, thus this potentially modifiable construct may have many valuable practical implications, including interventions.

The importance of the current study is hinged upon the utility of the results; the significant results are instrumental in providing support for intervening at the individual level (by reducing burnout), and intervening at the organizational level (by increasing civility and reducing workplace aggression). Finally, the current study is valuable because it may inform literature and management practices for both the Positive Organizational Behavior (POB) and Occupational Health Psychology (OHP) fields.

**Safety Outcomes (SO) and Safety Performance (SP)**

Numerous studies have evaluated a wide range of mechanisms and pathways for their potential influence on safety outcomes (i.e., accidents and injuries; for meta-analytic reviews, see Christian et al., 2009; Nahrgang et al., 2011). In the current study, safety outcomes are conceptualized following the recommendations made by Smecko and Hayes (1999). Safety outcomes is a combination of major injuries (recuperation with time off from work), minor injuries (requiring only basic first aid; a scratch, cut, sprain, bruise, etc.), and includes one of the “adverse events” described by Nahrgang et al. (2011); near accidents or “near misses” (a safety related event that could have resulted in injury or damage). Considering the issues and the potential for difficulties associated with collecting information regarding safety outcomes (e.g., low incidence rates, possible negative repercussions of reporting, lack of trust in anonymity, and a general lack of reliability in measuring safety outcomes), Christian et al. (2009) recommended also incorporating safety performance measures in order to avoid the potential limitations associated with self-report safety outcomes. Additionally, many of these potential issues were attributed to a
lack of cohesion in the operationalization of safety outcomes and other methodological issues. The addition of near accidents to the definition of safety outcomes attempts to correct for some of the problems Christian et al. (2009) discussed. Based on this, in addition to safety outcomes, I also incorporate safety performance as an outcome.

I conceptualize safety performance in the current research as a bi-dimensional construct. In line with Griffin and Neal (2000) and Neal, Griffin, and Hart (2000), the first dimension is safety participation, which is the extent to which workers engage in extra-role behaviors to support safety (similar to contextual job performance). The second dimension is safety compliance, which is the extent to which workers follow the rules regarding safety policies and procedures (similar to task-related job performance). Research has utilized the overall construct as well as the two subdimensions individually to provide support for many relationships, including burnout as a mediator.

In a meta-analysis, Nahrgang et al. (2011) provided evidence to support a positive relationship between burnout and safety. The researchers found significant results espousing safety compliance (one of the two dimensions of safety performance) as a mediator of the relationships between job-demands and job resources, burnout, and safety outcomes. Based on the authors’ results, there is sufficient evidence to support the proposed relationships in the current study. I utilized both dimensions of safety performance in the current study to capture the widest variety of behaviors that could influence the model; I intended to expand the previous findings by demonstrating that burnout leads to decreased overall safety performance (i.e., safety compliance and safety participation) not solely safety compliance. I also intended to replicate previous findings and provide evidence that burnout leads to increased safety outcomes.
Burnout

Research on burnout boasts a substantial history of inclusion in many topic areas of the behavioral sciences (e.g., mental health, drugs and alcohol, parenting, and occupational health). In the past 35 years, there has been a surge of studies utilizing burnout for research in the workplace (Schaufeli, Leiter, & Maslach, 2009). The commonly used term “job burnout,” is described as having “grass-roots” in “pop psychology,” as it was “derived from people’s workplace experiences,” rather than based on theory (Maslach, Schaufeli, & Leiter, 2001, p. 398). Despite its commonplace origins, a plethora of research on burnout has advanced its acceptance as a “well-established academic subject” and it has “become a phenomenon of notable global significance” (Schaufeli et al., 2009, p. 204). Maslach et al. (2001) further explains, “What has emerged from all of this research is a conceptualization of job burnout as a psychological syndrome in response to chronic interpersonal stressors on the job” (p. 399). Schaufeli et al. (2009) describe burnout as “a metaphor for the draining of energy” (p. 205). In the eyes of these authors, a worker is similar to a fire, where maintaining brightness, heat, and strength, results in the depletion of resources. The authors further summarize, “the metaphor describes the exhaustion of employees’ capacity to maintain an intense involvement that has a meaningful impact at work” (p. 205). The metaphor described by Maslach et al. (2001) represents the construct, but additional theoretical development concerning its function has been widely supported as well. Over the course of the development of the construct, numerous groups of researchers have sought to espouse various postulations and models.

The widely studied JD-R Model of burnout incorporates two core dimensions, emotional exhaustion and depersonalization (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). However, these terms are specifically related to professions where the majority of work is interpersonal (e.g.,
nursing). Demerouti et al. (2001) suggest that the analogous, broader terms, exhaustion and disengagement, may be used when referring to occupations where the nature of job duties can diverge from those found in typical human service professions.

The first sub dimension of burnout, exhaustion, represents the basic individual stress dimension. More specifically, exhaustion “refer[s] to general feelings of emptiness, overtaxing from work, a strong need for rest, and a state of physical exhaustion” (Demerouti, Bakker, Nachreiner, & Schaufeli, 2000, p. 458). The second sub dimension of burnout, disengagement, “refers to distancing oneself from one’s work (work object and content), and to negative, cynical attitudes and behaviours towards one’s work in general” (Demerouti et al., 2000, p. 458). These nonspecific terms are adequately representative of the core dimensions of burnout and should apply to a general sample (as in the current study). In addition, although previous research has differentiated the effects of burnout based on its sub dimensions (Demerouti, Bakker, Nachreiner, & Ebbinghaus, 2002; Maslach et al., 2001), the current study did not seek to evaluate burnout based on this possibility. Rather, the current study utilized the combined term for overall burnout. This provided an opportunity to capture the widest range of possible factors in a general working sample, any of which could influence the outcomes.

The current study investigated the established relationships between burnout, safety performance, and safety outcomes (cf. Nahrgang et al., 2011). I intended to extend these findings by including workplace aggression as a predictor. COR Theory surmises that when resources are depleted, a worker’s functioning will decrease. To add to the novelty of the current study and extend the model, I explain further in the sections to follow that workplace aggression can be attributed to such depletion. The subsequent loss of or threat to resources can lead to burnout, which is associated with lower energy for one to perform their duties. Thus, many individuals may
be too exhausted, lowering their motivation to follow safety procedures or perform proper safety behaviors (i.e. safety compliance; Christian et al., 2009). Additionally, when burnout is present, workers may lack the motivation to perform safely in their typical work-related activities and discontinue or disengage from any extra-role safety behaviors (i.e., safety participation). Therefore, I proposed that a main effect of burnout on safety performance will be present, such that, with high levels of burnout, workers will be either too exhausted or disengaged to follow safety procedures or engage in extra-role safety behaviors. In light of this, I further expected a main effect of burnout on safety outcomes, such that with higher levels of burnout, workers will report higher levels of engaging in unsafe activities that led to higher levels of reported safety outcomes. Thus, the following hypotheses were proposed:

*Hypothesis 1a: Burnout is negatively related to safety performance.*

*Hypothesis 1b: Burnout is positively related to safety outcomes.*

### Workplace Aggression

Workplace aggression is a rapidly growing concern for organizations and society. Cortina, Magley, Williams, and Langhout (2001) found that out of their sample of 1,142 federal court system employees, 71% of them ($N = 808$) reported experiencing some form of abuse or harassment at work over a five-year period. More recently, in a review of workplace bullying, mobbing, and general harassment, Branch, Ramsay, and Barker (2013) found that 10-15% of workers from general samples in Europe and North America reported experiencing some form of workplace abuse or harassment.

Due to the potential widespread personal impact of workplace aggression related constructs (e.g., bullying, mobbing, social undermining, incivility, abusive supervision, and general harassment), many researchers have sought to detect, prevent, and remediate any negative
outcomes. To clarify the construct’s proliferation, in a comprehensive review of related literature, Hershcovis (2011) concluded that in the majority of situations, the terminology used within workplace abuse and harassment literature is interchangeable, with little difference in the outcomes for each of the separate forms of workplace abuse or harassment. The present research was intended to investigate the effects of workplace abuse and harassment in general; therefore, the term *workplace aggression* is used hereafter to indicate the general term for the many forms of workplace abuse or harassment. Prior research on the subject did not always include this term, focusing instead on a specific form of workplace abuse or harassment. Nevertheless, it is important to understand the historical background of the topic at hand (i.e., workplace aggression) no matter which form has been utilized.

In the past, the various forms of workplace abuse and harassment have been studied for their possible influence on a wide variety of safety related outcomes. Incivility (rude and discourteous behavior(s) with a lack of regard for others, typically marked by ambiguity in perceptions of the target), has been linked to numerous outcomes, including lower job performance and work engagement (Chen et al., 2013). Research has shown an increase in job-related stress, psychological distress, cognitive distraction, dissatisfaction, and commitment as a result of incivility (Cortina, Kabat-Farr, Leskinen, Huerta, & Magley, 2013). Moreover, a variety of negative emotional and behavioral responses have been linked to incivility (Porath & Pearson, 2012). In addition, burnout has been demonstrated to be an outcome of incivility (Laschinger, Leiter, Day, & Gilin, 2009; Oyeleye, Hanson, O'Connor, & Dunn, 2013). Additional research has demonstrated that bullying (a steady form of abuse that includes ‘making fun’, or repeatedly (over time) insulting a person, ostracizing, and/or spreading rumors about the target), has been shown to negatively affect organizational outcomes (e.g., job satisfaction and organizational commitment)
similar to incivility (Glasø & Notelaers, 2012; Glasø, Vie, Holmdal, & Einarsen, 2011; Hauge, Skogstad, & Einarsen, 2010). Despite the abundance of literature relating workplace abuse and harassment to negative health and attitudinal outcomes, few studies have sought to investigate safety specific outcomes. The current study incorporated this concept utilizing theories on stress and burnout.

Hobfoll (1989) proposed a model that sought to explain stress and the ways in which people counteract or respond to stressors. He surmised, “. . . people strive to retain, protect, and build resources and that what is threatening to them is the potential or actual loss of these valued resources” (p. 516). Many researchers in the area of burnout have focused on the additional statements, “. . . individuals are predicted by the model to strive to minimize loss of resources” (Hobfoll, 1989, p. 516). Moreover, Hobfoll (1989) adds, “Employing resources for coping is also stressful in itself” (p. 518). In order to incorporate these concepts into the development of hypotheses using theories of burnout, it is necessary to understand the term “resource.”

Hobfoll (1989) describes four types of resources, which are potentially influenced by threats to the self; object resources are any physical entity that is related to the socioeconomic status of the individual (e.g., homes or vehicles). Conditions are resources that are not physical entities, but rather are symbolic or social in nature (e.g., marriage, promotion, or seniority). Personal characteristics are resources that “. . . aid stress resistance” (e.g., locus of control, personality, self-esteem, motivation, or emotional intelligence). Finally, energies are resources that facilitate the gain or prevent the loss of other resources (e.g., money or knowledge).

In addition to defining resources, COR Theory also states what is not a resource; the current model is limited by the consideration of one of the points made by Hobfoll (1989); “. . . social relations are seen as a resource [only] to the extent that they provide or facilitate the preservation
of valued resources” (p. 517). This would seem to exclude workplace aggression as a factor that influences social relations, however, further clarification of this point was later provided by Hobfoll (2001); resources include “Feeling valuable to others; Feeling that my life is peaceful; Understanding from my employer/boss; [and] Support from co-workers” (p. 342). Workplace aggression can thus be viewed as a source of resource depletion or as a threat to resources, and as a lack of social support.

In a meta-analysis, Halbesleben (2006) found a significant negative relationship between social support and burnout. By using the list of resources generated and published in Hobfoll (2001), Halbesleben (2006) was able to operationalize different forms of social support using COR Theory. Burnout dimensions (i.e., exhaustion and depersonalization) were found to be differentially related to varying forms of social support (i.e., work or non-work related). Halbesleben (2006) concluded, “work-related sources of social support . . . were more closely associated with exhaustion” (p. 1134). In conclusion, Halbesleben (2006) demonstrated a strong overall negative relationship between social support at work and burnout. In light of COR Theory, acts of workplace aggression can also be viewed as potentially threatening to resources, which could result in the depletion of resources, and lead to resource protection efforts. The relationship between workplace aggression and burnout is further supported by additional research and theory.

Workplace aggression has been empirically linked to burnout using a variety of theories. For instance, although Leiter, Price, and Laschinger (2010) made use of Generational Theory, and Oyeleye et al. (2013) used a Complex Adaptive Systems approach, both collected self-report information from healthcare workers and found a significant relationship between incivility and burnout. Miner-Rubino and Reed (2010) described their findings linking high job burnout with high incivility in property management employees in terms of Social Identity Theory. Described
by COR Theory, Sliter and colleagues found a significant relationship between incivility and burnout dimensions in two separate studies (Sliter, Jex, Wolford, & McInnerney, 2010; Sliter, Sliter, & Jex, 2012). More recently, Giumetti et al. (2013) utilized COR Theory and found a “depletion of energy” (i.e., burnout) in their participants who simply emailed with an uncivil virtual supervisor. Moreover, a comprehensive meta-analysis (which includes many theories), supports the hypothesis that burnout is a potential outcome of any form of workplace aggression (Hershcovis & Barling, 2010). Finally, in their JD-R Model based meta-analysis, Nahrgang et al. (2011) found that burnout mediated the relationship between demands (risks and hazards), resources (anything which facilitates one’s work, e.g., knowledge or autonomy), and safety outcomes. They listed “a supportive environment” as a resource, stating, “A supportive environment, whether from social support, leadership, or safety climate, was also consistent in explaining variance across these same outcomes” (i.e., burnout, engagement, and safety outcomes; p. 85). Thus, I view a lack of “a supportive environment” (i.e., workplace aggression) to be a demand (i.e., a risk or hazard) within the JD-R Model, as these acts could also be considered an “emotionally demanding interaction” (p. 72).

According to the JD-R Model, “Job demands refer to those physical, social, or organizational aspects of the job that require sustained physical or mental effort” whereas job resources “refer to those physical, psychological, social, or organizational aspects of the job that may do any of the following: (a) be functional in achieving work goals; (b) reduce job demands at the associated physiological and psychological costs; (c) stimulate personal growth and development” (Demerouti et al., 2001, p.501). Based on this, when job demands are high, people will experience burnout if they lack the resources to combat the increasing demands. In other words, resources must be present in order to protect against demands. The social and psychological
effects of workplace aggression can be viewed as a potential threat to psychological and social resources, thus workplace aggression should be viewed as a job demand. Therefore, I proposed the following hypothesis:

_Hypothesis 2: Workplace aggression is positively related to burnout._

**Workplace Aggression and Safety**

In a study of nurses, Haines et al. (2007) found a significant positive relationship between incivility and workplace injuries. Building off these results, McGonagle, Walsh, et al. (2014) found significant indirect relationships between civility norms, safety behaviors (i.e., safety compliance), and accidents. Finally, in a study of abusive workplace behaviors, Sabbath et al. (2014) found a significant positive relationship between abusive interactions (co-worker, client, and supervisor), with specific accidents and injuries. These few studies have empirically linked workplace aggression to safety performance and safety outcomes. Yet, a dearth of research has been conducted evaluating the causal pathway through which workplace aggression affects safety performance and safety outcomes. In terms of theory, McGonagle, Walsh, et al. (2014) used Social Exchange Theory to explain the relationships between civility, safety performance, and safety outcomes. Building off these results, this study proposed another theoretical explanation of the established relationships between workplace aggression, safety performance, and safety outcomes. The current study also incorporated burnout as a mediator of these relationships, providing another theoretical pathway through which workplace aggression affects safety performance and safety outcomes.

The relationship between workplace aggression and safety outcomes was first suggested by Barling (1996). In his manuscript, he proposed the relationship between workplace aggression and safety outcomes may be mediated by “cognitive distraction,” “negative mood,” and “fear” (p.
Parts of this model have been explored in later studies. For example, he surmised that the target might contemplate explanations for the event and lose focus, becoming distracted from their work (Barling, Rogers, & Kelloway, 2001). In this study, Barling et al. (2001) measured a one-time cross-sectional sample of in-home healthcare workers via self-reports. Although the authors posed workplace aggression and emotional response based items in terms of the respondents’ past six months of experience, they concluded that this was insufficient to support claims based on a mediational relationship. Later, in a meta-analytic study, Harschovis and Barling (2010) sought to provide evidence to support the mediating effect of cognitive distraction and emotional responses on the relationship between workplace aggression and outcomes. Unfortunately, their hypothesis remained unsubstantiated and they concluded, “the current study was unable to examine mediating relationships because sufficient data from prior studies were not available” (p. 38).

In the current study, I extended the previous literature’s limitations (i.e., cross-sectional methodology and lack of supporting empirical evidence) by considering burnout as a short-term (two to six week) mediating effect of the relationships between workplace aggression, safety performance, and safety outcomes. Drawing upon the JD-R Model and COR Theory, I proposed burnout as one of the mediating mechanisms through which workplace aggression is transmitted to safety performance and safety outcomes. I also added to the previous literature and increased the value of the current study by collecting longitudinal data, with three time points over the course of six to eight weeks (see Method section for details). To further examine this relationship, the current study proposed the following hypotheses (also see Appendix A, Figure 1, for a graphical representation of hypothesized relationships):

**Hypothesis 2a:** The relationship between workplace aggression and safety performance is mediated by burnout.
**Hypothesis 2b**: The relationship between workplace aggression and safety outcomes is mediated by burnout.

**Psychological Capital (PsyCap) as a Moderator of the Relationships between Workplace Aggression, Safety Performance, and Safety Outcomes**

A recent trend in workplace research has emerged in support of positive psychology. Grounded in the seminal work of B. F. Skinner (1984), positive psychology is a modern variation of operant conditioning which promotes focusing on positive behavior, rather than negative, due to the beneficial results found to be associated with positive actions. Gable and Haidt (2005) define positive psychology as “the study of the conditions and processes that contribute to the flourishing or optimal functioning of people, groups, and institutions” (p. 104). A growing number of scholars have espoused positive psychology and advanced theory in a variety of studies (for reviews, see Froman, 2010; Mills, Fleck, & Kozikowski, 2013).

Positive Organizational Behavior (POB) is a sub category of positive psychology. Past researchers have examined POB using the sub-dimensions contained within the higher-order construct created by Luthans, Avolio, Avey, and Norman (2007); *Psychological Capital (PsyCap)*. Luthans, Avolio, et al. (2007) describe PsyCap as “individual motivational propensities that accrue through positive psychological constructs such as efficacy, optimism, hope, and resilience” (p. 542). PsyCap is differentiated from a trait, described as “state-like positive psychological resource capacities [that] are more malleable and thus open to change and development than are trait-like personality and self-evaluation constructs” (Luthans & Youssef, 2007, p. 326). For further discussion, the authors provided a detailed explanation for this construct’s unique position on the state and trait continuum (cf. Luthans & Youssef, 2007). The first of the four sub-dimensions of PsyCap is *self-efficacy*, characterized by perseverance and confidence in a specific work related
task. The second dimension, hope, is a cognitive embodiment of general willpower and planning. Third, optimism, is a cognitive and emotional process of positive expectancy when external demands are present. Finally, resiliency, is a skill that enables an individual to maintain (or increase) resource levels when faced with challenges (Luthans, Avolio, et al., 2007).

As previously mentioned, COR Theory postulates that resources are key components in employee well-being outcomes (Hobfoll, 1989). Based on the above definitions of the sub-dimensions, PsyCap can be theorized as a mitigating factor in the depletion of resources, as described in COR Theory. If PsyCap is a conceptual storage bank of factors that hold and maintain resources with varying compensatory levels of storage capacity (Luthans, Avolio, et al., 2007), PsyCap should serve as a resource which enhances one’s ability to defend against job demands, or buffers the impact of job demands on one’s perception of the threat to resources, or actual resource depletion. In this manner, PsyCap’s sub-dimensions may work in conjunction with one another, or they may serve to compensate for one another when one or more is lacking. Based on this, negative outcomes such as burnout should not be as prevalent in individuals when one has the resources available to defend against threats or to recuperate from resource depletion. Barling (1996) provided evidence to support the claim that those who are high on optimism experience a reduced amount of stress following an act of workplace violence. He also surmised that victims who were “hardy” (i.e., optimistic and resilient) recovered faster from acts of workplace violence than those who were not. PsyCap’s additional multidimensionality (i.e., hope and self-efficacy), should provide additional potential to capture positive aspects of one’s personality beyond optimism and resiliency alone. Therefore, PsyCap provides an opportunity to measure additional factors which when combined to form one overall construct, may also serve as a buffer against a stress response.
COR Theory not only postulates the activation of certain mechanisms to protect threats to resources, but also provides a theoretical basis for reevaluating resources after a loss, in order to replenish resources (Hobfoll, 1989). Ability to cope is the determining factor in whether resource threats or losses will result in negative outcomes (i.e., stress and burnout). Hobfoll (2001) listed both optimism and self-efficacy as resources that may affect stress and help reduce burnout. Therefore, PsyCap should buffer the effects of threats to resources by providing the target of workplace aggression with additional resource capacities to be called upon to defend against resource loss and assist in resource replenishment. In other words, individuals who are higher in PsyCap should possess the ability to prevent resource loss, alter their perceptions of threats to resources, and they should be better equipped to replenish resources, after incidents of workplace aggression, than those who are low in PsyCap.

The Transactional Theory of Coping and Stress proposed by Lazarus and Folkman (1984) also explains the theoretical process in the proposed model. The Transactional Model proposed a two-stage cognitive appraisal process, by which an incident of workplace aggression is assessed through an individually subjective process. During the primary appraisal stage, the target assesses the incident based on how the situation may interfere with their goals. As an end result of the primary stage of appraisal, the target may perceive the incident as a challenge stressor, an obstacle to overcome, or as a hindrance stressor, an obstacle that requires coping strategies (Lazarus & Folkman, 1987). However, based on the work of many researchers such as Lepine, Podsakoff, and Lepine (2005), and as further supported by a recent meta-analysis (cf. Clarke, 2012), workplace aggression is typically considered to be a form of ‘interpersonal conflict’, and is thus labelled as a hindrance stressor.
Hindrance stressors have been previously linked to a variety of negative outcomes, including decreased job satisfaction and job performance, and increased turnover intentions (Clarke, 2012). More importantly, these meta-analytic results demonstrated a significant positive relationship between hindrance stressors, safety performance, and safety outcomes (Clarke, 2012). Therefore, following an act of workplace aggression, during the primary stage of appraisal the target may be attempting to classify the incident, where they will likely conclude that the act is a hindrance stressor. During the second stage of cognitive appraisal, the target may attempt to evaluate whether they possess the necessary resources to cope, while trying to reconcile, or make sense of the incident. The allotment of resources to appraise the situation in the secondary stage of cognitive appraisal could detract from the target’s ability to focus their attention on their work, where different perceived levels of resources (i.e., PsyCap) may affect the relationship between the stressor (i.e., workplace aggression) and resource depletion, eventually leading to exhaustion (i.e. burnout; Lazarus & Folkman, 1984).

The current study also utilizes the Transactional Theory to further discuss the potential influence of PsyCap as a moderator of the proposed relationships. It may be during primary appraisal, if goals are threatened, that emotions are evoked to begin coping with and further evaluate the stressor. These emotions can be hidden, controlled, or expressed, depending on the situation. If the target of workplace aggression views the incident as threatening, they may be more likely to appraise the stressor as an inhibitor to their goals. Once the stressor is viewed as goal blocking and threatening, secondary appraisal is the process by which the individual weighs the options for coping with the stressor. The three decisions made are “blame or credit and whether it is directed at oneself or another, coping potential, and future expectations” (Lazarus, 1991, p. 827).
During this time, PsyCap may have an effect on the appraisal process, influencing each of the three aforementioned decisions, altering the relationships.

Based on the aforementioned rationale, if a person is high on PsyCap (i.e., self-efficacy, hope, optimism, and resiliency), the process by which they appraise a stressor is inherently different from one who is low on PsyCap and lacks these resources. To clarify, if one is low on PsyCap, their available resources to draw upon after an incident of workplace aggression are lower than those who are high on PsyCap. This should result in a different secondary appraisal process, whereby the low PsyCap individuals may experience increased stress due to their resource deficiency, leading to an increase in negative appraisals in the secondary stage. It is during this stage that those low on PsyCap should be more likely to engage in self-blame due to a lack of self-efficacy. They may also believe that their potential to cope is low due to lack of optimism. Finally, they may evaluate the future more negatively due to lower hope and past experiences related to a lack of resiliency. This process should affect the relationship between workplace aggression and burnout, where the positive relationship between workplace aggression and burnout will be stronger for those low on PsyCap. Conversely, those who are high on PsyCap will draw upon their available resources to mitigate the effects of workplace aggression on burnout, leading to an increase in positive appraisals during the secondary stage.

PsyCap could also be conceptualized as part of emotion-focused coping strategies, where the intent is to change the perception of the stressor rather than engage in behaviors to change the person’s interaction with the stressor (i.e., problem-focused coping). Thus, following an incident of workplace aggression, those who are high in PsyCap may be able to dedicate less energy and spend less time assessing the situation, and should be more likely to engage in behaviors that will alleviate the effects of the situation (i.e., problem-focused coping). In sum, when the secondary
appraisal stage described by Lazarus (1991) is engaged and coping mechanisms are evaluated, PsyCap should influence the duration and energy expended while this stage is ongoing. Those who are high on PsyCap will draw upon resources that will be instrumental in decreasing burnout, thus allowing the individual to recuperate with better outcomes (e.g., high safety performance and lower self-reported accidents and injuries) from an act of workplace aggression.

In this theoretical context, PsyCap’s dimension, *optimism*, would refer to one’s expectancy that the outcome of an act of workplace aggression would be positive, or that one would be able to overcome such an act in a positive manner. PsyCap’s *self-efficacy* dimension captures a task-specific confidence (i.e., performing the duties associated with one’s job after an act of workplace aggression), and is thus more relevant and specific than other general trait based moderators (e.g., Core Self-Evaluations). Moreover, aligning well with COR Theory, the most theoretically prevalent PsyCap dimension is *resiliency*, the skill one possesses in ‘bouncing back’ or replenishing resources, after an act of workplace aggression. Based on this information, PsyCap fits the current model’s proposed relationships with the specific mediator and outcomes: burnout, safety performance, and safety outcomes. PsyCap is a relatively new construct that has yet to be utilized to its full potential. With one exception, the moderating effects of PsyCap have not yet been investigated.

PsyCap was constructed to be a synergistic amalgamation of human, social, and psychological capital (Luthans, Youssef, et al., 2007). Many researchers have used PsyCap as a higher order construct to predict positive work outcomes such as job performance, organizational citizenship behaviors (OCBs), job satisfaction, organizational commitment, and psychological well-being (for review, see Avey, Reichard, Luthans, & Mhatre, 2011). Although PsyCap has mainly been studied in the past 10-15 years as a predictor variable, its potential to be a moderator
is also evident. In the sole example available to date, Cheung et al. (2011) found that PsyCap moderated the relationship between emotional labor and job satisfaction. In their study, those who reported high levels of PsyCap engaged in more deep acting than those who reported low levels of PsyCap, leading to increased job satisfaction for the high PsyCap group. Specifically, the authors found that PsyCap moderated the relationship between surface acting and depersonalization, finding those who were low on PsyCap reported more depersonalization with increasing emotional labor. This provides evidence that PsyCap acts as a resource and supports the current study’s theoretical framework in this area.

As seen in Appendix A, Figure 1, the proposed model outlines the hypothesized effects of workplace aggression on burnout, leading to lower safety performance and increased self-reported accidents, injuries, and near accidents, and this mediation is moderated by PsyCap. In summary, if one is able to view the act(s) of workplace aggression as potentially having a positive outcome (i.e., high PsyCap), they should be more capable of buffering the negative effects, weakening the relationship between workplace aggression and burnout. However, if there is a substantial negative effect on their confidence in performing their job duties, and if they believe they will not be able to recover from the incident (i.e., low PsyCap), the relationship between workplace aggression and burnout will be stronger. When the causal pathway is broken at this stage, the negative effects of burnout on the outcomes should be mitigated. Furthermore, if the effects of workplace aggression are transmitted directly to both safety variables, PsyCap should also affect these relationships in a similar fashion. Based on this rationale, the following hypotheses were proposed:

Hypothesis 3a: PsyCap moderates the indirect effect of workplace aggression on safety performance through burnout. Specifically, the negative relationship between workplace
aggression and safety performance, through burnout, is stronger with lower levels of PsyCap and weaker with higher levels of PsyCap.

Hypothesis 3b: PsyCap moderates the indirect effect of workplace aggression on safety outcomes through burnout. Specifically, the positive relationship between workplace aggression and safety outcomes, through burnout, is stronger with lower levels of PsyCap and weaker with higher levels of PsyCap.

Hypothesis 3c: PsyCap moderates the direct effect of workplace aggression on safety performance, controlling for burnout. Specifically, the negative relationship between workplace aggression and safety performance is stronger among those individuals with lower levels of PsyCap and weaker among those with higher levels of PsyCap.

Hypothesis 3d: PsyCap moderates the direct effect of workplace aggression on safety outcomes, controlling for burnout. Specifically, the positive relationship between workplace aggression and safety outcomes is stronger among those individuals with lower levels of PsyCap and weaker among those with higher levels of PsyCap.

CHAPTER 2 Method

Participants and Procedure

Two methods were used to draw participants for this study. A student worker sample and a sample of Amazon’s Mechanical Turk (MTurk) workers were recruited. Although they are very similar, the sections that follow discuss the samples first in terms of their respective individual characteristics, and then combined. The data cleaning and results sections provide justification for merging the two samples.

In this study, I used three waves of data collection conducted independently by sample. All surveys were created using Qualtrics online survey software and a link was provided on each
respective online site for student workers or MTurk workers with a brief description of the study. For both samples, the surveys were separated by at least one week. The content of the surveys was almost identical, with only minor differences in the wording of the qualifications. The survey’s varied slightly in when they were administered but not in their overall substantive content. The student sample’s first survey differed from the workers only in that it included the pre-screening questions, which were not administered as a standalone survey. All outcome and predictor variables were administered during each phase of data collection (i.e., Workplace Aggression, Burnout, Safety Performance, Safety Outcomes, and PsyCap). Following the recommendations made by Podsakoff, MacKenzie, Lee, and Podsakoff (2003), in all surveys the outcome measures were presented first (i.e., Safety Outcomes and Safety Performance) followed by the proposed mediator (i.e., Burnout), the predictor (i.e., Workplace Aggression), and finally the moderator (i.e., PsyCap).

In order to match responses across survey administrations, some confidential information was collected during the study from both samples. Students were asked to provide a university ID, which could be used to identify them. Similarly, a determined person may misuse the supplied worker ID to gain access to personal information. To assuage concerns of the non-anonymous nature of the data collection, confidentiality was protected; the researcher did not intentionally attempt to find nor use the name or any personal information of any participant at any time in any way. All participants were referred to by only by ID codes (student and worker) and these codes were changed to random numbers in all datasets when the study was completed. IRB-approved protocols were followed in maintaining participants’ confidentiality.

**Student worker sample.** In late 2015, students enrolled in a psychology course at a large metropolitan university located in the Midwest United States were eligible to participate in the
current study. The study was posted to the psychology department’s student participation system (SONA) and all students were permitted to participate. I described the study as an online-only survey-based study with three surveys total that would take approximately 4-6 weeks to complete. To garner as much positive support as possible among the student population, I initially did not include any qualifications. SONA research participation is typically offered as an option for students to receive credit, which can be applied to a number of psychology courses’ requirements and/or extra credit. Because other options are available, the SONA system is considered completely voluntary.

No students were offered compensation for participation, but some who completed the full study were entered into a raffle drawing. As incentive, students were awarded .5 SONA credit hours per survey, whether complete or incomplete surveys were submitted. However, those who provided incomplete surveys were not invited to take additional surveys. The study description included requisite IRB information to this effect. The study description also included a statement describing an incentive for full participation (i.e., completing all three survey administrations). In accordance with this, five $20 gift cards were given to randomly chosen study participants at the end of the study.

Students were asked to input their university ID in the first student survey. This was used to align responses across survey administrations and send reminder emails directly to the participant from the researcher’s university email account. Using the university ID, the student sample was sent email reminders at regular intervals to remind student participants of the next survey’s availability. The email also thanked those who had already completed it and provided an access code and link to access the next survey for continued participation in the study. These emails were sent via the university’s email system only to those who completed the previous phase.
Because this ID can potentially be used to identify participants, IRB-approved protocols were followed in maintaining participants’ confidentiality, and no such action was commenced that would violate confidentiality or the protocols.

Additionally, the SONA system contains information gathered from a mass-screening survey, administered online and required for all undergraduate students enrolled in an introduction to psychology course. Targeted recruitment efforts were made using the information collected from the mass-screening survey. Any student who responded to the mass-screening survey and indicated they worked more than 20 hours per week was emailed regularly (bi-weekly) through the SONA system to their university email account with information and an invitation to participate. No direct contact between researcher and potential participant was made; the recipients were unknown to the researcher and the email could easily be ignored.

A total of 328 students provided responses to the first survey. During the study, many students failed to provide proper contact information, failed to enter the same university ID, did not complete one or more of the surveys, or were able to take one of the surveys more than once. In addition, the majority of students who participated did not meet minimum qualifications for the study (i.e., worked less than 20 hours per week or did not work in a hazardous occupation) and were eliminated (see Data Cleaning for details). The final sample consisted of only qualified participants who completed all three phases \((n = 88)\), yielding an attrition rate of 73%. Although this may seem high, there were no initial qualifications for student participation; student workers were sorted by desired qualifications after the study concluded.

In this sample, the majority of respondents reported that they were “Female” \((n = 76, 86\%)\). Participants reported their age in the range of 18 to 68 years, with an average reported age of 24 years \((SD = 7.67)\). The majority of participants reported that they were “White, European, or
European American” (n = 40, 45%), many reported their ethnicity as “Black, African, or African American” (n = 21, 24%), or “Middle Eastern, Arab, or Arab American” (n = 15, 17%), some reported identifying as “Asian, Asian American, or Pacific Islander” (n = 6, 7%), a few as “Hispanic or Hispanic American” (n = 3, 3%), and a few as “Other” (n = 3, 3%). Most participants indicated that they worked 20-25 hours per week (n = 57, 65%), many reported between 40-45 hours worked per week (n = 14, 16%), with a reported range of 20-53 hours per week and an average of 27 hours worked per week (SD = 8.04). This sample also reported that they worked in a wide variety of industries, with 13 out of the 20 available categories represented by at least one participant, however, this sample predominantly reported that they worked in “Healthcare and social assistance” (n = 34, 39%), “Accommodation and food services” (n = 23, 26%), and “Retail trade” (n = 11, 12%).

**MTurk worker sample.** The current study utilized the MTurk system to collect data for this sample. All surveys were posted as an external link to Qualtrics online survey hosting software on the MTurk site as a Human Intelligence Task (HIT). HITs are made available to workers who meet the qualifications established by the researcher. In order to avoid unnecessary expenditure, MTurk participants were given the opportunity to complete a brief, two-item survey, which included all IRB information and served as a pre-screening. The questions were designed to qualify only those individuals who indicated they worked more than 20 hours per week and received some form of safety training at their job, currently work in a job in which physical safety could be a concern, do not work exclusively for MTurk, and are a U.S. worker (as determined by Amazon). The pre-screening survey was available on MTurk for two weeks with compensation set .15 USD. On a regular basis, the researcher reviewed the data from the pre-screening. Based on answering affirmatively to the pre-screening questions, the researcher assigned an electronic qualification on
MTurk to workers, which allowed them to view and participate in the next survey administration phase. The results of the pre-screening and each additional survey were utilized to screen out participants who did not qualify and to qualify those who did.

With the exception of the pre-screening, which was set to automatically approve compensation, each of the surveys ended with a randomly generated compensation code. This randomly-generated code was provided at the end of each survey and was entered in MTurk by the respective worker for verification and approval of the HIT by the researcher. Approval by the researcher compensated each worker $1.5 USD for each respective survey. Only one survey per participant per administration period was permitted. No advertisements were permitted per Amazon’s rules; MTurk workers are able to view the HIT when released, but there is no way to inform them it is available. However, an independently established online social community did provide unsolicited support for the current study. No other compensation, rewards, or incentives were provided for MTurk workers.

The pre-screening received a large response set \((n = 1,444)\), but in order to stay within budget, sample size was restricted for each phase. The surveys were set to automatically end when the respective desired maximum number of responses was reached and this was performed on a ‘first come, first served’ basis. Because there was no way to announce the implementation of the additional surveys, everyone had an equal chance of participating, by finding the study on their HIT list. The researcher maintained a log of all workers and adhered to the desired timeline. MTurk worker ID was provided when requesting compensation, this ID was used to align responses across survey administrations and assign qualifications for each consecutive wave. MTurk calculated the average hourly rate to be above federal minimum wage for each of the phase surveys. Only 25% of the pre-screening \((n = 1,444)\) and 54% of the first survey’s total participants \((n = 659)\) remained
in the final sample. The final sample consisted of only those participants who completed all three phase surveys \((n = 357);\) see Data Cleaning for details.

The majority of the MTurk sample reported their sex as “Male” \((n = 207, 58\%);\) Age ranged from 20-63, the majority indicating they were 40 years of age or under \((n = 289, 81\%);\) with an average age of 33 years \((SD = 9.61);\) The majority of participants reported their ethnicity as “White, European, or European American” \((n = 284, 80\%);\) some identified as “Asian, Asian American, or Pacific Islander” \((n = 31, 9\%);\) a small potion reported their ethnicity as “Black, African, or African American” \((n = 18, 5\%);\) or “Hispanic or Hispanic American” \((n = 18, 5\%);\) whereas “Middle Eastern, Arab, or Arab American” \((n = 2, <1\%);\) and “Native American or Alaskan Native” \((n = 1, <1\%);\) were not well represented, and only a few selected “Other” \((n = 3, <1\%).\) MTurk respondents reported that they worked on average between 20 and 80 hours per week, but, as expected, the majority and the average reported hours worked per week were both 40 \((n = 178, 50\%; M = 40, SD = 7.82);\) The MTurk sample reported that they worked in more industries than the student sample, with 19 out of the 20 available categories represented by at least one participant. More specifically, most MTurk respondents indicated that they worked in “Retail trade” \((n = 55, 15\%);\) followed by “Professional, scientific, and technical services” \((n = 44, 12\%);\) “Healthcare and social assistance” \((n = 41, 11\%);\) and “Educational services” \((n = 36, 10\%);\) The only category with zero participants was “Mining”.

**Combined sample.** Both samples were cleaned and merged within their respective areas. The data were tested for significant differences immediately after merging (see Results section and Appendix A, Tables 2 and 3 for details). Following this, the data were cleaned further, then maintained in one cohesive dataset (see Data Cleaning for details). The characteristics reported from here on out are based on the combined data from the student and MTurk samples \((n = 445).\)
The combined sample consisted of an almost even group of Males and Females, with a less than one percent difference separating the Female group into a slim majority \((n = 226, 51\%)\). Reported age ranged from 18-68, with a mean of 31 \((SD = 10.0)\), and most participants were 40 years of age or less \((n = 374, 84\%)\). The majority of participants identified as “White, European, or European American” \((n = 324, 73\%)\), some identified as “Black, African, or African American” \((n = 39, 9\%)\) or “Asian, Asian American, or Pacific Islander” \((n = 37, 8\%)\), a small amount identified as “Hispanic or Hispanic American” \((n = 21, 5\%)\) or “Middle Eastern, Arab, or Arab American” \((n = 17, 4\%)\), only one “Native American or Alaskan Native” \((n = 1, <1\%)\), and just a few selected “Other” \((n = 6, 1\%)\). The average number of hours worked per week was 38 \((SD = 9.47)\). The participants reported that they worked in many industries, with 19 out of the 20 available categories represented by at least one participant (the only category with zero participants was again “Mining”). More specifically, most respondents indicated that they worked in “Healthcare and social assistance” \((n = 75, 17\%)\), “Retail trade” \((n = 66, 15\%)\), followed by “Professional, scientific, and technical services” \((n = 46, 10\%)\), “Accommodation and food services” \((n = 44, 10\%)\), and “Educational services” \((n = 40, 9\%)\).

**Power**

In a literature review and simulation that tested the six most popular mediational statistical methods, Fritz and MacKinnon (2007), found the indirect effect method median sample size was 142.5 and the median sample size for nested SEM models was 239.5 participants. Although the majority of published studies had a sample size over 200, based on their results, for many methods the maximum sample size needed for power of .8 is less than 200. Based on a bias-corrected bootstrap method, with estimated conservatively moderate minimum path coefficients between the predictor and mediator (i.e., \(\alpha = \pm .26\)) and between the mediator and the outcome (i.e., \(\beta = \pm .26\)),
this article indicated a sample greater than 200 would be adequate to establish a minimum power of .8. However, based on these estimates, if any path coefficient in the current study’s proposed conditional process (i.e., moderated-mediation), was found to be significantly lower than the minimums previously described (i.e., ±.26), the required sample size may increase and even exceed 350. Fortunately, the current study’s resulting sample size exceeded this value ($n = 445$), indicating power may not be of concern. However, post-hoc analyses were performed to support this conclusion.

To alleviate any further concerns, post-hoc power analyses using G*Power 3.1.9.2 and IBM SPSS version 23, both concluded acceptable power has been achieved. More specifically, G*Power analyses using an effect size of .04 (the lowest significant effect size calculated in the current study; see Results section, Hypothesis 3b), yielded an adequate power level ($1 - \beta = .92$). Based on the supporting documentation (i.e., Fritz & MacKinnon, 2007), and results of statistical analyses, the current study is not concerned with Type II errors due to low power.

**Data Cleaning**

IBM SPSS software version 23 was used in all data cleaning and hypothesis testing processes. The student worker sample and the MTurk worker sample were analyzed separately until merging was justified. This process is discussed in the section that follows. Hypothesis testing procedures were performed with the subsequent use of a combined single dataset.

**SONA Student Sample Data De-identification.** During the cleaning process for SONA Survey 1 ($n = 328$), three duplicate IDs and an additional six response sets were removed due to incomplete (less than 75%) response sets ($n = 319$); Survey 2 ($n = 235$) contained ten duplicate ID sets; Survey 3 ($n = 190$) did not contain any duplicates. When duplicates were found, the earlier response set was kept, and the later (most recent) dated set was deleted. Following this, all
university IDs remaining were changed to a random five-digit number. This process included invalid and blank responses to the ID prompt. The same syntax was then used to convert ID in SONA Survey 2 and Survey 3. These three datasets were saved as master de-identified versions.

Working with the master de-identified files, the data were cleaned more thoroughly. Primarily, data in SONA Survey 1 were screened to remove respondents who entered “No” for the pre-screening items or responded that they did not work an average of 20 hours per week or more \((n = 155)\). Six individuals failed to respond to more than two of the three Insufficient Effort Responding (IER; Huang, Curran, Keeney, Poposki, & DeShon, 2012) items correctly and were removed from the dataset \((n = 149)\). The data were further analyzed for invalid format in open-response options (i.e., the Safety Outcomes variables). Any respondent who provided an uninterpretable or invalid response was logged and their response to each respective question was cleared. For example, when respondents answered with a range (e.g., “1-2”), the minimum value was entered. When the response was “no,” “noe,” or “N/A,” the value was cleared (i.e., blank and considered missing data).

SONA Survey 2 \((n = 225)\) and Survey 3 \((n = 190)\) were cleaned using the same process as above. For the Survey 2 dataset, six individuals were removed for IER \((n = 219)\), and several Safety Outcomes responses were cleared or entered in numerical value. Survey 3 was similar; six individuals were removed for IER \((n = 184)\) and several responses to Safety Outcomes were changed to numerical values or cleared. The data were combined by university ID and only those who completed all three surveys remained in the final dataset \((n = 88)\).

**MTurk Sample Data De-identification.** For MTurk Survey 1 \((n = 659)\), 14 incomplete response sets were found, 21 duplicate sets were found, Safety Outcomes were cleared or changed to a numerical value, and all variables were renamed with a unique suffix to indicate survey
administration time/phase. As before, I used the respondents unique MTurk ID to generate an Excel file with an associated six-digit random code. I used this information to create a syntax to convert the ID to the random code and ran the syntax in all surveys. The final de-identified Survey 1 data were saved \((n = 622)\).

For MTurk Survey 2 \((n = 403)\), there were no duplicates, four were removed for an incomplete response set, and Safety Outcomes were cleared or changed to a numerical value. One individual was deleted due to a non-coded ID remaining. This indicated either the survey was accessed without permission or the respondent was removed from Survey 1 for IER. In either case, the response set was deleted, and the final Survey 2 de-identified dataset was saved \((n = 398)\).

For MTurk Survey 3 \((n = 375)\), no issues were found with the data. The syntax was run to code ID into random six-digit number. Three IDs remained (two were blank) and were deleted. Safety Outcomes were cleared or changed to a numerical value and the final Survey 3 de-identified dataset was saved \((n = 372)\). The three MTurk phase survey datasets were merged to form one overall dataset. After removing any respondent who did not participate in all three survey administrations, the final MTurk dataset was saved \((n = 371)\).

Finally, the merged data from SONA \((n = 88)\) and the merged data from MTurk \((n = 372)\) were combined. The final merged dataset for both samples containing data from all three time points was saved. The combined dataset was utilized in all further data screening and cleaning processes that follow \((n = 459)\).

**Combined Dataset.** The combined data from the SONA student sample and the MTurk sample were cleaned further to ensure complete cohesion. Because MTurk was not already screened, IER was once again analyzed. Three additional respondents were removed for IER \((n = 456)\). At this point a variable was created to measure the time respondents took to complete each
survey. The researcher tested the total time to take each survey and set the minimum cutoff at two and a half minutes for Survey 1 and two minutes for Survey 2 and 3. Four participants were removed for failing to meet or exceed the minimum cutoffs ($n = 452$).

Another set of variables was created to measure time between survey completion for each respondent for both Survey 1 to Survey 2 and Survey 2 to Survey 3. One individual was added to the qualification list on MTurk prematurely and was able to take Survey 2 with only five days of downtime. Because the hypothesis and survey prompts were based on a minimum one-week interval, this respondent was removed from the dataset ($n = 451$).

**Study Specific Data Screening.** The PCQ was used to measure PsyCap at all three time points. I performed a One-Way Analysis of Variance (ANOVA) after creating a time based coding scheme in a new dataset to compare the responses. Non-significant results of a Levene’s Test of Homogeneity of Variance indicated the two samples were homogeneous. The ANOVA was also not significant, nor were any of the post-hoc tests (Bonferroni, Scheffe, LSD, and Tukey HSD). Based on these results, the mean of all three PsyCap administrations was used in all analyses that follow.

**Outlier detection and remedies.** I followed the procedures outlined by Cohen, Cohen, West, and Aiken (2003) for this section. Outliers may represent contaminated or atypical data points, or they may represent actual values. If detected, it was at the discretion of the researcher to remedy, remove, or allow these cases to remain. The process is explained in detail; if any suspected outliers were found, the decision to include or exclude them is discussed.

To further analyze each of the variables for possible issues and outliers, the next step was to look at a univariate frequency chart and histogram for each variable. Significant skewness or kurtosis (critical value $\pm 1.96$, Alpha = .05) is an indication of possible outliers and non-normal
data. Safety outcomes was expected to be skewed due to methodological issues (Christian et al., 2009) and the use of self-report data (Zohar, 2000).

Safety Outcomes were extremely positively skewed ($\text{Skew/SE}_{\text{Skew}} = 25.8$) and leptokurtic ($\text{Kurt/SE}_{\text{Kurt}} = 54.7$). In addition, the Workplace Aggression composite was also found to be extremely positively skewed ($\text{Skew/SE}_{\text{Skew}} = 21.8$) and leptokurtic ($\text{Kurt/SE}_{\text{Kurt}} = 30.8$). When many zero and one values are present in the data, as was the case for Workplace Aggression and Safety Outcomes, it is recommended to add a constant to the value when transforming, as the $\log_{10}$ of 0 is infinity and the $\log_{10}$ of 1 is zero. In accordance with the recommendations made by Cohen et al. (2003), the Workplace Aggression and Safety Outcomes variables were transformed using a $\log_{10}$ with a constant formula (i.e., $\log_{10}([\text{variable}]+5)$). The transformed Workplace Aggression scale reduced the skewness and kurtosis ($\text{Skew/SE}_{\text{Skew}} = 19.6$, $\Delta\text{Skew} = -2.2$; $\text{Kurt/SE}_{\text{Kurt}} = 24.1$, $\Delta\text{Kurt} = -6.7$). Safety Outcomes also benefitted from the transformation ($\text{Skew/SE}_{\text{Skew}} = 17.1$, $\Delta\text{Skew} = -8.7$; $\text{Kurt/SE}_{\text{Kurt}} = 17.8$, $\Delta\text{Kurt} = -36.9$). The transformed variables were used in all analyses that follow, with exceptions noted when interpretation deemed necessary to report untransformed descriptives (e.g., mean and standard deviation in Table 1).

All variables were further analyzed for outliers and standardized using a $z$-transformation. It was reasonable to expect that in some instances, “Rare Cases” may be valid (Cohen et al., 2003, p. 412), therefore, I set the standardized cutoff score higher than is typical ($z \pm 4.22$, $p = .0001$). This cutoff was utilized because the purpose of the current study was the collection of data which attempts to measure rare workplace incidents (i.e., Workplace Aggression and Safety Outcomes). Therefore, it was counterintuitive to then remove the responses from the dataset because they were considered to be outliers. Four outliers were removed for exceeding the cutoff on Workplace
Aggression, one was removed for Safety Performance, and one was removed for Safety Outcomes. No other deletions were performed for any reason, yielding the final sample size \( n = 445 \).

During this process, the Workplace Aggression scale was found to have extremely positive Skewness \( \text{Skew/SE}_{\text{Skew}} = 21.8 \). Upon further inspection, the item “Attacked you with a weapon” was found to be highly correlated with “Threatened you with physical violence” \( r = .92 \). As explained in the Measures section, the item “Attacked you with a weapon” was removed to attempt to increase the parsimony of the measure. The Workplace Aggression variables were recalculated to reflect this deletion.

**Assumptions of regression.** I began the process of clearing the assumptions of regression before analyzing the hypotheses. To detect any possible violations in the assumptions of regression among variables, the relationships were analyzed. I conducted a series of statistical and graphical analyses to clear the assumptions. No significant issues were found with the data (details available upon request).

**Multicollinearity.** I followed the recommendation made by Kline (2011) to run a series of regression analyses with each variable functioning as the dependent variable or criterion (DV) and the others input in the equation as independent variables or predictors (IVs). A large squared multiple correlation was used as a cutoff \( R^2 > .90 \), as this “suggests extreme multivariate collinearity” (p. 53). The multiple regressions also provided an opportunity to look for a small Tolerance \( < .10 \) and a large Variance Inflation Factor (VIF; > 10.0). No issues were found in any of the relationships between study variables.

**Missing data.** According to Kline (2011), “A few missing values, such as less than 5% on a single variable, in a large sample may be of little concern” (p. 55). The only missing values in the current study were one individual who failed to respond and provide their sex and another
individual who provided responses to Safety Outcomes which were deleted from the dataset (e.g., “n/a” or “non”). These two cases were maintained because their entire response set was not found to be problematic and no other issues were detected by any of the scrutiny subjected to the data up to this point. The final dataset was used in all hypothesis testing ($n = 445$). Whenever applicable, I have noted when the sample size fluctuated due to two missing values (one for Sex and one for Safety Outcomes).

Measures

**Demographics.** Industry type, hours worked per week, gender, age, and ethnicity, were measured as demographic items (see Method section for descriptives and Appendix B for items).

**Insufficient Effort Responding.** Three items were included in the phase surveys only to capture respondents who are failing to pay attention to the survey. The items were placed at the midpoint within the burnout and workplace aggression measures, prior to the PsyCap measure, and at the end of the workplace aggression scale. The five point Likert type scale ranged from 1 (“Strongly Disagree”) to 5 (“Strongly Agree”). The IER items were worded the same, with different responses requested. A sample item is, “Please select the ‘[insert value]’ response”. Failure to respond correctly to two or more of the three IER items in any phase resulted in possible deletion of their data (see Data Cleaning for details).

**Negative Affect (NA).** Used as a covariate (administered at time 1 only), the Positive and Negative Affect Schedule (PANAS) brief scale (Watson, Clark, & Tellegen, 1988) measures both positive and negative affect. In the current study, the internal consistency (i.e., Cronbach’s Alpha) was .92. The five point Likert type response scale ranged from 1 (“Never”) to 5 ("Many Times"). Participants were asked to rate a list of 10 words on the extent to which they have felt the emotion, ‘in general’. Sample items include, “distressed,” “upset,” “afraid,” and “nervous” (Watson et al.,
Only the brief NA portion of the PANAS was included for evaluation as a possible covariate in the model; NA was found to explain a considerable amount of variance in PsyCap (Bergheim et al., 2013).

Using NA as a covariate has received a great deal of criticism (cf., Spector & Brannick, 2011), however, the recommendations made by Becker et al. (2015) support the inclusion of NA when it is theoretically sound to do so. The researcher provided a theoretical basis for the inclusion of NA in the proposal of the current study. In addition, in order to maintain model cohesion and avoid possible confusion, NA was included in all hypothesis tests as a covariate. NA descriptives, correlations, and reliability estimates, are provided in detail in Table 1, and results are presented with and without NA.

**Workplace Aggression.** In the most applicable study to evaluate a complete measure of workplace aggression, many items were factor analyzed by R. A. Baron, Neuman, and Geddes (1999) to form the Workplace Aggression Scale (WAS). The WAS has three factors; “Expression of Hostility,” is defined as “antagonistic behaviors that are primarily verbal or symbolic in nature”. The second factor, “Obstructionism” is described as, “behaviors intended to obstruct or impede the performance of a coworker or supervisor. The final factor, “Overt Aggression,” is stated as “behaviors that are typically thought of as workplace violence,” including physical assault and battery (Rutter & Hine, 2005, p. 258).

This measure was chosen because it is broad enough to capture the widest range of negative behaviors that could be perceived as workplace aggression, as is intended in the current study. However, the perpetrator’s perspective was used to form the statements and some of the statements were redundant and written above an average working class reading level; therefore, when it was necessary in the current study, the wording was reformed to indicate a target’s perspective, add
wording to indicate a negative perception of the event, remove redundancy of item content, and lower the level of comprehension required. Similar procedures were used in Rutter and Hine (2005); some slightly transformed statements from R. A. Baron et al. (1999) were implemented to meet the specific needs of their study.

In the current study, the new question stem “Over the past week, how often were you bothered by anyone you work with because they…?” was followed by the 30 newly worded statements. Sample items include, “Acted superior to you,” “Failed to warn you of risks to your health or safety,” and “Physically attacked or assaulted you”. The five-point frequency based response scale ranged from 1 (“Never”) to 5 (“Very Often”). Coefficient Alpha was .95 for workplace aggression at Time 1.

The Aggression subscale items “Attacked you with a weapon” and “Threatened you with physical violence” were found to be highly correlated in the current study ($r = .91$). It seemed logical that threatening would most likely occur before an attack with a weapon, whereas an attack with a weapon does not always come as a result of being threatened. Therefore, the item “Attacked you with a weapon” was removed from all analyses (see Appendix D for full measure).

**Psychological Capital.** The Psychological Capital Questionnaire (PCQ) is a 24-item measure that was constructed from the combination of four subscales: optimism, hope, self-efficacy, and resiliency, to form the higher-order construct PsyCap. The 6-point Likert response scale ranged from 1 (“Strongly Disagree”) to 6 (“Strongly Agree”), with no neutral response. Sample items are “I feel confident analyzing a long-term problem to find a solution” and “If I should find myself in a jam at work, I could think of many ways to get out of it” (Luthans, Youssef, et al., 2007; used with permission per Mind Garden, Inc., February 2015; see Appendix E for abbreviated measure).
Coefficient Alpha was stable across all three survey administrations (\(\text{Alpha}_{T1} = .94\); \(\text{Alpha}_{T2} = .94\); \(\text{Alpha}_{T3} = .94\)). In addition, an ANOVA between the three time points resulted in all nonsignificant differences. Based on these results, the mean of the three individual PCQ means, for all three time points, was used in all analyses (\(\text{Alpha}_{T1T2T3} = .94\)).

**Burnout.** Dimensions of exhaustion and disengagement were measured via the Oldenburg Burnout Inventory (OLBI; Demerouti, Bakker, Vardakou, & Kantas, 2003). The higher-order construct of burnout was examined rather than the separate dimensions (see intro section “Burnout,” for rationale). There were eight items each for exhaustion and disengagement. A sample item for exhaustion is, “There are days when I feel tired before I arrive at work,” and a sample item for disengagement is, “It happens more and more often that I talk about my work in a negative way”. The five-point Likert response scale ranged from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). Scores were reversed prior to analysis such that higher scores indicated greater levels of burnout (see Appendix F for measure and details). Coefficient Alpha was .91 for burnout at Time 2.

**Safety Performance.** Safety Performance was measured by the Workplace Health & Safety scale, (this measure was provided by A. Neal, personal communication, July 2014). The bi-dimensional scale measures both Safety Participation and Safety Compliance with four items each to form the overall construct, Safety Performance. The five-point Likert response scale ranged from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). A sample items for Safety Participation is, “I put in extra effort to improve the safety of the workplace” and Safety Compliance is, “I use all the necessary safety equipment to do my job” (also see Appendix G). Coefficient Alpha was .90 for safety performance at Time 3.
Safety Outcomes. Safety Outcomes was evaluated using a self-report measure proposed by Smecko and Hayes (1999), that included items based on frequency of occurrence. Each respondent was asked to report their experiences for the one-week period prior to the respective survey over the series of phases. The three-item scale was included in its entirety due to its importance as an outcome. The items are, “How many minor injuries (e.g., scratches, cuts, bruises, or sprains) did you receive at work?” followed by, “How many major injuries (resulting in any lost time from work) did you receive at work?,” and finally, “How many ‘near accidents’ (something that could have resulted in injury or damage) have you been involved in at work?” (see Appendix H for details).

Due to a low reported occurrence of Major Injuries, the sum of reported Minor Injuries and Near Accidents at Time 3 was used as an outcome variable in the current study. Based on this and other findings, statistical procedures were included to diminish the potential negative impact of the low incidence rate (i.e., log transformation discussed earlier).

Hypothesis Testing Background and Rationale

Traditional testing of moderation and mediation has taken the form of many different methods. Rucker, Preacher, Tormala, and Petty (2011) discussed some potential issues with the most commonly used R. M. Baron and Kenny (1986) causal steps approach to testing a mediation model. For these reasons, I did not employ the traditional causal steps approach to mediation. I instead utilized a more positively regarded, modern, alternative approach.

Edwards and Lambert (2007) empirically tested and recommended an alternative method to be used to test for mediation and moderation in one model. Their recommendation was to test a Total Effects Model, in which both the direct and indirect effects of mediation with or without moderation are tested within the same equation, using a bootstrap method to determine standard
errors and statistical significance. In order to combine the bootstrap with the complex equations presented in Edwards and Lambert (2007), Hayes (2013) created a macro that is integrated with IBM SPSS software.

Hayes (2013) described his Process Macro, as a “Conditional process analysis [that] is used when one’s research goal is to describe the conditional nature of the mechanism or mechanisms by which a variable transmits its effect on another and testing hypotheses about such contingent effects” (p. 10). Thus, his macro has provided researchers with an opportunity to focus statistical tests around the conditional processes by which the study variables are hypothesized to affect one another (see Fodor, Antoni, Wiedemann, & Burkert, 2014; Lee, Sudom, & Zamorski, 2013; A. Li, Shaffer, & Bagger, 2015; McGonagle, Beatty, & Joffe, 2014; Volpone & Avery, 2013).

**Control variables.** The following items were evaluated as potential control variables in the current study: time between survey 1 and 2, time between survey 2 and 3, industry type, hours worked per week, gender, age, and ethnicity. Negative Affect was also included as a possible covariate. Following the recommendations made by Cohen et al. (2003), Ordinary Least Squares Regression (OLS) was utilized to determine the viability of these variables as control or covariate.

Time between survey 1 and 2, time between survey 2 and 3, hours worked per week, and age, were added as continuous variables to a hierarchical regression model without coding. Sex was coded as 1 (“Male”) and 2 (“Female”) and ethnicity was coded as 1 (“White, European, or European American”) and 2 (all other groups). Industry type was coded to create three groups representing white-collar, blue-collar, and service industry, workers. The white-collar group made up 23% of the sample \((n = 104)\) and included participants who selected “Information”, “Finance and insurance”, “Real estate and rental and leasing”, “Professional, scientific, and technical
services”, and “Management of companies and enterprises”. The blue-collar group made up 12% of the sample (n = 55) and included those who selected “Agriculture, forestry, fishing, and hunting”, “Utilities”, “Construction”, “Manufacturing”, “Wholesale trade”, and “Transportation and warehousing”. The service industry group consisted of 64% of the sample (n = 286) and included respondents for “Retail trade”, “Administrative and support & waste management services”, “Educational services”, “Healthcare and social assistance”, “Arts, entertainment, and recreation”, “Accommodation and food services”, “Other services (except public administration)”, and “Public administration and active duty military”. Two dummy-coded variables were created to contrast these groups (i.e., 0 (blue-collar and service) vs. 1 (white-collar), and 0 (white-collar and service) vs. 1 (blue-collar)).

Each hierarchical model added the respective IV, mediator, or moderator, then the group of controls, followed by NA as a covariate. Burnout (see Appendix A, Table 4), safety performance (see Appendix A, Table 5), and safety outcomes (see Appendix A, Table 6) were analyzed as dependent variables in the regression models. These models were independently evaluated to investigate the impact of the controls and covariate in the hypothesized relationships.

**Hypothesis Testing Procedure**

The following variables were used in all hypothesis tests: the predictor (X) was defined as workplace aggression at time one; burnout was the mediator (M) and was defined using time two; sex and NA were entered in that order as control variables (CVs) and were measured at time 1 only and in all testing that follows, sex and NA were entered at the end of each respective analysis, therefore, they are referred to hereafter as the controls or control variables; the first outcome (Y1) was defined by safety performance at time three; and the second outcome (Y2) was defined by using safety outcomes at time three. PsyCap at all three time points was previously compared and
verified; a mean of all three time points served as the moderator (W) in all statistical models (where applicable). The controls were used in all hypothesis tests and the results are presented with and without them.

Hypothesis 1a, 1b, and 2 proposed simple direct relationships between an outcome and a predictor. In order to test these hypotheses, the outcome was regressed on the predictor. Hypotheses 2a and 2b proposed the mediating effect of burnout on the relationships between workplace aggression and a) safety performance and b) safety outcomes is mediated by burnout. For these tests, I used the Process Macro’s imbedded ‘Model 4’. Finally, for Hypotheses 3a and 3b, the Process Macro’s Model 7 analyses provided the reported results for the relationships, and Hypotheses 3c and 3d were tested using Model 11 (also see Appendix A, Figures 2 and 3 for results). In all applicable cases, the Process Macro’s options were selected for a 95% confidence interval (CI), calculated from 50,000 bootstrapped samples, using mean centered products, heteroscedasticity-consistent standard errors (SEs), OLS/Maximum Likelihood (ML) CIs, and outputting the Preacher and Kelly Kappa-Squared ($\kappa^2$) value comparison of indirect effects. Kappa-Squared is a statistical representation of the “ratio of the indirect effect relative to its maximum possible value in the data” (Hayes, 2013, p. 191). Thus, Kappa-Squared is recommended because it is bound between zero and one and is interpreted as the percent of the indirect effect relative to its maximum potential. For hypotheses involving moderation (i.e., 3a, 3b, 3c, and 3d), if significant differences were found in any test of the moderator, I examined the conditional indirect effects and I generated graphs of the effects at ± 1 Standard Deviation (SD) from the mean (see Appendix A, Figures 4 and 5).
CHAPTER 3 Results

Combined Dataset

Results of independent samples t-tests revealed no differences between the SONA and MTurk samples for any study variables (significant differences were found for the demographic variables, age and hours worked per week). Based on the chi-square tests of independence, the other demographic variables (sex, ethnicity, and industry type) were found to be significantly dependent in both samples, with the exception of ethnicity in the SONA sample. Results of these analyses are presented in Appendix A, Tables 2 and 3. For detailed information, the Method section presents descriptives for each sample, both independently and after being combined.

Controls

Results of OLS hierarchical regression analyses indicated that NA added significant variance to the relationship between workplace aggression and burnout, above and beyond the group of controls, therefore NA was included in all hypothesis testing as a control. Sex and industry type (white-collar vs. blue-collar and service) were significant when predicting safety performance with workplace aggression and PsyCap as predictors. However, sex was also correlated with NA ($r = .10$), but industry type was not (see Appendix A, Table 1). Based on these findings, sex and NA were included as controls in all hypothesis testing. In addition, to compare their impact, based on the recommendations made by Becker et al. (2015), the results are presented with and without the controls.

Transformed Variables

As previously described, Workplace Aggression and Safety Outcomes were log transformed prior to these analyses. To ease the interpretation of results, it is necessary to provide basic descriptives of these variables. The mean ($M$), standard deviation ($SD$), mean - log
transformed (MLg), standard deviation - log transformed (SDLg), minimum (Min), maximum (Max), log transformed minimum (MinLg), and log transformed maximum (MaxLg), are presented for comparison. Workplace Aggression (M = 1.31, SD = .41; MLg = .799, SDLg = .026; Min = 1.0, MinLg = .78; Max = 3.29, MaxLg = .92); Safety Outcomes (M = .78, SD = 1.39; MLg = .75, SDLg = .74; Min = 0, MinLg = .70; Max = 8, MaxLg = 1.11). All other study variables were not transformed and descriptives can be found in Table 1.

Symbolization

For mediation symbolization in the results, the examples described in Rucker et al. (2011) are utilized as follows; “a” represents the relationship between X and M; “a’” represents the relationship between W and M; “a X a’” represents the interaction term for X and W; “b” represents the relationship between M and Y1 (or Y2), controlling for X; “c” represents the total effect of X on Y1 (or Y2), reported as an unstandardized slope of the regression; “c’” represents the direct effect of X on Y1 (or Y2), controlling for M; “IE” represents the indirect effect of X on Y1 (or Y2) through M.

Hypothesis 1a

The relationship between burnout and safety performance was significant, \( b = -.24, \beta = -.27, t(443) = -5.81, p < .001 \), and burnout accounted for a significant amount of variance in safety performance, \( R^2 = .07, F(1, 443) = 33.8, p < .001 \), supporting Hypothesis 1a. When controlling for sex and NA, the relationship between burnout and safety performance was still statistically significant, \( b = -.21, \beta = -.24, t(440) = -4.73, p < .001; \Delta b = .03, \) and the overall variance accounted for in safety performance by all predictors remained significant, \( R^2 = .09, F(3, 440) = 14.0, p < .001 \). The controls accounted for significantly more variance than burnout alone, \( \Delta R^2 = .02, p = .023 \), but sex was the only significant addition to the model, \( b = .13, \beta = .10, t(440) = 2.10, p = .04 \).
NA was not significantly related to safety performance above and beyond burnout, $b = -0.09, \beta = -0.10, t(440) = -1.93, p = .054$. With the addition of the controls, Hypothesis 1a remained supported and the substantive conclusion was unaltered.

**Hypothesis 1b**

The relationship between burnout and safety outcomes was also significant, $b = 0.02, \beta = 0.15, t(442) = 3.26, p = .001$, and burnout accounted for a significant amount of variance in safety outcomes, $R^2 = 0.02, F(1, 441) = 10.6, p = .001$, supporting Hypothesis 1b. After controlling for sex and NA, the relationship between burnout and safety outcomes was still statistically significant, $b = 0.02, \beta = 0.14, t(439) = 2.79, p = .005; \Delta b = 0.00$, the overall model remained significant, $R^2 = 0.03, F(3, 439) = 4.23, p = .006$, and the controls failed to account for significantly more variance in safety outcomes than burnout alone, $\Delta R^2 = 0.01, p = .36$. Sex and NA were not significantly related to safety outcomes above and beyond burnout, $b_{Sex} = -0.01, \beta_{Sex} = -0.06, t(439) = -1.28, p = .20; b_{NA} = 0.01, \beta_{NA} = 0.04, t(439) = .74, p = .46$. With the addition of the controls, Hypothesis 1b remained significant and the substantive conclusion was unaltered.

**Hypothesis 2**

The relationship between workplace aggression and burnout was significant, $b = 7.5, \beta = 0.27, t(443) = 5.88, p < .001$, and workplace aggression accounted for a significant amount of variance in burnout, $R^2 = 0.07, F(1, 443) = 34.6, p < .001$, supporting Hypothesis 2. After controlling for sex and NA, the variance accounted for by the controls increased significantly, $R^2 = 0.20, F(3, 440) = 34.0, p < .001; \Delta R^2 = .12, p < .001$. The relationship between workplace aggression and burnout was deflated but did not substantively change to a nonsignificant value, $b = 4.32, \beta = 0.16, t(440) = 3.40, p = .001; \Delta b = -3.18$. Sex did not add to this model, $b = 0.09, \beta = 0.06, t(440) = 1.34, p = .18$. NA improved the model above and beyond burnout, $b = 0.38, \beta = 0.35, t(440) = 7.62, p <
.001, providing further evidence for NA as a control variable. With the variance associated with the controls accounted for, the substantive conclusion was not affected, but the interpretation of the regression coefficients was subject to the deflating effects of the control variables. Therefore, Hypothesis 2 remains supported, but should be discussed in light of the conservative estimates of the model with control variables added.

**Hypothesis 2a**

The Process Macro confirmed the relationship between workplace aggression and burnout, with and without the controls, that was previously established in Hypothesis 2. Figure 2 contains results from the analyses with controls added. The following results are based on analyses without controls. The Process Macro’s Model 4 revealed that the relationship between workplace aggression and safety performance mediated by burnout was significant and burnout accounted for a significant amount of variance in safety performance, controlling for workplace aggression, $R^2 = .10, F(2, 442) = 21.7, p < .001$. The direct effect of workplace aggression on safety performance, controlling for burnout, was significant, $c' = -4.16, 95\% \text{ CI } [-6.84, -1.48], t(442) = -3.05, p = .002$. Burnout significantly mediated the relationship between workplace aggression and safety performance in the overall model, $b = -2.0, t(442) = -4.84, p < .001$, with a significant indirect effect, $IE = -1.48, 95\% \text{ CI } [-2.44, -0.80], t(442) = -3.57, p < .001$. This accounted for 6% of the maximum possible indirect effect, $\kappa^2 = .06, 95\% \text{ CI } [.03, .09]$. The total effect of workplace aggression on safety performance was also significant, $c = -5.64, 95\% \text{ CI } [-8.25, -3.04], t(443) = -4.26, p < .001$, and workplace aggression accounted for a significant amount of the variance in safety performance, $R^2 = .05, F(1, 443) = 18.2, p < .001$. Taken altogether, these results provided support for Hypothesis 2a. Based on these findings, workplace aggression influenced safety performance directly and indirectly through burnout.
When controlling for sex and NA, the relationship between workplace aggression and burnout was similar. The full model measuring the relationship between workplace aggression and safety performance with burnout as the mediator and the controls was significant, $R^2 = .11$, $F(4, 439) = 12.5, p < .001$. The direct effect of workplace aggression on safety performance was significant, $c' = -3.83, 95\% \text{ CI} [-6.67, -0.99], t(439) = -2.65, p = .008$. The effect of burnout as a mediator of the relationship between workplace aggression and safety performance remained significant, $b = -0.19, t(439) = -4.25, p < .001$, as did the indirect effect, $IE = -0.80, 95\% \text{ CI} [-1.55, -0.32], t(439) = -2.60, p < .05$, but more importantly, this value differed significantly from the model without the controls, $\Delta IE = .68$. However, once again, none of the control variables significantly added to the overall model, $b_{\text{Sex}} = .11, t(439) = 1.92, p = .056; b_{\text{NA}} = -.05, t(439) = -.10, p = .32$. The control variables did not significantly affect any of the relationships between variables and the added variance due to the controls was negligible, $\Delta R^2 = .01$.

The total effect of workplace aggression on safety performance also remained significant with the controls added, $R^2 = .07$, $F(3, 440) = 11.0, p < .001$, and workplace aggression accounted for a significant amount of the variance in safety performance controlling for sex and NA, but this was not a significant improvement above the total effect model without the controls, $\Delta R^2 = .02$. The unstandardized coefficient representing the total effect of workplace aggression on safety performance was deflated when the controls were added, $c = -4.63, 95\% \text{ CI} [-7.48, -1.78], t(440) = -3.19, p = .002; \Delta c = 1.01$. However, NA was the only control variable significantly related to safety performance in the total effect model, $b_{\text{NA}} = -.12, t(440) = -2.43, p = .015$; sex was not significant in the total effect model, $b_{\text{Sex}} = .10, t(440) = 1.62, p = .105$. Based on these results, the addition of control variables did not alter the substantive conclusion for Hypothesis 2a; the controls again only acted to deflate the relationship between workplace aggression and safety performance,
mediated by burnout (i.e., the indirect effect and total effect coefficients). Based on these findings, the results were interpreted using the conservative model with controls included, and additional support for Hypothesis 2a was provided (also see Appendix A, Figure 2).

**Hypothesis 2b**

Figure 3 contains results of analyses with controls added. The following results are based on analyses without controls. The Process Macro’s Model 4 revealed that the overall model with workplace aggression and burnout as predictors accounted for a significant amount of variance in safety outcomes, $R^2 = .08$, $F(2, 441) = 11.2$, $p < .001$. The direct effect of workplace aggression on safety outcomes, controlling for burnout, was also significant, $c' = .82$, 95% CI [.40, 1.24], $t(441) = 3.85$, $p < .001$. Contrary to safety performance, burnout did not significantly mediate the relationship between workplace aggression and safety outcomes in the overall model, $b = .01$, $t(441) = 1.78$, $p = .077$, and the indirect effect of burnout on the relationship between workplace aggression and safety outcomes was also nonsignificant, $IE = .07$, 95% CI [-.01, .17], $t(441) = 1.70$, $p > .05$, and this accounted for 2% of the maximum possible indirect effect, $\kappa^2 = .02$, 95% CI [.00, .05]. The total effect of workplace aggression accounted for a significant amount of variance in safety outcomes, $R^2 = .08$, $F(1, 442) = 18.9$, $p < .001$, and workplace aggression was significantly related to safety outcomes, $c = .90$, 95% CI [.49, 1.30], $t(442) = 4.35$, $p < .001$.

Because mediation was not supported, these results do not support Hypothesis 2b; based on these findings, in the current study, workplace aggression was found to have a nonsignificant influence on safety outcomes indirectly through burnout. Only a significant direct influence of workplace aggression on safety outcomes was found without control variables added to the model.

When controlling for sex and NA, the relationship between workplace aggression and safety outcomes was similar. However, the full model measuring the relationship between
workplace aggression and safety outcomes with burnout as the mediator and the controls included was substantively different. Workplace aggression and the control variables in the overall model accounted for a significant amount of variance in safety outcomes, controlling for burnout, $R^2 = .09$, $F(4, 438) = 5.87, p < .001$, and the direct effect of workplace aggression on safety outcomes, controlling for burnout, was also significant, $c = .84$, 95% CI [.39, 1.28], $t(438) = 3.71, p < .001$. Contrary to the model without the controls, burnout was a significant mediator, $b = .01, t(438) = 2.0, p = .045$, and the indirect effect was also significant, $IE = .05$, 95% CI [.01, .13], $t(438) = 1.65, p < .05$. Also, neither of the control variables significantly added to the overall model, $b_{Sex} = -.01, t(438) = -1.0, p = .32$; $b_{NA} = -.00, t(438) = -.56, p = .58$. In this case, the control variables taken together significantly affected the substantive conclusions for the relationships between variables, with only a minor, yet significant increase in variance, $\Delta R^2 = .01$.

The total effect of workplace aggression also accounted for a significant amount of variance in safety outcomes with the controls added, $R^2 = .08$, $F(3, 439) = 6.54, p < .001$, but this was not a significant improvement above the total effect model without the controls, $\Delta R^2 = .00$. The coefficient for workplace aggression was deflated in the total effect model when the controls were added, but not significantly, $c = .89$, 95% CI [.45, 1.32], $t(439) = 4.0, p < .001$; $\Delta c = .01$. As previously, none of the control variables were significantly related to safety outcomes in the total effect model, $b_{Sex} = -.01, t(439) = -.86, p = .39$; $b_{NA} = .00, t(439) = .08, p = .94$.

Based on these results, the addition of control variables altered the substantive conclusion of Hypothesis 2b. Controlling for sex and NA, burnout was found to mediate the relationship between workplace aggression and safety outcomes. Based on these findings, the results were interpreted from the model with the controls included (also see Appendix A, Figure 3).
Hypothesis 3a

The results presented in the following section are based on models without the control variables added. Appendix A, Figure 2 contains results of analyses with the controls included in the model. The overall model predicting burnout with workplace aggression, PsyCap, and the interaction between them, was highly significant and accounted for a large portion of the variance in burnout, $R^2 = .48$, $F(3, 441) = 135$, $p < .001$. The relationship between workplace aggression and burnout was significant, $a = 4.16$, 95% CI [1.56, 6.77], $t(441) = 3.14$, $p = .002$, as well as the relationship between PsyCap and burnout, $a` = -.69$, 95% CI [-.77, -.62], $t(441) = -17.2$, $p < .001$, and the interaction between them, $a X a` = 4.48$, 95% CI [1.35, 7.62], $t(441) = 2.81$, $p = .005$.

The conditional indirect negative effect of workplace aggression on safety performance through burnout was significant when PsyCap was average, $IE = -.83$, 95% CI [-1.52, -.35], and when PsyCap was high (i.e., +1 SD), $IE = -1.45$, 95% CI [-2.56, -.67], but not significant when PsyCap was low (i.e., -1 SD), $IE = -.21$, 95% CI [-.76, .20]. Based on this finding, support was found for the opposite effect as was proposed, indicating lack of support for Hypothesis 3a.

When sex and NA were added to the model, the relationships remained as they were without the controls, only NA was significant, sex was not, and the original model was only altered due to deflated coefficient estimates. In the overall model, workplace aggression still accounted for a significant amount of variance in burnout, $R^2 = .49$, $F(5, 438) = 82.7$, $p < .001$, and this accounted for only a small increase in variance over the model without controls, $\Delta R^2 = .01$. The relationship between workplace aggression and burnout deflated, $a = 3.56$, 95% CI [.94, 6.17], $t(438) = 2.68$, $p = .008$; $\Delta a = -.62$, as did the relationship between PsyCap and burnout, $a` = -.65$, 95% CI [-.73, -.56], $t(438) = -14.7$, $p < .001$; $\Delta a` = -.04$, and the interaction between them, $a X a` = 4.31$, 95% CI [1.09, 7.53], $t(438) = 2.63$, $p = .009$; $\Delta a X a` = -.17$. These deflated values did not
change the substantive conclusion as many were not significant; the only control which significantly added to this model was NA, $b = .11, 95\% \text{ CI } [.02, .20], t(438) = 2.52, p = .012$.

The direct effect of workplace aggression on safety performance, controlling for burnout and PsyCap, was deflated when the controls were added. The value remained significant, $c^* = -3.83, 95\% \text{ CI } [-6.67, -0.99], t(439) = -2.65, p = .008; \Delta c^* = .33$, and the effect of burnout on safety performance, controlling for workplace aggression and PsyCap, also remained significant in the overall model, $b = -.19, 95\% \text{ CI } [-.27, -.10], t(439) = -4.25, p < .001; \Delta b = .01$. Neither of the controls were significant in this model, $b_{Sex} = .11, t(439) = 1.92, p = .056; b_{NA} = -.05, t(439) = -1.0, p = .32$.

With the controls added, the conditional indirect effects of workplace aggression on safety performance through burnout also remained significant when PsyCap was average, $IE = -.66, 95\% \text{ CI } [-1.33, -.23]; \Delta IE = .17$, and when PsyCap was high (i.e., +1 SD), $IE = -1.21, 95\% \text{ CI } [-2.31, -.49]; \Delta IE = .24$, and not significant when PsyCap was low (i.e., -1 SD), $IE = -.11, 95\% \text{ CI } [-.60, .29]; \Delta IE = .10$ (see Appendix A, Figure 2 for results and Figure 4 for graph of indirect effects). In Figure 4, the conditional indirect effects of PsyCap are presented with their corresponding 95% CIs. This graph clearly shows the increasing negative effects of workplace aggression on safety performance, through burnout, as PsyCap increases from average to high levels. The conditional indirect effect coefficients were deflated when controls were added, but the substantive conclusions were unchanged. Based on these results, Hypothesis 3a remained unsupported.

**Hypothesis 3b**

The overall model predicting burnout by workplace aggression, PsyCap, and the interaction between them, mirrored the pattern found for safety performance. Only negligible differences were found due to one less degree of freedom for safety outcomes.
As previously, the effect of burnout on safety outcomes was not significant in the overall model, $b = .010$, 95% CI [-.00, .02], $t(441) = 1.78$, $p = .08$, thus the conditional indirect effects of workplace aggression on safety outcomes through burnout were all nonsignificant. Based on this finding, support was not found for Hypothesis 3b. However, taking into account the findings of previous analyses, the addition of sex and NA as control variables was found to alter the substantive conclusion.

When sex and NA were added to the model predicting burnout, the relationships remained as they were without the controls, with minor differences due to the loss of one degree of freedom. Only a minor difference was found for the direct effect of workplace aggression on safety outcomes, which remained significant, $c' = .84$, 95% CI [.40, 1.28], $t(438) = 3.71$, $p < .001$; $\Delta c' = .02$. Most importantly, the effect of burnout on safety outcomes, controlling for workplace aggression, significantly increased with the addition of the controls, $b = .012$, 95% CI [.00, .02], $t(438) = 2.01$, $p = .045$; $\Delta b = .002$. Sex and NA were not significant in this model, $b_{sex} = -.01$, $t(438) = -1.00$, $p = .32$; $b_{NA} = -.01$, $t(438) = -.56$, $p = .58$. With the addition of the controls, the conditional indirect effects of workplace aggression on safety outcomes through burnout were significant when PsyCap was average, $IE = .04$, 95% CI [.004, .11], and when PsyCap was high (i.e., +1 SD), $IE = .08$, 95% CI [.01, .20], and not significant when PsyCap was low (i.e., -1 SD), $IE = .01$, 95% CI [-.02, .05] (see Appendix A, Figure 3 for results and Figure 5 for a graph of indirect effects). This graph represents the conditional indirect effects of PsyCap with 95% CIs on the positive relationship between workplace aggression and safety outcomes, through burnout. Similar to safety performance, the mediating effects of burnout on the relationship between workplace aggression and safety outcomes was only significant when sex and NA were controlled for, and the conditional indirect effects of PsyCap as a moderator of this relationship were
significant, but in the opposite direction. Although these findings are significant, they are not in the expected direction as was hypothesized. Based on these results, Hypothesis 3b is unsupported.

**Hypothesis 3c**

The direct effect of workplace aggression on safety performance was not moderated by PsyCap, \( b_{WAggXPsyCap} = 1.43, t(440) = 1.02, p = .31 \), and the addition of sex and NA as control variables did not alter the results, \( b_{WAggXPsyCap} = 1.36, t(437) = 1.03, p = .30 \). Sex added to the model, \( b_{Sex} = .12, t(437) = 2.21, p = .03 \), but NA did not, \( b_{NA} = .12, t(437) = 1.34, p = .18 \). Based on these results, Hypothesis 3c was not supported.

**Hypothesis 3d**

The direct effect of workplace aggression on safety outcomes was not moderated by PsyCap, \( b_{WAggXPsyCap} = -.056, t(439) = -.20, p = .84 \), and the addition of sex and NA as control variables did not alter the results, \( b_{WAggXPsyCap} = -.045, t(436) = -.16, p = .87 \). Sex and NA were not significant, \( b_{Sex} = -.01, t(436) = -.98, p = .33 \); \( b_{NA} = -.00, t(436) = -.22, p = .83 \). Based on these results, Hypothesis 3d was not supported.

**Post-Hoc Analyses**

The results of Hypotheses 3a and 3b led to further investigation into the relationship between workplace aggression and burnout, moderated by PsyCap. Based on a regression analysis, workplace aggression, PsyCap, and the controls accounted for a significant amount of variance in burnout, \( R^2 = .47, F(4, 443) = 97.8, p < .001 \). The relationship between workplace aggression and burnout was significantly positive \( (r = .27, \beta = .07, p < .05) \) and the relationship between PsyCap and burnout was significantly negative \( (r = -.67, \beta = -.60, p < .001) \). Support was found for PsyCap as a moderator between workplace aggression and burnout. The interaction between workplace aggression and PsyCap accounted for a significant amount of variance in burnout above and
beyond the model with the predictors and controls, $R^2 = .49$, $F(5, 443) = 82.4$, $p < .001$, and this accounted for a significant increase in variance over the model without the interaction term, $\Delta R^2 = .02$. Figure 6 shows the positive relationship between workplace aggression and burnout is moderated by PsyCap. A simple slopes test revealed that for those with low PsyCap (i.e., -1 SD), their level of burnout was significantly higher than the average and high PsyCap (i.e., +1 SD) groups; when workplace aggression was low, burnout in the low PsyCap group = 3.04, the average PsyCap group = 2.51, and the high PsyCap group = 1.98, and when workplace aggression was high, burnout in the low PsyCap group = 3.07, the average group = 2.70, and burnout in the high PsyCap group = 2.33. Further analyses were conducted using quartiles of PsyCap, where Q1 represented the 25th percentile, Q2 was the 26th to 50th percentile, Q3 was the 51st to 75th percentile, and Q4 was the 76th to 100th percentile. Each quartile contained about 25% of the sample ($nQ1 = 113; nQ2 = 112; nQ3 = 111; nQ4 = 109$).

Levels of burnout differed based on PsyCap quartile; Q1 reported the highest mean burnout ($M_{Q1} = 3.51$, $SD_{Q1} = .56$) with each quartile reporting lower burnout as they increased in PsyCap ($M_{Q2} = 3.05$, $SD_{Q2} = .54; M_{Q3} = 2.77$, $SD_{Q3} = .57; M_{Q4} = 2.21$, $SD_{Q4} = .64$). A One-Way ANOVA was significant, indicating there are differences between groups, $F(3, 441) = 96.9$, $p < .001$. Tukey’s HSD, Scheffe, Fisher’s LSD, and Bonferroni post-hoc tests supported this conclusion; I found that all four quartiles were significantly different from one another (all comparisons $p < .01$). Interestingly, the range as well as the minimum and maximum values of burnout differed by quartile; Q1 had a range of 2.50 (2.38 to 4.88), Q2 had a range of 2.50 (1.88 to 4.38), Q3 had a range of 3.25 (1.25 to 4.50), and Q4 had a range of 3.13 (1.00 to 4.13). As PsyCap increased, the range of burnout reported by participants also increased, while burnout’s minimum and maximum reported values decreased. Taken together with the results of Hypotheses 3a and 3b, the post-hoc
analyses shed new light on the nature of the moderating effects of PsyCap on the proposed relationships.

Similarly, the reported incidents of workplace aggression also differed based on PsyCap quartile. The mean and range of workplace aggression reported for the PsyCap quartiles differed as PsyCap increased; $M_{Q1} = .81$, $SD_{Q1} = .04$, Q1 range = .14 (.78 to .92); $M_{Q2} = .80$, $SD_{Q2} = .03$, Q2 range = .13 (.78 to .91); $M_{Q3} = .80$, $SD_{Q3} = .02$, Q3 range = .08 (.78 to .86); $M_{Q4} = .79$, $SD_{Q4} = .02$, Q4 range = .12 (.78 to .90). A One-Way ANOVA was significant, $F(3, 441) = 9.21, p < .001$. The post-hoc Tukey’s HSD, Scheffe, Fisher’s LSD, and Bonferroni analyses revealed that Q1 differed significantly from only Q3 and Q4 (all $p < .01$). The mean reported workplace aggression decreased as PsyCap increased, but the range decreased then increased again in Q4.

**CHAPTER 4 Discussion**

Workplace safety is an important outcome, as it has many deleterious effects for workers and organizations. Aside from potential loss of life and disability, the mere cost to an organization of temporarily or permanently losing an employee due to an avoidable injury or accident is enormous. Drawing upon COR Theory (Hobfoll, 1989), the JD-R Model (Demerouti et al., 2001), and Transactional Theory (Lazarus & Folkman, 1987), the present research evaluated the effects of workplace aggression as a specific job demand, hypothesized to negatively affect safety performance and accidents and injuries (i.e., safety outcomes). The current study was influenced by previous literature linking workplace aggression with burnout and research linking burnout with safety related variables. No other study has conceptualized burnout as a mediator of the relationships between workplace aggression and safety related outcomes. Additionally, PsyCap was included in a novel way; as a moderator, hypothesized to buffer the mediating effects of
workplace aggression on two safety related outcomes, both mediated by burnout. Two samples were collected to evaluate the hypotheses.

The results support previous findings that burnout was negatively related to safety performance and positively related to safety outcomes. These findings are in line with a previous meta-analytic study (cf., Nahrgang et al., 2011). Based on the JD-R Model, Nahrgang et al. (2011) found support for the positive relationship between burnout and safety outcomes, and the negative relationship between burnout and safety performance. Workplace aggression was also found to be positively related to burnout. As previously, this hypothesis replicates previous findings (cf., Laschinger et al., 2009; Oyeleye et al., 2013). The current study sought to replicate these findings before advancing to more complex models, and this was accomplished.

The previously-established negative relationship between workplace aggression and safety performance, and the positive relationship between workplace aggression and safety outcomes, were found to be mediated by burnout. The indirect effect of burnout as a mediator accounted for 6% of the possible maximum indirect effect for safety performance and 2% for safety outcomes. The direct relationships between workplace aggression and safety behaviors and safety outcomes were also significant. The effects of workplace aggression were transmitted both directly, and indirectly through burnout, to safety performance and safety outcomes.

This study adds to the body of literature in the area of burnout. Based on the model and theory, workplace aggression is considered a job demand and thus a ‘threat’ to resources or resource depleting, as it was shown to be positively related to burnout. Similarly, burnout has been evaluated and support was found replicating the relationships between burnout and safety related variables. More importantly, the current study adds to the literature in workplace aggression, burnout, and safety, by expanding upon previous results and providing evidence for a mediational
process. I have demonstrated that workplace aggression led to increased burnout and that increased burnout led to lower safety performance and higher safety outcomes. Additional analyses provided some insights into a unique mechanism by which these relationships are altered.

PsyCap significantly moderated the effects of burnout as a mediator of the relationship between workplace aggression, safety performance, and safety outcomes. However, the results are different from what was hypothesized. For both safety performance and safety outcomes, individuals who reported high (i.e., +1 SD) or average levels of PsyCap were significantly impacted by workplace aggression, as demonstrated by the larger effect of workplace aggression on both the outcomes, when mediated by burnout. For those who reported average levels of PsyCap, this effect was weaker, but remained significant for the two outcomes. Contrary to what was hypothesized, those who reported low levels of PsyCap were unaffected; the effect of workplace aggression on the outcomes when mediated by burnout remained unchanged (nonsignificant) when PsyCap was reported to be low (i.e., -1 SD).

The analyses examining the moderating effects of PsyCap on the direct relationships between workplace aggression, safety performance, and safety outcomes, controlling for the mediation effect of burnout, were not supported. No effects were found in either model, leading to the conclusion that PsyCap affects the indirect relationship, but not the direct relationship, between workplace aggression and the safety related outcomes, when controlling for burnout. These results were unexpected, but they are novel and interesting for research and practice.

Post-hoc analyses demonstrated that the expected negative effects of workplace aggression on burnout are different based on levels of PsyCap. Those who reported higher levels of PsyCap also reported significantly lower burnout, with a narrower range. Similarly, those who reported higher levels of PsyCap also reported lower workplace aggression. The effect of PsyCap as a
buffering mechanism was found for the relationship between workplace aggression and burnout such that those who reported high PsyCap also reported lower levels of burnout and those who reported low PsyCap reported high levels of burnout. The relationships between workplace aggression and both safety performance and safety outcomes was mediated by burnout and moderated by PsyCap. The mediating effect of burnout in the proposed relationships was stronger when PsyCap was high, weaker but significant when PsyCap was average, and not significant when PsyCap was low. There are many possible explanations for these findings.

The results of the post-hoc analyses are congruent with research; based on theory and available research, PsyCap typically acts as a buffer between demands or threats to resources and a stress response such as burnout. For example, recently Y. Li, Wang, Yang, and Liu (2016) based their multi-level study on COR Theory. They studied the effects of PsyCap as a moderator of the relationship between abusive supervision and subordinate distress. They found that individuals with lower PsyCap were more likely to experience distress when their supervisor was abusive. In addition, Cassidy, McLaughlin, and McDowell (2014) found PsyCap partially mediated the relationship between workplace bullying and well-being. However, their study also included social support and they found the combination of PsyCap with social support to be the most impactful mediator of the relationship between bullying and well-being. The current study found a similar pattern of post-hoc results; PsyCap acted as a buffer for those faced with challenges such as workplace aggression, such that those who reported lower levels of PsyCap also reported higher levels of burnout and those who reported higher levels of PsyCap also reported lower levels of burnout.

Future studies may attempt to explain why the mediating effects of burnout on the relationships between workplace aggression and both outcomes were stronger with higher levels
of PsyCap. Those who reported high levels of PsyCap also reported lower levels of burnout, but
the stronger mediating effect of burnout in the relationships between workplace aggression and
both the outcomes when PsyCap was reported to be high leads to a different conclusion. One
explanation is that those who reported higher levels of PsyCap may be less inclined to pay attention
or interpret workplace aggression as an act of hostility, especially when many of the items deal
with covert, passive aggression (see Appendix D for scale items), as demonstrated by the post-hoc
analyses which found lower reported workplace aggression with higher PsyCap and vice versa.
Levels of burnout for those who reported high PsyCap may not be indicative of actual workplace
aggression, but rather their interpretation of the acts. Their optimism, hope, resiliency, and self-
efficacy may need to reach a breaking point before the effects are transmitted to the outcomes.
Once the breaking point is reached, the effects may not be seen in burnout, but could possibly still
affect the outcomes. In addition, a victim of workplace aggression who is high on PsyCap may not
be able to fully comprehend acts of workplace aggression or they be unwilling to defend against it
until it becomes severe, leading the individual to experience cognitive dissonance once they have
surpassed their breaking point (Festinger, 1957). Contrary to this, someone who is low on PsyCap
may be more inclined to accurately and promptly interpret an act of workplace aggression and they
may be more sensitive earlier, which could be responsible for impacting burnout and the outcomes
at the same time. Based on this theory, cognitive dissonance may be an influential factor in
explaining the impact of PsyCap in the relationships between workplace aggression and both the
outcomes, mediated by burnout. Additional research should be conducted to evaluate this
possibility.

The findings of the current study suggest that workplace aggression is more highly
destructive than expected. Despite reporting lower burnout, based on the overall results,
individuals with high levels of PsyCap were most impacted by workplace aggression, whereas those with low PsyCap reported higher levels of burnout but no significant effects on the outcomes. Based on these results, the effects of workplace aggression and PsyCap on burnout and the subsequent safety related outcomes should be of concern to organizations and of interest to researchers.

**Implications for Research**

Workplace aggression was found to be a specific job demand and PsyCap acted as a moderator, with higher levels of burnout found to be associated with lower PsyCap. This result was presented in combination with other results showing PsyCap altered the effects of workplace aggression on some negative safety related outcomes when mediated by burnout. In research, these relationships add to the theoretical development of the constructs in the area of Occupational Health Psychology by providing a link between previously disconnected variables. The use of COR Theory, the JD-R Model, and Transactional Theory, adds to literature in OHP and other areas. Additional research may be conducted by adding to the relationships by modeling new concepts and considering the theories listed as well as any other theories.

There are many opportunities for additional research with different constructs. For example, based on Zohar (1980), “Safety Climate” includes the concept that “workers indeed have a unified set of cognitions regarding the safety aspects of their organization” (p. 101) and in this manner, “climate was viewed as a summary of molar perceptions that employees share about their work environments” (p. 96). Thus, future research may seek to measure safety climate at the group or organizational level, when shared perceptions can be gathered and analyzed. In addition, there is also a body of established research from which future studies could draw upon that demonstrates the positive relationship between safety climate and safety performance (see Clarke, 2006; Zohar,
2000), and the negative relationship between civility norms and safety outcomes, mediated by safety climate (cf. McGonagle, Walsh, et al., 2014).

Further consideration may be worthwhile in utilizing the novel conceptualization of a related personal quality, “Grit” (Duckworth, Peterson, Matthews, & Kelly, 2007). Grit is defined as “perseverance and passion for long-term goals” and is characterized by “working strenuously toward challenges, maintaining effort and interest over years despite failure, adversity, and plateaus in progress” (pp. 1087-1088). Based on the results of their six studies, Duckworth et al. (2007) concluded that grit accounted for more variance than cognitive ability (IQ) and the Big Five (Conscientiousness only) in a number of “success outcomes”. Their research included results from a number of situations, including educational achievement level, career changes, GPA, military officer retention, and a children’s spelling bee. In all studies, ‘grittier’ individuals performed at higher levels than less ‘gritty’ people. This construct includes aspects of long-term effort and overcoming adversity, which could be included in models utilized to measure the effects of workplace aggression over time.

Future research may consider safety climate or grit as part of a similarly structured model as was proposed in the current study. This may present a worthwhile endeavor for researchers, but was beyond the scope of the current study. The use of additional statistical methods and design, such as a cross-lagged analysis or multi-level modeling, may uncover ancillary relationships. Finally, more research should be conducted to evaluate PsyCap.

To date, very little attention has been paid to the use of PsyCap as a moderator. With the exception of Y. Li et al. (2016) and Cheung et al. (2011), PsyCap has not been studied in this context. In the current study, the construct was conceptually evaluated as a moderator. The majority of studies thus far have attempted to evaluate PsyCap as a predictor (for reviews, see
Avey et al., 2011; Dawkins, Martin, Scott, & Sanderson, 2013), providing an opportunity for additional research utilizing PsyCap in novel conceptualizations.

Practical Implications

In practice, the current study supports future strategies to lower accident and injury rates by reducing workplace aggression and alleviating the symptoms of burnout. One such intervention, the *Civility, Respect, Engagement in the Workplace (CREW)* process, has been successful in addressing workplace aggression, and is recommended to be utilized by any organization (Osatuke, Moore, Ward, Dyrenforth, & Belton, 2009). Other interventions, such as Mindfulness based training programs (Luken & Sammons, 2016), and “Take Care!” (Le Blanc, Hox, Schaufeli, Taris, & Peeters, 2007), have also been shown to be effective in reducing burnout (for review, see Maricuțoiu, Sava, & Butta, 2016).

Limitations

The present research was based on a sample of students and workers that had little contact with the researcher directly; I used only anonymous self-reports for data collection and responded to participant generated technical issues via email as needed. The use of self-reports in safety research has been questioned (Zohar, 2000); thus, objective measures should be considered for future endeavors.

The samples included in the current study were limited, as they did not represent a cohesive unit, workgroup, or organization. Therefore, safety climate was excluded from the current study. Additionally, the samples differed on a number of demographic characteristics, including age, gender, and ethnicity (see Method section for details). However, there were no significant differences found between samples on any study variables. Therefore, use of student workers
should not have adversely impacted the results. However, as previously described, the use of additional methods and statistical procedures is recommended.

The timeline in which the study was conducted may have been too short. In burnout research, time points between survey administrations range from a few months to a full year (Maslach et al., 2001). The current study’s participants were asked to complete three survey administrations in four to six weeks. Recent research on PsyCap has attempted to utilize a three-week timeframe to evaluate the effects of PsyCap on well-being, but this timeframe was between surveys, not in total (Avey, Luthans, Smith, & Palmer, 2010).

The use of MTurk to gather information has also been questioned (Buhrmester, Kwang, & Gosling, 2011). The HIT is uploaded on the Amazon host site and it is left to chance as to who will notice its presence. Active MTurk workers may be available in their off hours, or they may be participating while they are at work. Thus, workers who participate in online, paid research studies, may be “cyber-loafing” (Lim, 2002), or using technology to avoid working. Because the participant could potentially be working when taking the surveys online, not fully engaging in work activities, the individual may be missing the opportunity to have the experiences the current study attempted to measure. In addition, cyber-loafing may be a coping mechanism in response to stress (S. Stoddart, personal communication, April, 2016). Another interesting finding is that social loafing has been linked to revenge motives including antisocial behavior, performed in retaliation for counterproductive workplace behaviors, such as loafing (Hung, Chi, & Lu, 2009). Therefore, the participants who are working and able to participate in surveys may be engaging in loafing, the loafing may be the source of and response to workplace aggression, inserting a third variable into the equation. It was beyond the scope of the current study to measure this, but additional research may consider the effects of loafing workers.
Additionally, the study was advertised on MTurk with the qualifications clearly described. This was done in an attempt to limit unqualified individuals from attempting to participate and completing the pre-screening survey, thus wasting funding. However, due to recent changes in MTurk policies, the number of HITs with compensation rates over .50 USD has dramatically decreased (anonymous MTurk worker, personal communication, November, 2015). The qualifications were made salient to potential participants and there was no concrete method to rule out potential unqualified participants who participated for compensation despite not being qualified. These individuals may have indicated that they did, but may not have actually worked in a hazardous occupation and/or may not have actually worked at least 20 hours per week. Identifying them was impossible; future research may prevent unwanted study participation and survey access by removing unverifiable qualifications from advertisements when compensation is included.

The treatment of workplace aggression may have contributed to a poor fitting Confirmatory Factor Analysis (CFA) model. Results of a preliminary CFA yielded a poor fit for a three-factor workplace aggression model and an unacceptable fit for a one-factor model. The hypotheses were developed and analyzed based on a one-factor model. Future analyses will be conducted to analyze each of the three workplace aggression factors independently in the current study’s proposed relationships.

Finally, the results of this study may be subject to the effects of Common Method Variance (CMV; Podsakoff et al., 2003). I followed the recommendations made by Podsakoff et al. (2003) in this study, (e.g., placing the outcome measures at the beginning of the survey, protecting confidentiality, and using multiple time points), to attempt to mitigate the effects. Due to
underreporting and lack of evidence to support the effects of CMV in safety research, it has been widely accepted that the effects of CMV may be (cautiously) disregarded (Christian et al., 2009).

**Conclusion**

Despite these limitations, the present research has demonstrated that the effects of workplace aggression are transmitted both directly and indirectly through burnout, to safety performance and safety outcomes. Additionally, PsyCap was shown to be an influential moderator of these relationships. Due to the negative effects of workplace aggression on individuals, organizations should seek to prevent and reduce workplace aggression. Additionally, interventions designed to prevent workplace aggression and reduce burnout may be viable options to improve safety related outcomes.
APPENDIX A

Tables and Figures

Throughout this section: * p < .05. ** p < .01. *** p < .001. All significance values are based on two-tailed analyses.

Table 1 (continued on next page)

Correlations and Reliabilities

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\(^a\) Variable has been log transformed. \(^b\) n = 444. \(^c\) n = 443.

Notes. Correlations for Workplace Aggression and Safety Outcomes are based on transformed variables, the mean and SD are from untransformed variables. Ethnicity is dichotomous with non-white group coded with higher value. Sex is dichotomous; Female coded with higher value. WC = White-Collar group. BC = Blue-Collar group. "WC vs. BC and Service" and "BC vs. WC and Service" are dummy coded respectively with first group given higher value over other two combined. Cronbach's Alpha internal consistency reliability is listed in bold across diagonal.
Table 1 (continued)

**Correlations and Reliabilities**

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<td>-27**</td>
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<td>.91</td>
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<td>-18**</td>
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<td>.27**</td>
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<sup>a</sup> Variable has been log transformed.  
<sup>b</sup> n = 444.  
<sup>c</sup> n = 443.

**Notes.** Correlations for Workplace Aggression and Safety Outcomes are based on transformed variables, the mean and SD are from untransformed variables. Ethnicity is dichotomous with non-white group coded with higher value. Sex is dichotomous; Female coded with higher value. WC = White-Collar group. BC = Blue-Collar group. "WC vs. BC and Service" and "BC vs. WC and Service" are dummy coded respectively with first group given higher value over other two combined. Cronbach's Alpha internal consistency reliability is listed in bold across diagonal.
Table 2

*Independent Samples T-Test*

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<th>Variable</th>
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<th>SE Diff</th>
<th>95% CI Diff</th>
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<td>M</td>
<td>SD</td>
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<td>8.05</td>
<td>40.27</td>
<td>7.82</td>
<td>-14.14***</td>
<td>-13.24, -11.40</td>
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<td>-1.41</td>
<td>-.12, .08</td>
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<td>0.02</td>
<td>0.80</td>
<td>0.03</td>
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<td>-.00, -.01</td>
</tr>
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<td>-.02, -.18</td>
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<td>0.76</td>
<td>1.24</td>
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<td>0.69</td>
<td>4.09</td>
<td>0.65</td>
<td>1.00</td>
<td>.08, .08</td>
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<td>0.08</td>
<td>1.70</td>
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</tbody>
</table>

<sup>a</sup> Variable has been log transformed. <sup>b</sup> SONA n = 87.

*Notes.* SONA n = 88. MTurk n = 357. N = 445. Diff = difference between samples. All values based on equal variances assumed.
Table 3

*Chi-Square Test of Independence*

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<td>1</td>
<td>9.10**</td>
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</tr>
</tbody>
</table>

<sup>a</sup>SONA n = 87.

*Notes.* SONA n = 88. MTurk n = 357. N = 445. All values based on equal variances assumed. Ethnicity is dichotomous with non-white group coded with higher value. Sex is dichotomous; Female coded with higher value. WC = White-Collar group. BC = Blue-Collar group. "WC vs. BC and Service" and "BC vs. WC and Service" are dummy coded respectively with first group given higher value over other two combined.
### Table 4

**Hierarchical Regression to Evaluate Control Variables and NA with Burnout as the Outcome**

<table>
<thead>
<tr>
<th>Variable</th>
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<th>β</th>
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<td>1.01</td>
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<td>.04</td>
<td>-.65***</td>
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<td>.06</td>
<td>.03</td>
<td></td>
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<td>.06</td>
<td>.06</td>
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<sup>a</sup> Variable has been log transformed. <sup>b</sup> n = 444.

**Notes.** N = 445. Ethnicity is dichotomous with non-white group coded as higher value. Sex is dichotomous with Female group coded as higher value. "White-Collar vs. Blue-Collar and Service" and "Blue-Collar vs. White-Collar and Service" are dummy coded respectively with first group given higher value over other two combined.
Table 5  
Hierarchical Regression to Evaluate Control Variables and NA with Safety Performance

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</table>

a Variable has been log transformed. b n = 444.

Notes. N = 445. Ethnicity is dichotomous with non-white group coded as higher value. Sex is dichotomous with Female group coded as higher value. "White-Collar vs. Blue-Collar and Service" and "Blue-Collar vs. White-Collar and Service" are dummy coded respectively with first group given higher value over other two combined.
Table 6

*Hierarchical Regression to Evaluate Control Variables and NA with Safety Outcomes*\textsuperscript{a}

<table>
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<th>Variable</th>
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<th>(\beta)</th>
<th>(\Delta R^2)</th>
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<tr>
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<td>.10</td>
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<tr>
<td>Burnout</td>
<td>.02</td>
<td>.01</td>
<td>.15*</td>
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<tr>
<td><strong>Step 2</strong></td>
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<tr>
<td>Time Between T1 and T2</td>
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<td>.04</td>
<td></td>
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<tr>
<td>Time Between T2 and T3</td>
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<td>.00</td>
<td>-.04</td>
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<tr>
<td>Hours Worked per Week</td>
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<td>White-Collar vs. Blue-Collar and Service</td>
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<td>Blue-Collar vs. White-Collar and Service</td>
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<td>.01</td>
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</table>

\textsuperscript{a} Variable has been log transformed. \textsuperscript{b} \(n = 444\).

*Notes.* \(N = 445\). Ethnicity is dichotomous with non-white group coded as higher value. Sex is dichotomous with Female group coded as higher value. "White-Collar vs. Blue-Collar and Service" and "Blue-Collar vs. White-Collar and Service" are dummy coded respectively with first group given higher value over other two combined.
Figure 1: Conceptual model

Notes. CIE = conditional indirect effect. IE = indirect effect. DE = direct effect. H = hypothesis.

Figure 2: Safety Performance results

Variable has been log transformed.

Notes. IE = indirect effect. CIE = conditional indirect effect. DE = direct effect. TE = total effect. INT = interaction or moderation of Workplace Aggression and PsyCap. SD = standard deviation. NS = nonsignificant. All results are based on models which included covariates. Values are unstandardized coefficients/standardized coefficients where applicable.
Figure 3: Safety Outcomes results

*Variable has been log transformed.

Notes. IE = indirect effect. CIE = conditional indirect effect. DE = direct effect. TE = total effect. INT = interaction or moderation of Workplace Aggression and PsyCap. SD = standard deviation. NS = nonsignificant. All results are based on models which included covariates. Values are unstandardized coefficients/standardized coefficients where applicable.
Figure 4: Conditional indirect negative effect of workplace aggression on safety performance, mediated by burnout.
Figure 5: Conditional indirect negative effect of workplace aggression on safety outcomes, mediated by burnout

Variable has been log transformed.
Figure 6: The moderating effect of PsyCap on the relationship between workplace aggression and burnout.

a Variable has been log transformed.
## APPENDIX B

Demographics

<table>
<thead>
<tr>
<th>Question/Scale</th>
<th>Value Label(s)</th>
</tr>
</thead>
</table>
| **Ethnicity**  | 1 - Asian, Asian American, or Pacific Islander  
|                | 2 - Black, African, or African American  
|                | 3 - Hispanic or Hispanic American  
|                | 4 - Middle Eastern, Arab, or Arab American  
|                | 5 - Native American or Alaskan Native  
|                | 6 - White, European, or European American  
|                | 7 - Other  
| If you selected ‘other’ for your ethnicity, please specify: | [text box with maximum 15 characters] |
| **Gender**     | 1 = Male  
|                | 2 = Female |
| **Age**        | [two characters allowed] |
| **Hours Worked per Week** | [three characters allowed] |
| **Industry Type: North American Industry Classification System (NAICS) Code** | 1 - Agriculture, forestry, fishing, and hunting  
| | 2 - Mining  
| | 3 - Utilities  
| | 4 - Construction  
| | 5 - Manufacturing  
| | 6 - Wholesale trade  
| | 7 - Retail trade  
| | 8 - Transportation and warehousing  
| | 9 - Information  
| | 10 - Finance and insurance  
| | 11 - Real estate and rental and leasing  
| | 12 - Professional, scientific, and technical services  
| | 13 - Management of companies and enterprises  
| | 14 - Administrative and support & waste management services  
| | 15 - Educational services  
| | 16 - Healthcare and social assistance  
| | 17 - Arts, entertainment, and recreation  
| | 18 - Accommodation and food services  
| | 19 - Other services (except public administration)  
| | 20 - Public administration and active duty military |
### APPENDIX C

**Negative Affect (PANAS)**

<table>
<thead>
<tr>
<th>Question/Scale</th>
<th>Value Labels</th>
</tr>
</thead>
</table>
| **Negative Affect**  
*How often have you felt . . . in general, that is, on the average?* | 1 – Never  
2 – Rarely  
3 – Sometimes  
4 – Often  
5 – Many Times |
| 1. Scared |  |
| 2. Afraid |  |
| 3. Upset |  |
| 4. Distressed |  |
| 5. Jittery |  |
| 6. Nervous |  |
| 7. Ashamed |  |
| 8. Guilty |  |
| 9. Irritable |  |
| 10. Hostile |  |
## APPENDIX D

### Workplace Aggression

<table>
<thead>
<tr>
<th>Question/Scale</th>
<th>Value Labels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workplace Aggression Scale (WAS)</strong></td>
<td><strong>1 = Never</strong>&lt;br&gt;<strong>2 = Rarely</strong>&lt;br&gt;<strong>3 = Sometimes</strong>&lt;br&gt;<strong>4 = Often</strong>&lt;br&gt;<strong>5 = Very Often</strong></td>
</tr>
</tbody>
</table>

*Over the past week, how often were you bothered by anyone you work with because they...?*

1-14 are Hostility; 15-24 are Obstructionism; 25-30 are Aggression

1. Spread false rumors about you  
2. Stared, gave dirty looks, or other negative eye contact  
3. Made fun of your opinions  
4. Gave you the ‘‘silent treatment’’  
5. Said nothing to defend you when other people lied or spread rumors about you  
6. Sexually harassed you  
7. Acted superior to you  
8. Criticized or attacked your friends or coworkers  
9. Purposely left the work area when you entered  
10. Made fun of you or your work in public  
11. Sent unfairly negative information about you to superiors in the company  
12. Made negative or obscene gestures toward you  
13. Delivered unfairly negative performance appraisals  
14. Interrupted you when you were speaking  
15. Failed to return phone calls or respond to your text or emails  
16. Intentionally slowed your work  
17. Intentionally showed up late to meet with you or for a shift change  
18. Directly interfered with or blocked you from working  
19. Withheld information you needed  
20. Needlessly used things you needed  
21. Caused you to be late  
22. Failed to warn you of risks to your health or safety  
23. Refused to give you the things or equipment you need to work  
24. Failed to defend your ideas, plans, or proposals  
25. Physically attacked or assaulted you  
26. Stolen or destroyed your personal property  
27. Intentionally damaged, sabotaged, stole, or hid company property that you need to work  
28. Attacked you with a weapon [removed due to high correlation with 29 – see measures for details]  
29. Threatened you with physical violence  
30. Destroyed your mail or messages
APPENDIX E
Psychological Capital

<table>
<thead>
<tr>
<th>Question/Scale</th>
<th>Value Labels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Psychological Capital Questionnaire (PCQ-24)</strong></td>
<td></td>
</tr>
<tr>
<td>Copyright 2007 Psychological Capital Questionnaire (PCQ) by Fred Luthans, Bruce J. Avolio, and James B. Avey. All rights reserved in all medium. Published by Mind Garden, Inc. <a href="http://www.mindgarden.com">www.mindgarden.com</a></td>
<td>1 = Strongly Disagree</td>
</tr>
<tr>
<td>Permission to use this measure was granted for this study and is not to be used for any other purpose without express permission.</td>
<td>2 = Disagree</td>
</tr>
<tr>
<td>With the exception of the sample items in the measures section, PER COPYRIGHT LAWS, THIS MEASURE OR ANY PORTION THEREOF IS NOT TO BE PUBLISHED OR SHARED IN ANY CONTEXT OR FORMAT.</td>
<td>3 = Somewhat Disagree</td>
</tr>
<tr>
<td></td>
<td>4 = Somewhat Agree</td>
</tr>
<tr>
<td></td>
<td>5 = Agree</td>
</tr>
<tr>
<td></td>
<td>6 = Strongly Agree</td>
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</table>
APPENDIX F

Burnout

<table>
<thead>
<tr>
<th>Question/Scale</th>
<th>Value Labels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Burnout: Exhaustion and Disengagement:</strong> Oldenburg Burnout Inventory (OLBI)</td>
<td>1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree</td>
</tr>
</tbody>
</table>

Please read each statement carefully and indicate the extent to which you AGREE with each statement.

1. I always find new and interesting aspects in my work. [D]
2. There are days when I feel tired before I arrive at work. [R] [E]
3. It happens more and more often that I talk about my work in a negative way. [R] [D]
4. After work, I tend to need more time than in the past in order to relax and feel better. [R] [E]
5. I can tolerate the pressure of my work very well. [E]
6. Lately, I tend to think less at work and do my job almost mechanically. [R] [D]
7. I find my work to be a positive challenge. [D]
8. During my work, I often feel emotionally drained. [R] [E]
9. Over time, one can become disconnected from this type of work. [R] [D]
10. After working, I have enough energy for my leisure activities. [E]
11. Sometimes I feel sickened by my work tasks. [R] [D]
12. After my work, I usually feel worn out and weary. [R] [E]
13. This is the only type of work that I can imagine myself doing. [D]
14. Usually, I can manage the amount of my work well. [E]
15. I feel more and more engaged in my work. [D]
16. When I work, I usually feel energized. [E]
APPENDIX G

Safety Performance

<table>
<thead>
<tr>
<th>Question/Scale</th>
<th>Value Labels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safety Performance</strong></td>
<td></td>
</tr>
<tr>
<td>climate on safety climate and individual behavior. Safety Science, 34(1–3),</td>
<td>2 = Disagree</td>
</tr>
<tr>
<td>99-109. doi: <a href="http://dx.doi.org/10.1016/S0925-7535(00)00008-4">http://dx.doi.org/10.1016/S0925-7535(00)00008-4</a></td>
<td>3 = Neutral</td>
</tr>
<tr>
<td>1-4 are Safety Compliance, 5-8 are Safety Participation</td>
<td>4 = Agree</td>
</tr>
<tr>
<td>5 = Strongly Agree</td>
<td></td>
</tr>
</tbody>
</table>

*Please read each statement carefully and indicate the extent to which you AGREE with each statement.*

1. I carry out my work in a safe manner
2. I use all the necessary safety equipment to do my job
3. I use the correct safety procedures for carrying out my job
4. I ensure the highest levels of safety when I carry out my job
5. I promote the safety program within the organization
6. I put in extra effort to improve the safety of the workplace
7. I help my coworkers when they are working under risky or hazardous conditions
8. I voluntarily carry out tasks or activities that help to improve workplace safety
APPENDIX H

Safety Outcomes

<table>
<thead>
<tr>
<th>Question/Scale</th>
<th>Value Label</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safety Outcomes: Workplace Injuries and Accidents</strong></td>
<td><em>Frequency Count (0-99)</em></td>
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</table>

*Please indicate how often the following situations have happened to you at work in the past week.*

<table>
<thead>
<tr>
<th>Question</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>How many minor injuries (e.g., scratches, cuts, bruises, or sprains) did you receive at work?</td>
<td></td>
</tr>
<tr>
<td>How many major injuries (resulting in any lost time from work) did you receive at work? [Not used in current study due to low incidence rate]</td>
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</tr>
<tr>
<td>How many ‘near accidents’ (something that could have resulted in injury or damage) have you been involved in at work?</td>
<td></td>
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</table>
REFERENCES


ABSTRACT

WORKPLACE AGGRESSION, SAFETY PERFORMANCE, AND SAFETY OUTCOMES, MEDIATED BY BURNOUT AND MODERATED BY PSYCHOLOGICAL CAPITAL (PSYCAP)

by

DANIEL WIEGERT

August 2016

Advisor: Dr. Alyssa McGonagle

Major: Psychology (Industrial/Organizational)

Degree: Master of Science

The Bureau of Labor Statistics reports that in 2013, there were over four thousand work-related fatalities and over 1.1 million workplace accidents, with a cost to organizations due to these losses estimated to be over 2 billion dollars. The purpose of the current study is to identify workplace aggression as an antecedent of safety behaviors (i.e., safety performance and workplace accidents and injuries (i.e., safety outcomes), along with burnout as a mediator. Additionally, Psychological Capital (PsyCap) was proposed as a moderator (buffer) of the hypothesized mediational relationships. The Job Demands-Resources Model Conservation of Resources, and Lazarus and Folkman’s (1987) Transactional Theories were used. A series of online surveys with a combined student ($n = 88$) and general population ($n = 357; N = 445$) sample was used. Findings indicated that the relationships between workplace aggression and both safety performance and safety outcomes, were mediated by burnout, and these relationships are affected by level of PsyCap. Practical applications include reducing workplace aggression to lower burnout and improve safety.

Keywords: workplace aggression, burnout, safety, Psychological Capital, Process Macro
AUTOBIOGRAPHICAL STATEMENT

I am a Doctoral Student at Wayne State University studying Industrial/Organizational (I/O) Psychology. After spending four years serving in the United States Navy, I became interested in workplace safety and occupational health psychology. I attended San Diego State University’s Master of Applied Science program for one year before transferring to Wayne State to pursue a Ph.D. in I/O psychology. My research interests have expanded beyond Occupational Health to include Organizational Leadership/Culture/Motivation. This thesis represents the conclusion of a step on my way to obtaining my ultimate goal.