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SERIOUSLY THOUGH... IS POSITIVE WORKPLACE HUMOR A HELP OR A
HINDRANCE?: THE IMPACT OF COWORKER-EMPLOYEE HUMOR INTERACTIONS
ON EMPLOYEE WELL-BEING AND EFFECTIVENESS

by

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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
in the Department of Psychology
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ABSTRACT

The prevalence and importance of humor in the workplace has been well-documented over the past several decades, with research consistently revealing its significant impact on employee well-being and effectiveness. During this same time period, organizations worldwide have begun embracing team-based work designs as a means for achieving success. As a result, the degree to which employees are engaging in both frequent and intensive interactions with their coworkers is rapidly increasing. Despite these trends, little research has been dedicated to investigating the ways in which employees' well-being and effectiveness are influenced by the humor of their coworkers or the ways in which employees' own humor interacts with that of their coworkers to determine these outcomes. The current study answered the need for such research by investigating the impact of coworker-employee humor interactions on employee strain and performance using a sample of undergraduate-level students engaged in a high-fidelity work simulation. In the current study, coworker humor was experimentally manipulated by pairing each participant with a study confederate who was trained to act as either a non-humorous coworker or a humorous coworker throughout the duration of the work simulation. Results of a pilot study provided empirical evidence supporting the validity of this manipulation; showing that participants' paired with a humorous confederate coworker rated their coworker significantly higher on positive humor, but no different on negative humor, than participants' paired with a non-humorous confederate coworker.

Based on theory and prior findings drawn from multiple streams of science, it was expected that positive coworker humor would have a significant impact on employees' strain and performance, but that the nature of its influence on these outcomes would be contingent upon

employees' own dispositional humor. Specifically, it was hypothesized that employees paired with humorous coworkers would experience a lesser degree of perceived, affective, cognitive, and physical strain than employees paired with non-humorous coworkers if their own sense of humor was high but a greater degree of perceived, affective, cognitive, and physical strain than employees paired with non-humorous coworkers if their own sense of humor was low. In addition, it was expected that employees paired with humorous coworkers would demonstrate a higher level of interpersonal and task performance than employees paired with non-humorous coworkers if their own sense of humor was high but a lower level of interpersonal and task performance than employees paired with non-humorous coworkers if their own sense of humor was low. Finally, it was hypothesized that employees' strain would partially mediate the effects of coworker-employee humor interactions on employee performance.

In support of these hypotheses, analyses revealed that several indicators of employees' perceived, affective, cognitive, and physical strain were in fact each significantly influenced by interactions between employees' own humor and that of their coworkers. Specifically, high sense of humor employees who worked with a humorous coworker experienced a lesser degree of perceived, affective, cognitive, and physical strain than did those who worked with a non-humorous coworker. This was evidenced by their lower self-reported perceived strain (an indicator of perceived strain), higher state-level positive affect and lower state-level negative affect (indicators of affective strain), higher anagram task performance and lower perceived task difficulty (indicators of cognitive strain), as well as their lower systolic blood pressure and lower state-level somatic anxiety (indicators of physical strain). In contrast, low sense of humor employees who worked with a humorous coworker experienced a greater degree of perceived, affective, cognitive, and physical strain than did those who worked with a non-humorous

coworker. This was evidenced by their higher self-reported perceived strain, lower state-level positive affect and higher state-level negative affect, lower anagram task performance and higher perceived task difficulty, as well as their higher systolic blood pressure and higher state-level somatic anxiety. Consistent with expectations, results revealed that the degree to which employees experienced job strain typically varied based on the degree to which there was a match between employee sense of humor and coworker positive humor levels. Similar levels of coworker and employee humor generally resulted in relatively low levels of employee strain whereas dissimilar levels of coworker and employee humor most often resulted in relatively high levels of employee strain. Contrary to expectations, however, coworkers' positive humor and employees' sense of humor did not interact to predict employees' interpersonal or task performance. Instead, positive coworker humor had a significant positive main effect on both forms of employee performance. Although these findings are consistent with the study hypotheses in that positive coworker humor was expected to enhance high sense of humor employees' performance, they run counter to the expectation that positive coworker humor would hinder low sense of humor employees' performance. Because the interaction between coworker humor and employee humor was not a significant predictor of either type of employee performance, analyses were not conducted to test for mediated moderation.

Findings from the current study offer a number of contributions to organizational science and, in addition, hold several implications for practice. Specifically, these results have relevance for and greatly expand the workplace humor, individual differences, PE fit, occupational health, and workgroup/team composition literatures. In addition, results contribute to the literature by elucidating the need for future research dedicated to exploring the direct and interactive effects of coworker characteristics, including humor, on employee well-being and effectiveness. Finally,

results of this study serve to inform researchers and practitioners in matters related to several critical human resource functions, including matters in personnel selection, placement, and training, as well as in workgroup/team composition.

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CHAPTER ONE: INTRODUCTION

“When something goes wrong or something comes up... it’s the ability to laugh it off and not feel depressed by it... that would be an indicator [that crew members are doing well]”

(anonymous long-duration spaceflight astronaut, National Aeronautics and Space Administration).

“I think it makes a big difference... you could be trudging through the snow pulling a sled and be laughing at how hard it is or be miserable at how hard it is” (anonymous long-duration spaceflight astronaut, National Aeronautics and Space Administration).

The above words were spoken by National Aeronautics and Space Administration (NASA) astronauts with prior long-duration spaceflight (LDSF) experience during interviews conducted as part of a recent LDSF crew training needs analysis (Smith-Jentsch et al., 2011). They were uttered in response to questions regarding the most effective ways for crew members to achieve and maintain high levels of well-being and effectiveness during LDSF missions, throughout which crew members must operate in isolated, confined, and extreme (ICE) environments that directly threaten such outcomes (e.g., Human Research Program, National Aeronautics and Space Administration, 2011). Their statements make it clear that astronauts who work under such harsh conditions highly value workplace humor as a facilitator of crew members’ well-being and effectiveness and, ultimately, of mission success.

Not only out of the desolate expanses of outer space, but also out of the vastness of the individual differences literature, employee humor has emerged as one of the characteristics considered to be most important to achieving and maintaining high levels of employee well-being and effectiveness. Professionals charged with managing the human resources of today’s

organizations (e.g., managers and human resource professionals) have named humor as one of the most important characteristics for employees to possess (Lange & Houran, 2009). Employees themselves often cite humor as being critical for their own success and for the success of others within their organizations (e.g., within middle schools, military academies, and among business academics and practitioners; Cooper, 2002; Deitrick, 2004; Farthing, 2006; Gunzelman, 2010). Humorous employees are often viewed as playing an important role and as serving many functions in organizations (Plester & Orams, 2008). As such, they tend to be well-liked, popular, and highly valued by coworkers and superiors (Morkes, Kernal, & Nass, 1999; Plester & Orams, 2008; Scott, 2007) and may even serve to attract others to the organizations in which they work by offering them fun workplace experiences (Tews, Michel, & Bartlett, 2012). In support of the widespread belief in the value of employee humor, research suggests that, when used properly, humor within organizations is generally good for business (Vitug & Kleiner, 2007). As a result, a number of popular books have recently been published discussing the importance of incorporating humor into the workplace (e.g., *The Levity Effect*, *Humorous Organizing*, *Humor Works*; Gostick & Christopher, 2008; Lynch, 2007; Morreall, 1997), it has often been suggested that individuals should be trained to use humor effectively in the workplace (e.g., Gunzelman, 2010), and organizations have recently begun instituting so called cultures of fun which focus on incorporating humor into the workplace (Fleming, 2005).

In support of the high value that organizational members and scholars place on humor, an extensive body of research has revealed strong positive relationships between workplace humor and employee well-being and effectiveness. Specifically, relationships have consistently been found between employees' humor and their perceived stress, burnout, affective states, and physical health (e.g., Fry, 1995; Hawkins, 2008; Mesmer, 2000; Moran & Massam, 1999), as

well as their performance and creativity (e.g., Dean & Major, 2008; Friel, 2004; Susa, 2002).

These findings are important in that they have revealed many benefits of having individuals with good humor in the workplace and have thus provided evidence in support of the view that humor is an important individual difference characteristic to consider when selecting, placing, and training new or existing employees.

Despite the many important findings prior research has yielded, the workplace humor literature remains incomplete and, as a result, it is likely that many benefits and perhaps a few downsides of employee humor remain undiscovered. Specifically, the vast majority of prior research has been dedicated to exploring relationships between individuals' humor and their *own* well-being and effectiveness. Comparatively little research, however, has investigated whether, how, and to what degree an individual's humor impacts the well-being and effectiveness of *others* within the organization (Mesmer-Magnus, Glew, & Viswesvaran, 2012). Thus, the question remains; does an employee's humor impact the well-being and effectiveness of those with whom he/she works in the same way and to the same degree that it does his/her own well-being and effectiveness?

A small number of researchers have made initial attempts to determine the impact of individuals' humor on others in the workplace by examining the degree to which leaders' humor positively impacts subordinates' work-related outcomes. Results of this research suggest that leaders' humor does provide benefits to subordinates in the form of enhanced well-being (e.g., Hughes, 2009; Mertz, 2000) and effectiveness (e.g., Avolio, Howell, & Sosik, 1999), supporting the idea that an employee's humor can in fact have effects on the work-related outcomes of those around him/her. The full extent to which an employee's humor serves to influence others in the workplace remains unknown, however. Although extant research suggests that the humor of

individuals in leadership positions matters in determining subordinate outcomes, researchers have yet to investigate how an individual's humor impacts the well-being and effectiveness of his/her peers (i.e., coworkers, teammates; Mesmer-Magnus et al., 2012).

This is a substantial gap in the workplace humor research that requires a swift remedy (Mesmer-Magnus et al., 2012). Given the increasing prevalence of teams in the workplace and the fact that many employees spend large amounts of time in the presence of coworkers (e.g., Basford & Offerman, 2013; Chiaburu & Harrison, 2008; Sias, 2009), it is particularly important that research be dedicated to examining the impact of coworker humor on individuals in the workplace and that the ways in which humor functions in teams and workgroups be explored. This is the case because, as a result of these organizational trends, the impact of coworker humor on employee outcomes has the potential to be even greater than the significant effects of leaders' humor that have already been observed. Findings from the organizational science literature support this idea; revealing that various employee outcomes (e.g., delinquency, withdrawal) are in fact heavily influenced by the characteristics and behaviors of employees' coworkers (e.g., coworkers' delinquency, coworkers' withdrawal; e.g., Eder & Eisenberger, 2008; Gibson & Wright, 2001), often above and beyond the degree to which they are influenced by the characteristics and behaviors of their superiors (e.g., Basford & Offerman, 2013; Chiaburu & Harrison, 2008). Such findings are likely due to the fact that employees interact with their coworkers extensively on a regular basis as they work side by side and often engage in interdependent activities with them that require a high level of interpersonal interaction (e.g., cooperation, conflict management, communication). Such extensive and intensive interaction with their coworkers is likely to make coworker characteristics play a significant role in influencing employees' daily well-being and effectiveness (i.e., their typical well-being and

effectiveness). The usually less frequent and less intensive interaction that they have with their superiors (e.g., leaders; Sias, 2009), however, is likely to make superior characteristics play a relatively small role in influencing employees' typical levels of well-being and performance. Instead, superior characteristics are more likely to only have a significant impact on employee outcomes for a short period of time when the employee is in the presence of the superior and being evaluated by them (thereby only influencing employees' maximum well-being and performance; e.g., Klehe & Anderson, 2007). This suggests that employees' daily well-being and effectiveness is likely to be significantly impacted by the humor of their coworkers, perhaps to an even greater extent than it is impacted by the humor of their leaders. As such, the primary purpose of the current study is to fill an existing gap in workplace humor research and to expand the individual differences and team composition literatures by examining whether, under what circumstances, and the ways in which individuals' well-being and effectiveness is affected by the humor of their coworkers.

Conducting research dedicated to examining relationships among coworker humor and individual well-being and effectiveness is an important endeavor for a number of reasons. Namely, if such research reveals that individuals' well-being and effectiveness is not only impacted by their own humor, but also by the humor of their coworkers, these findings would have significant theoretical and practical implications. Specifically, such findings would suggest that individual difference researchers should consider reaching beyond traditional examinations of how individuals' well-being and effectiveness is affected by their own characteristics and begin investigating how individuals are impacted by the characteristics of those around them. If coworker humor impacts individual well-being and effectiveness it is possible that other coworker characteristics (e.g., neuroticism, conscientiousness) do also. Further, such findings

would suggest that organizations might wish to reconsider the importance they place on selecting employees based on the degree to which they possess good humor. If it is the case that individuals' humor not only has an impact on their own well-being and effectiveness, but that it also has an impact on the well-being and effectiveness of others within the organization, then the overall impact of bringing individuals with good humor into the organization may be considerably different (i.e., larger or smaller) than prior research would suggest. Thus, hiring individuals based on humor may be impacting organizations to a degree that is much different (i.e., greater or lesser) than was previously estimated. Research which confirms this might prompt organizations to adjust the degree to which they choose to consider humor when making selection decisions so that it is commensurate with the newfound value of employee humor. Moreover, if research reveals that individual well-being and effectiveness is influenced by coworker humor, this would suggest that it might be beneficial to develop strategies for training employees to use, or perhaps refrain from using humor in the presence of their coworkers. This type of training would likely yield a good return on investment for organizations who implement it since training only a few individuals to adjust their use of humor in the workplace could serve to enhance the well-being and effectiveness of entire workgroups of untrained individuals.

Although any examination of the effects of coworker humor on employee outcomes would be valuable, it may be particularly important to explore how employees' own humor interacts with that of his/her coworkers' to determine employee well-being and effectiveness. For instance, explorations of this kind may reveal that the relationships between employee humor and employee well-being and effectiveness are not as simple as prior literature would suggest. Instead, the impact of an employee's humor on his/her well-being and effectiveness may vary substantially depending on the humor of the individuals with whom he/she works. In this way,

team/workgroup composition with regard to humor may matter considerably in determining employee outcomes, perhaps more so than employee humor itself. If it is revealed that employees' own humor interacts with that of their coworkers in a predictable manner, such findings would have significant practical implications. Specifically, this information would suggest that selecting individuals into organizations based on their own humor alone may not be ideal. Instead, organizations may benefit more from selecting individuals based, not only on their own humor, but also on the humor of the individuals with whom they will be working. Further, understanding how employee humor and coworker humor interacts would allow organizations to place existing employees and to compose workgroups/teams (i.e., manipulate humor composition of workgroups) in such a way as to maximize individual well-being and effectiveness. Consideration of how employees' humor interacts with that of their coworkers is not only likely to significantly enhance the ability of organizations to select personnel and compose workgroups effectively, but it is also likely to enhance the ability of scholars and practitioners to accurately predict the impact of humor in the workplace in general. The likelihood of this is supported by prior research which has found that interactions of this kind (i.e., interactions occurring between individual characteristics and environmental/situational characteristics) tend to explain a significant amount of variance in individual outcomes above and beyond that which can be explained by only considering the main effects of individual characteristics and/or environmental characteristics, alone or combined (e.g., Barrick et al., 2001; Kristof-Brown, Zimmerman, & Johnson, 2005). As such, the current study will examine the ways in which coworker humor and employee humor interact to influence employee well-being and effectiveness.

Prior literature suggests that coworker humor can be expected to have an impact on employee well-being and effectiveness but that it is likely to have very different effects on these outcomes across employees with differing levels of humor. In other words, the nature of the relationships between coworker humor and employee well-being and effectiveness are likely to vary substantially depending on the humor of the employees themselves. Specifically, extant theory and prior findings support the idea that coworker humor is negatively related to employee strain (an indicator of well-being) and positively related to employee performance (an indicator of effectiveness) among employees with high dispositional humor (i.e., sense of humor) but positively related to employee strain and negatively related to employee performance among employees with low dispositional humor. This is likely for a number of reasons. Namely, when employees with high dispositional humor have humorous coworkers, they are likely to experience lower levels of strain and higher levels of performance than their counterparts with non-humorous coworkers because the humor-related norms of their work environment (i.e., the humor climate) will be consistent with their own dispositional humor (Robert & Wilbanks, 2011; Sidle, 2000). This, in turn, is likely to reduce the degree to which they engage in emotional labor and/or deviate from behavioral norms, which have both been shown to have negative consequences in terms of employee strain and performance (e.g., Hülshager & Schewe, 2011; Sidle, 2000; Tschanh, Rochat, & Zapf, 2005). In addition, as a result of the humor climate they are exposed to, such employees will be more likely to engage in beneficial humor behaviors associated with their disposition (e.g., humor production, laughing, using humor to cope). As such, they will be more likely to reap the many well-being and performance benefits associated with their high levels of dispositional humor (e.g., Abel, 2002; Bizi, Keinan, & Beit-Hallahmi, 1988; Ford, Ferguson, Brooks, & Hagadone, 2004; Fry, 1995; Jones, 2006; Kuiper, McKenzie,

& Belanger, 1995; Moran & Hughes, 2006; Martin, 2001; Nezu, Nezu, & Blissett, 1988; Sidle, 2000). In contrast, when employees with low dispositional humor have humorous coworkers, they are likely to experience higher levels of strain and lower levels of performance than their counterparts with non-humorous workers because the humor climate will be inconsistent with their own dispositional humor (Robert & Wilbanks, 2011; Sidle, 2000). This conflict between employees' dispositional humor and the humor-related norms of their environment is likely to increase the degree to which they engage in emotional labor and/or deviate from behavioral norms, likely resulting in negative strain- and performance-related outcomes (e.g., Hülshager & Schewe, 2011; Sidle, 2000; Tschanh et al., 2005). In addition, because low levels of dispositional humor are associated with an inability to recognize and appreciate humor and with negative attitudes toward humor and those who use it (Thorson & Powell, 1993), these employees are likely to both “not get” the humor of their coworkers and to be irritated by it. Thus, they are not likely to reap any of the potential benefits of their coworkers' humor (e.g., low levels of strain and high levels of performance; e.g., Avolio et al., 1999; Cash-Baskett, 2011; Francis, Monahan, & Berger, 1999; Gockel, 2007; Grugulis, 2002; Holmes & Marra, 2006; Hughes, 2009; Huo, Lam, & Chen, 2012; Kahn, 1989; Kurtzberg, Naquin, & Belkin, 2009; Locke, 1996; Lynch, 2010; Moran, 1996; Morkes et al., 1999; Ogunlana, Niwawate, Quang, & Thang, 2006; Plester & Orams, 2008; Robert & Wilbanks, 2011; Romero & Cruthirds, 2006; Susa, 2002; Thompson, 2009; Vecchio, Justin, & Pearce, 2009; Walkowiec, 1994; Yao, 2005), but instead, they are likely to experience strain and performance decrements as a result of being annoyed by it (e.g., Rothbard & Wilk, 2011).

If this expected pattern of effects is found it would not only mean that the impact of coworker humor differs depending on the humor of the employee whose strain and performance

it is affecting, but it would also mean that the impact of employees' own humor on their own strain and performance differs depending on the humor of the individuals with whom they work. Specifically, it would suggest that employees' dispositional humor is most beneficial to them when they work with humorous others and least beneficial to them when they work with non-humorous others. This could mean that high levels of dispositional humor are not necessarily beneficial to employees under all circumstances. Under certain conditions, in fact, it may actually be detrimental; an idea that runs quite contrary to the common belief that employees' dispositional humor should always be positively associated with their well-being and effectiveness (e.g., Lange & Houran, 2009).

Finally, extant theory and prior research suggests that, although such interactions between the humor of employees and their coworkers are likely to have direct effects on employees' strain and performance, the impact of coworker-humor interactions on employees' performance is likely to be due, at least in part, to the impact of such interactions on employees' strain (e.g., Bizi et al., 1988; Ford et al., 2004; Kaye & Fortune, 2001; Kuiper, Martin, & Olinger, 1993; Morreall, 1991; Robert & Wilbanks, 2011; Yao, 2005). In other words, the literature supports the idea that coworker-humor interactions operate through employees' strain to impact employees' performance. As such, it is likely that employee strain partially mediates the expected relationships between coworker-employee humor and employee performance.

To summarize, the goal of the current study is to expand the individual differences, occupational health, and workgroup/team composition literatures by clarifying the role that coworker humor plays in determining individuals' well-being and effectiveness and, specifically, the ways in which it interacts with employee humor to do so. To achieve this, data are collected from undergraduate-level students engaged in a high-fidelity work simulation in which coworker

humor is manipulated through the use of study confederates who act as coworkers to the study participants. Analysis of this data is expected to reveal significant interactions between coworker humor and employee humor in predicting employee well-being and effectiveness. Specifically, it is expected that an employee's own sense of humor determines the way in which his/her well-being and effectiveness is impacted by the humor of his/her coworker. Whereas coworker humor is likely to enhance well-being and effectiveness among employees who are high on humor themselves, it is likely to hinder well-being and effectiveness among employees who are low on humor. Moreover, analyses are expected to reveal that an employee's humor is more beneficial to his/her well-being and effectiveness when coworker humor is high but that it is less beneficial to his/her well-being and effectiveness when coworker humor is low; suggesting that there are some conditions under which employees' own humor may not hold expected relationships with their well-being and effectiveness. Findings from the current study promise to inform researchers and practitioners in matters of personnel selection, placement, and training as well as in workgroup/team composition. Further, this work may be viewed as a call for additional research dedicated to exploring the direct and interactive effects of coworker characteristics, including humor, on individual well-being and effectiveness in the workplace.

CHAPTER TWO: LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Defining Workplace Humor

To be able to understand and to predict the nature of its relationships with other variables, such as employee well-being and effectiveness, it is first critical to understand the nature of workplace humor itself. Unfortunately, workplace humor is a complex construct and, therefore, not a simple one to define. Mesmer-Magnus et al. (2012) recently summarized the complexity of the construct by identifying four primary issues responsible for complicating its definition. Their efforts have provided a clear overview of the workplace humor construct and a useful framework for clarifying the meaning of the term “workplace humor” as it is referred to in the context of the current study.

Disposition versus behavior. First, Mesmer-Magnus et al. (2012) cite the fact that the terms “humor” and “sense of humor” are often used interchangeably in the humor literature, despite the fact that they are distinct concepts. As is true of many individual difference constructs (e.g., the Big Five personality traits; e.g., Fleeson & Gallagher, 2009), the workplace humor construct seems to encompass *both* individual dispositions and individual behaviors; the two of which are likely to be highly related. This fact might explain the semantic confusion which has plagued the workplace humor literature.

There is general consensus among humor researchers that the term “sense of humor” refers to a stable personality trait that determines the degree to which individuals tend to both recognize and use successful humor (e.g., Martin, 1996; Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003; Mesmer-Magnus et al., 2012; Thorson & Powell, 1993). In other words, the term is

most often used to represent an individual's dispositional humor. The meaning of the term "humor," in contrast, is much less widely agreed upon. Nearly always, however, it is viewed as a discrete communicative behavior involving two or more people, including a humor producer and an audience (Crawford, 1994; Lynch, 2002; Mesmer-Magnus et al., 2012). Humor is most often viewed as the production of a meaningful communication that is (or is intended to be) perceived as humorous by others (i.e., joking; Cooper, 2005; Duncan & Feisal, 1989; Duncan, Smeltzer, & Leap, 1990), but it has also been viewed as laughter in response to others' humorous communications (Sala, 2000; Sala, Krupat, & Roter, 2002). Thus, the term seems to be used to represent individuals' actual and specific humor behaviors rather than their more general humor dispositions or tendencies.

Although there are clear differences in how the terms "sense of humor" and "humor" are defined, these two aspects of the humor construct are likely to be significantly related. Specifically, individuals' humor behavior likely stems from and is, therefore, a reliable indicator of their dispositional humor (e.g., Church, Katigbak, Reyes, Salanga, Miramontes, & Adams, 2008; Fleeson & Gallagher, 2009; Martin, 1996; Martin & Lefcourt, 1984; Thorson & Powell, 1993; Wu & Clark, 2003). But while high correlations likely exist between the two, dispositional humor and humor behavior should be considered distinct aspects of the workplace humor construct and, thus, treated as such (Mesmer-Magnus et al., 2012). This is because, in addition to an individual's own sense of humor, other situational/environmental factors may also have a significant influence on his/her humor behavior (e.g., Mischel, 1968; Salancik & Pfeffer, 1978).

In the current study, both sense of humor and humor behavior is examined. Specifically, while employees' sense of humor is assessed via a self-report measure, their coworkers' humor

behavior is manipulated through the use of study confederates who were trained to engage in (and to refrain from engaging in) specific humor behaviors.

Multidimensionality of workplace humor. A second issue which has led to some confusion regarding the definition of workplace humor stems from the multidimensionality of the construct. Most scholars agree that humor is a multidimensional construct. There is much less consensus, however, regarding the number and nature of the dimensions that comprise the construct (Mesmer-Magnus et al., 2012).

One of the more popular conceptualizations of the construct has become the basis for the widely used Multidimensional Sense of Humor Scale (MSHS; Thorson & Powell, 1993). The creators of this scale identified four dimensions of humor. The first dimension identified by Thorson & Powell (1993) is “humor production and social use of humor.” This dimension involves an individual’s tendency to be humorous, playful, and to have a good time. The second dimension of humor is “humor appreciation.” This dimension represents an individual’s tendency to recognize humor, recognize the absurdities inherent in life, and to recognize oneself as a humorous individual. The third dimension of humor involves “attitudes toward humor.” This dimension represents an individual’s tendency to appreciate humor, humorous individuals, and humorous situations. The fourth and final dimension of humor identified by Thorson and Powell (1993) is “coping/adaptive humor.” This dimension involves an individual’s tendency to use humor as a mechanism for coping and adapting to situations as well as their ability to laugh at problems they are faced with and to deal with difficult situations.

Although a number of other researchers have used different sets of dimensions to define the humor construct and to develop their own humor scales (e.g., Bowling, Beehr, Johnson, Semmer, Hendricks, & Webster, 2004; Svebak, 1974; Ziv, 1984), many have used dimensions

that are very similar to the four identified by Thorson and Powell (1993). Further, many have used some but not all of the exact dimensions identified by Thorson and Powell (1993) to form their definitions and measures of the humor construct (e.g., Bowling et al., 2004; Svebak, 1974). Due to its comparatively comprehensive nature and widespread use, Thorson and Powell's (1993) conceptualization of the humor construct is the one that is utilized in the current study to help define workplace humor.

Operationalizations of workplace humor. Closely related to the issue of multidimensionality, there is a third issue complicating the definition of workplace humor which involves the various ways in which humor has been operationalized (Mesmer-Magnus et al., 2012). There are three primary ways in which humor has been operationalized in the past (Eysenck, 1972). Each reflects an underlying assumption regarding the dimensions which comprise the humor construct. First, humor has sometimes been operationalized as the degree to which individuals share an appreciation for humorous content (i.e., using a conformist perspective; e.g., Feingold, 1983; Svebak, 1974). This operationalization is based on the assumption that humor is an individual's ability to recognize and appreciate material that is conventionally viewed as humorous. Second, humor has often been operationalized as the frequency with which individuals are amused and/or demonstrate amusement through laughter and/or smiling (i.e., using a quantitative perspective; e.g., Martin & Lefcourt, 1984; Sala, 2000; Sala et al., 2002). This operationalization is based on the assumption that humor is an individual's tendency to become amused when exposed to humorous material. Lastly, humor has been operationalized as the frequency with which individuals produce (or attempt to produce) humorous communications and/or amuse other people (i.e., using a productive perspective; e.g., Avolio et al., 1999; Booth-Butterfield & Booth-Butterfield, 1991; Bowling et al., 2004; Decker

& Rotondo, 2001; Hurren, 2006; Morkes et al., 1999). This operationalization is based on the assumption that humor is an individual's tendency to produce humorous material themselves.

The numerous ways in which humor has been operationalized is, in part, due to the many ways in which its nature has been conceptualized. Regardless of how one chooses to define humor, however, it seems imperative that the operationalization of the construct be aligned with the presumed nature of its underlying dimensions. Therefore, in the current study, humor is viewed and operationalized as the degree to which individuals both produce and appreciate humor, as well as the degree to which they hold positive attitudes toward humor and recognize its utility as a means for coping with stressful life events (specifically in the workplace). This operationalization is consistent with the conceptualization of humor that is utilized in the current study and is reflected in the content of the tool that is used to measure it (i.e., MSHS; Thorson & Powell, 1993) as well as in the method that is used to manipulate it.

Styles of workplace humor. A final issue which has complicated the definition of workplace humor is that an individual's humor may be expressed in a variety of ways (Mesmer-Magnus et al., 2012). Just as individuals vary with regard to the degree to which they possess, use, recognize, and/or appreciate humor, they also vary with regard to the ways in which they express their humor. The different forms in which humor may be expressed have been referred to as humor styles (e.g., Martin et al., 2003). Although consensus surrounds the idea that numerous humor styles exist, there is less agreement regarding their exact number and nature. For instance, while some researchers have identified two distinct styles of humor (e.g., collaborative and competitive humor; Holmes & Marra, 2002), others have identified upwards of five (e.g., affiliative, self-enhancing, aggressive, mild-aggressive, and self-defeating humor; Craik, Lampert, & Nelson, 1996; Romero & Cruthirds, 2006).

Despite these disparities in the humor literature, a number of trends persist which have allowed scholars to integrate the numerous styles of humor proffered into one theoretical model. Specifically, a number of researchers have proposed the idea that there are both *positive* and *negative* forms of humor (e.g., Holmes & Marra, 2002; Martin et al., 2003; Romero & Cruthirds, 2006). Positive humor has been defined as being relatively benign and/or benevolent in nature while negative humor has been defined as being potentially detrimental and/or injurious (Mesmer-Magnus et al., 2012). In addition to there being consensus around the idea that there are both positive and negative forms of humor, numerous researchers have seemingly agreed that humor (whether it be positive or negative in nature) may be directed either toward the *self* or toward *others* (e.g., Martin et al., 2003; Romero & Cruthirds, 2006). While the general purpose of humor that is directed toward the self is to influence intra-psychic states within the humor producer, the general purpose of humor directed toward others is to influence the interpersonal/social relationships that exist between the humor producer and members of the audience to the humorous content (Mesmer-Magnus et al., 2012).

Observing these trends, Martin and colleagues (2003) crossed these two dimensions of humor commonly found in the literature (i.e., negative—positive humor and self-directed—other-directed humor) to form four distinct humor styles within which most styles of humor offered by other scholars are able to be categorized. Martin et al. (2003) labeled positive humor that is directed toward the self (i.e., with an intra-psychic focus) as coping/self-enhancing humor. This style of humor involves using humor to protect oneself and to cope with stress by regulating one's emotions and by cognitively reframing/reevaluating stressful situations to achieve a healthy perspective. The second style of humor identified by Martin et al. (2003) is affiliative humor, which involves the use of positive humor directed toward others (i.e., with an

interpersonal/social focus). This humor style is based on the use of humor to enhance one's relationships and feelings of cohesion with others, to enhance others' personal well-being, and/or to reduce interpersonal conflict. Martin et al.'s (2003) third humor style involves the use of negative humor that is directed toward the self and is referred to as self-defeating humor. Self-defeating humor involves the use of humor that is overly self-disparaging and often based on feelings of low self-esteem, emotional neediness, or avoidance. This style of humor is defined by attempts to put oneself down in order to amuse or to gain approval from others as well as laughter in response to ridicule from others. The fourth and final humor style identified by Martin et al. (2003) involves negative humor directed toward others and is referred to as aggressive humor. This style involves the use of humor to tease, ridicule, belittle, disparage, manipulate and/or to put down others and is defined by a generally tendency to use humor with little regard for the ways in which it may harm the well-being of others. Although Martin et al. (2003) identified four distinct styles of humor, it is important to remember that these styles were formed by crossing two continuous dimensions. The implication of this is that any one instance of humor is likely to possess characteristics of more than just one style.

Of the two dimensions along which the expression of humor may vary, the greatest divide in the humor literature seems to have taken place along the positive—negative humor dimension. It is between the two ends of this continuum that the largest theoretical and practical differences reside. Further, there exists great disparity with regard to the amount of attention that has been paid to the different ends of this continuum. Namely, a majority of prior studies involving humor have been focused on the positive forms of humor (i.e., coping/self-enhancing humor and affiliative humor; e.g., Decker & Rotondo, 2001; Doosje, De Goede, Van Doornen, & Goldstein, 2010; Fitzell & Pakenham, 2010; Gkorezis, Hatzithomas, & Petridou, 2011;

Hawkins, 2008; Hester, 2010; Malinowski, 2009; Riolli & Savicki, 2010; Susa, 2002; Thompson, 2009; Van den Broeck, Vander Elst, Dikkers, De Lange, & De Witte, 2012; Wojtyna & Stawiarska, 2009; Young, 2009). Comparatively little research has been dedicated to exploring negative humor styles (i.e., self-defeating humor and aggressive humor), however (e.g., Cooper, 2002; Doosje et al., 2010; Gkorezis et al., 2011; Hawkins, 2008; Malinowski, 2009; Susa, 2002). Despite being armed with little research regarding negative humor, relative to that regarding positive humor, scholars have been able to identify important theoretical and practical differences between the two. For instance, it has been theorized, and there is some evidence to support the idea, that positive and negative forms of humor have opposite effects on meaningful outcomes. Specifically, while positive humor has consistently been shown to be positively associated with a number of desirable outcomes (e.g., low burnout, low negative affect, high positive affect; e.g., Doosje et al., 2010; Fitzell & Pakenham, 2010; Hawkins, 2008; Malinowski, 2009; Riolli & Savicki, 2010), recent findings reveal that negative humor is negatively associated with these same outcomes (e.g., Doosje et al., 2010; Hawkins, 2008; Malinowski, 2009). This suggests that positive and negative forms of humor tend to function differently in the workplace; relating differently to important employee and work variables. This is not all that surprising given the major conceptual differences between the positive and negative humor styles defined by Martin et al. (2003). Although there are also significant conceptual differences between the self-directed and other-directed humor styles (i.e., between the two ends of the self-directed—other-directed humor dimension), meta-analytic evidence suggests that (at least in their positive forms) they tend to function the same in the workplace (Mesmer-Magnus et al., 2012). Specifically, positive self-directed humor (i.e., coping/self-enhancing humor) and positive other-directed humor (i.e., affiliative humor) have been shown to

be functionally similar with both consistently showing positive associations with beneficial employee/work outcomes.

Given the functional differences between the positive and negative forms of humor, it is important that they be kept separate for the purposes of empirical examination. This does not preclude studies which examine both positive and negative forms of humor simultaneously, but it does suggest that care must be taken in the context of such studies to examine independent relationships between each form of humor and the other variables of interest. Moreover, functional differences between positive and negative forms of humor suggest that all humor researchers should make it a point to clarify which form(s) of humor their findings are applicable to. Thus, it is important to note that, in the current study, only positive humor is examined. Therefore, it is expected that findings from the current study will only be generalizable to situations involving instances of positive humor in the workplace. Further, because there is evidence to suggest that both forms of positive humor (i.e., coping/self-enhancing humor and affiliative humor) are functionally equivalent (Mesmer-Magnus et al., 2012), in the current study both are included in the definition of positive workplace humor.

Summarizing the workplace humor construct. Although the literature fails to provide one agreed upon definition of workplace humor that is both clear and concise, what is clear is that humor is a complex multi-faceted construct which may vary along many different dimensions. One's humor may be described in terms of either individual dispositions or individual behaviors. Further, it may be described, not only in terms of degree (i.e., how much one recognizes, appreciates, or uses humor), but also in terms of style (i.e., the degree to which one's humor is positive versus negative and self-directed versus other-directed). Moreover, the degree to which one is humorous may be described along multiple dimensions (e.g., the degree

to which one produces humor, the degree to which one appreciates humor, the degree to which one holds favorable attitudes toward humor, or the degree to which one uses humor as a means for coping/adapting) and operationalized in multiple ways (e.g., in a conformist, quantitative, or productive sense). Despite this, researchers suggest that there exists a cohesive superordinate humor construct which underlies each of these facets (Mesmer-Magnus et al., 2012). As such, workplace humor may be best conceptualized as a multi-faceted yet unified construct. Despite this conclusion, a precise definition of workplace humor remains elusive. In this way, workplace humor might be likened to similarly complicated constructs which have elicited some variation of the following definition: I don't know how to define it, but I know it when I see it (e.g., obscenity, sustainability; *Jacobellis v. Ohio*, 1964; White, 2013).

It is important to note that, although the definition of “workplace humor” specifically is being discussed here, the issues identified by Mesmer-Magnus et al. (2012) and the description of the construct’s characteristics are also applicable to the construct of “humor” in general. That is, the workplace humor construct shares a common definition (as well as the issues that surround that definition) with other forms of humor that occur outside of the workplace (e.g., in social settings, at home). Seemingly, the only variable that distinguishes workplace humor from these other forms of humor is the context/setting in which it occurs (i.e., the workplace).

Workplace humor researchers have readily adopted definitions of humor developed within other streams of science in order to study its correlates, antecedents, and effects within organizational settings and professional populations. As a result, a large body of workplace-specific humor literature has blossomed; a summary of which is provided below as a prologue to the current study.

Prior Workplace Humor Research

The use of humor among employees has been found to be prevalent across a wide variety of occupations. For example, studies have shown high incidences of humor among police officers (Coughlin, 2002), hospice care workers (Adamle & Ludwick, 2005; Jones, 2008), psychiatric unit hospital staff (Sayre, 2001), medical professionals in intensive care units (Coombs & Goldman, 1973) and aboard ships deployed in wartime (Yerkes, 1993), as well as among athletic trainers (Reed & Giacobbi, 2004), meatpackers (Strömberg & Karlsson, 2009), and business academics and practitioners (Gunzelman, 2010). Although the humor used by such employees is often of a positive nature, the prevalence of negative humor is also high in many occupations (Sayre, 2001).

Likely a result of its prevalence, a significant amount of theoretical and empirical work has been completed regarding workplace humor and its relationships with important personal and work-related employee outcomes. It is thought that humor has a significant impact on a number of important workplace outcomes, and that it does so through a number of mechanisms. Specifically, theory purports that humor is likely to influence various outcomes through simultaneous and consecutive affective, cognitive, physiological, social, and behavioral processes (e.g., Duncan et al., 1990; Martin, 2001; Mesmer-Magnus et al., 2012). For example, the laughter that is often associated with humor has been shown to have a number of immediate physiological effects on individuals (e.g., muscle relaxation, increased oxygenation of blood, endorphin release; e.g., Duncan et al., 1990; Fry, 1994; Martin, 2001), which are likely to translate into more long-term outcomes. In addition, the positive emotional states that are inextricably linked with humor are also likely to result in more distal outcomes (e.g., affective,

physical, and social outcomes; e.g., Argyle, 1997; Martin, 2001). Similarly, the various cognitive, social, and behavioral processes that have been associated with humor are likely to translate into a number of important outcomes as well (e.g., Duncan et al., 1990; Martin, 2001; Mesmer-Magnus et al., 2012).

In order to test this idea that workplace humor has the potential to impact various workplace outcomes through a number of affective, cognitive, physiological, social, and behavioral processes, a large body of workplace humor research has recently burgeoned. The research conducted to date can be readily divided into three separate streams. The first stream involves explorations between individual employees' workplace humor and their own individual outcomes (both personal and work-related). The second stream of research involves group-level workplace humor and group-level outcomes. The third and final stream of research involves leader workplace humor and subordinates' outcomes, as well as a number of more general leadership effectiveness outcomes. Although a number of studies conducted within each of these streams have included explorations of relationships involving negative workplace humor, the focus has primarily been placed on studying the effects of positive workplace humor among employees.

Review of the workplace humor literature has not only served to highlight gaps in our collective knowledge, but findings from this literature have helped shed light on the role that coworker humor plays in determining employee well-being and effectiveness. Thus, a summary of prior workplace humor research is warranted as a prelude to the current study. In summarizing the three streams of research found in the workplace humor literature, a particular focus will be placed on relationships discovered between *positive workplace humor* and employee *well-being* and *effectiveness*, as these variables are the primary focus of the current study.

Individual workplace humor and individual outcomes. In recent decades, there has been a growing interest in studying the effects of employee humor in the workplace. The majority of the research conducted during this period has focused on exploring the influence of an employee's humor on his/her own personal and work-related outcomes. Of these outcomes, some of the most commonly studied include those related to employees' personal well-being, including employee health, stress/strain, burnout, coping, and affective outcomes. Other frequently studied outcomes of employee humor include those related to employees' work-related well-being, including their work-related cognitions, attitudes, and social status, as well as indicators of employee effectiveness, such as employee interpersonal, task, and creative performance.

Employee personal well-being. It is widely believed that employees' own workplace humor affords them many health benefits (Morreall, 1991) and that it helps those in a wide range of occupations to successfully cope with job stress (e.g., Filipowicz, 2002), including those who work as crime scene investigators (Roth & Vivona, 2010), journalists (Buchanan & Keats, 2011), emergency workers (Moran & Massam, 1997; Rowe & Regehr, 2010; van Wormer & Boes, 1997) and dispatchers (Shuler, 2001), medical professionals (Cameron & Brownie, 2010; Hutchinson, 1987; Kuhlman, 1988; Palmer, 1983), hospice care workers (Jones, 2008), caregivers (Parrish & Quinn, 1999), child care workers (Zinger, 1988), social workers (Witkin, 1999), addiction counselors (Weaver & Wilson, 1997), psychologists (Rupert & Kent, 2007; Stevanovic & Rupert, 2004), West Point Cadets (Myers & Bechtel, 2004), National Guardsmen (Worthington, 1994), business managers (Iwasaki, MacKay, & Mactavish, 2005), hotel kitchen staff (Brown & Keegan, 1999), and even sex workers (Sanders, 2004). Over the past few decades, a wealth of empirical evidence has accumulated in support of these beliefs. Although

some contradictory findings have emerged, the majority of findings suggest that employees' workplace humor has many positive effects on important outcomes associated with their personal well-being.

Relationships between employee humor and several indicators of employees' personal well-being have been extensively studied in the context of the prior workplace humor research. As a result, there is a large amount of evidence to support the idea that humor is positively related to personal well-being among employees and that it serves to buffer employees from the negative effects of job stressors. The studies that have provided such evidence have involved employees from a variety of industries, including musical theater performers (Friel, 2004), school psychologists (Williams, 2001), military personnel (e.g., United States Soldiers stationed in Iraq; Riolli & Savicki, 2010), medical professionals (Fitzell & Pakenham, 2010; Moran, 1996; Sim, Chong, Chan, & Soon, 2004; Spruill, 1992), and female executives (Fry, 1995), suggesting that the results are likely to be generalizable across numerous professions.

This body of research has revealed that, as compared to those who do not, employees who tend to use humor, particularly as a means of coping, and who possess high dispositional humor tend to experience lower levels of perceived stress (Friel, 2004; Fry, 1995; Mesmer, 2000; Moran & Hughes, 2006; Sidle, 2000; Williams, 2001), as well as higher levels of self esteem (Von Kirchenheim, 1996), general psychological well-being (Spruill, 1992; Stevens, 2010; Von Kirchenheim, 1996), and perceptions of physical health (Kuiper & Nicholl, 2004). In addition, this research has shown that employees who are exposed to humorous material (e.g., humorous videos) experience significant reductions in anxiety (Moran, 1996). This suggests that it is not only employees' own humor that matters with regard to enhancing their well-being, but the humorous content found in their work environment is also likely to play an important role.

Although the vast majority of empirical findings point to a positive relationship between employee humor and personal well-being, some contradictory findings have emerged over the past few decades. For example, some research has yielded insignificant findings following examinations of relationships between employee humor and employee depression (Peterson, 2004). In addition, some studies have failed to find expected relationships between employees' sense of humor and their perceived stress (e.g., Spruill, 1992), and health habits (e.g., Kuiper & Nicholl, 2004). Many of the studies from which such contradictory findings have emerged have focused solely on studying the effects of employees' dispositional humor, and not on employees' actual humor behavior in the workplace, which may account for the unexpected results.

Although some researchers have attempted to use peer ratings of employees' dispositional humor in order to capture more information about their actual humor behavior, other measurement issues (e.g., the use of single-item scales with an inability to distinguish between positive and negative humor) likely obfuscated important relationships between employee humor and employee well-being which only resulted in additional contradictory findings (Kerckänen, Kuiper, & Martin, 2004).

Prior research regarding the buffering role that employee humor plays in moderating relationships between job stressors and employee well-being has also yielded mixed findings. Although some researchers have failed to find evidence in support of the idea that employees' humor protects them from experiencing the negative effects of job stressors (DesCamp & Thomas, 1993; Peterson, 2004), others have found more success. For example, in a study of medical professionals, it was found that employees' personal well-being tends to be less negatively affected by exposure to life-threatening situations when they use humor to cope (Sim et al., 2004). In another study conducted with female executives, Fry (1995) found that humor

serves to buffer employees from experiencing decrements in their personal well-being following exposure to job stressors, such as decrements in their self-esteem and physical health. In the same study humor was also found to buffer employees from experiencing symptoms of burnout in response to job stressors.

A large amount of additional research has been completed in an effort to define the relationships that exist between employee humor, job stressors, and employee burnout specifically. Employee burnout has most often been conceptualized as the feelings of emotional exhaustion, depersonalization, and a lack of personal accomplishment that result from long periods of exposure to job stress (e.g., Maslach, 1982). In prior studies of the humor—burnout relationship, humor has been examined as both an antecedent of burnout as well as a moderator of the job stressor—burnout relationship. Findings from a number of studies suggest that employee humor does indeed have a significant impact on employee burnout and on the relationships that exist between job stressors and employee burnout. For example, it has frequently been found that when employees (e.g., pediatricians, youth care workers, teachers, nursing faculty) use humor as a coping mechanism and possess a high sense of humor they tend to experience lower levels of burnout than employees who do not use humor to cope and who possess a low sense of humor (Alvarado, 2000; Bowden, 2000; Killian, 2004; Mesmer, 2000; Talbot & Lunden, 2000). Further, as was previously discussed, humor has been found to buffer employees (e.g., female executives) from experiencing burnout following job stressors (Fry, 1995). Additional research suggests that the nature of the employees' humor seems to matter, however. Specifically, positive forms of employee humor appear to protect employees from experiencing high levels of burnout while negative forms of employee humor seem to contribute to employee burnout. In prior studies, positive employee humor has been shown to be directly

negatively related to burnout among employees in a variety of industries (e.g., medical professionals, school principals; Hawkins, 2008; Malinowski, 2009; Van den Broeck et al., 2012; Wojtyna & Stawiarska, 2009). Negative humor, on the other hand, has repeatedly been found to be positively related to employee burnout (Hawkins, 2008; Malinowski, 2009).

In contrast to these findings a number of researchers have failed to find commonly expected relationships between employee humor, job stressors, and employee burnout. For example, in a study of teachers, McKenzie (2009) failed to find significant direct relationships between employees' coping humor and their levels of burnout. Other researchers have actually found significant positive relationships between the humor of employees (e.g., HIV/AIDS and oncology health care workers, crisis clinicians) and their burnout and fatigue, as opposed to the expected negative associations (Dorz, Novara, Sica, & Sanavio, 2003; Lounsbury, 2006).

Research which has examined the moderating effects of employee humor on the relationship between job stressors and burnout has yielded some unexpected findings as well. Wallace, Lee, and Lee (2010), for example, found that employees' coping humor actually strengthened the positive relationship between job stressors and employee burnout, as opposed to attenuating it. Several other researchers have simply failed to find employee humor to be a significant moderator of the job stressor—employee burnout relationship at all (Alvarado, 2000; Van den Broeck et al., 2012). Although multiple studies have failed to yield expected relationships between employee humor, job stressors, and employee burnout, many have acknowledged that flaws in the methodology employed (e.g., cross-sectional designs, a failure to distinguish between positive and negative humor) may have contributed to their unexpected results (e.g., Dorz et al., 2003; McKenzie, 2009; Wallace et al., 2010). Although methodological issues are one potential explanation for the results of these studies, it is also possible that the existence of

unexplored moderators (e.g., coworker humor) that affect the relationships between employee humor, job stressors, and burnout contributed to their contradictory findings.

In addition to research focused on studying relationships between employee humor and indicators of personal well-being such as health, perceived stress, and burnout, there is also a small body of work dedicated to exploring relationships between employees' humor and their affective well-being, in the form of both their positive and negative affect (e.g., moods, emotions) specifically. Emerging from this work is a wealth of evidence in support of the idea that employee humor significantly impacts the affective well-being of employees. Current workplace theory suggests that employee humor causes positive affect spirals among employees who initiate it, as well as among other employees in their workgroup; provided those other employees have an appreciation for the humor used (Robert & Wilbanks, 2011). A number of empirical findings support the contentions of this *Wheel Model* of humor. For example, positive humor, particularly when used for coping, has been found to result in higher levels of positive affect and lower levels of negative affect among the employees who use it (Doosje et al., 2010; Fitzell & Pakenham, 2010; Riolli & Savicki, 2010). Negative humor, on the other hand, has been found to result in higher levels of negative employee affect (Doosje et al., 2010). In addition, it has been shown that individuals with high levels of coping humor tend to experience lower levels of negative mood after exposure to a stressor (e.g., a sad cartoon) than individuals with low levels of coping humor, suggesting that humor serves to buffer employees from the negative effects of job stressors on their affect (Moran & Massam, 1999). Further, recent findings reveal that humor helps employees to successfully manage their own emotions (Dean & Major, 2008; Gilgun & Sharma, 2012) and to deal with job stress during and after work, which enhances positive affect among employees, as well as others within the organization (Locke, 1996;

Stevens, 2010). Research has found, for example, that physicians often use humor in response to patients' negative affect (a work stressor) in order to foster positive affect, not only among themselves, but also among their patients (Francis et al., 1999; Locke, 1996).

It is commonly believed that one of the primary reasons employee humor is positively linked to various indicators of employee well-being (e.g., health, perceived stress, positive and negative affect, burnout) is because it serves as an effective mechanism for coping with job stress. In fact, throughout the existing workplace humor literature, employee humor has frequently been linked to effective coping in response to job stress among individuals working within a variety of industries. Humor is often used as a means for coping by those working in high-stress occupations, such as medical professionals working with dying patients (Schulman-Green, 2003) and mental health clinicians (Peterson, 2004). Employee humor has been found to be positively associated with employees' coping efficacy, so that employees high in humor are likely to feel more confident in their ability to cope with job stress (Wanzer, Booth-Butterfield, & Booth-Butterfield, 2005). As such, numerous researchers have explored the degree to which humor actually serves as an effective coping mechanism to reduce employees' stress and to increase their well-being. Although results of this research are not always positive (e.g., Kwandt, 1992) the vast majority of research dedicated to exploring humor as a means of coping among employees has yielded evidence in support of the idea that humor can be a highly effective coping device. As detailed above, for example, it has repeatedly been found that the use of positive humor is an effective coping mechanism that helps employees to stave off the negative effects of job stress and negative life/work events (e.g., burnout, negative affect; Hawkins, 2008; Moran & Massam, 1999). Further, when humor is used to cope with failures experienced at work or in school, individuals tend to feel more satisfied at the end of the day (Stoeber & Janssen,

2011). In addition to these findings, employees' humor has been positively linked to their use of other adaptive coping strategies and resources, such as positive reappraisal of stressful situations as being opportunities for growth (Fry, 1995) and the receipt of social support from coworkers/supervisors (Factor, 1997). With regard to social support, specifically, it has been theorized that employee humor is negatively related to employee stress in part because it serves to attract social support from others. In particular, it is thought that individuals tend to like employees who are humorous more than employees who are non-humorous (an idea which has some empirical support; Morkes et al., 1999) and, therefore, they tend to provide humorous employees with greater amounts of social support to help them cope with job stress (Moran & Hughes, 2006). Alternatively, it has been suggested that employee humor is linked to high levels of social support because employees dealing with job stress tend to seek out others with whom they can engage in humorous exchanges. Some empirical support has been found for this idea. Specifically, Jacobs (2003) found that employees often seek social support from their coworkers to cope with job stress because of the humorous interactions that tend to result from it. Not all research investigating the relationship between employee humor and social support has yielded significant findings, however. Some researchers who have failed to find evidence of a relationship between employees' humor and the amount of social support they receive have speculated that unidentified moderators (e.g., how others perceive the employees' humor) may be the cause of their unexpected findings (Bowling et al., 2004).

To summarize, prior research has provided a large amount of evidence which points to employees' humor as an important facilitator of their personal well-being, in part because it provides them with methods for coping with job stress. Specifically, research has demonstrated the direct effects of employee humor on various indicators of well-being, such as employees'

perceived stress and health, burnout, and affect. In addition, humor has been found to play a role in buffering employees from the detrimental effects of job stress. For reasons that are still unclear, however, not all studies have yielded consistent findings with regard to the impact of employees' humor on their own personal well-being.

Employee work-related well-being. Findings from prior research suggest that, not only does employee humor benefit employees by increasing their personal well-being, but it also serves to enhance their work-related well-being. That is, employee humor facilitates positive work-related cognitions, attitudes, and even employees' social status.

One way in which employees benefit from workplace humor is that humor helps employees to make sense of their situation and to understand themselves within it. Specifically, employees ranging from hotel kitchen chefs, to corrections officers, to female managers use humor to develop and understanding of their experiences within and of their organizations (Hatch, 1997), to interpret work events (including work stressors; Tracy, Myers, & Scott, 2006), to make sense of their jobs (Lynch, 2009), and to form and maintain their personal and work-related identity and autonomy, both as an individual and as a group member (Lynch, 2009; Martin, 2004; Nielsen, 2011; Tracy et al., 2006). Humor is also used by employees to effectively resist organizational policies that conflict with their ideals (Martin, 2004). At the same time, however, humor helps employees to cope with changes within their organization and lowers their intentions to resist such change (Bovey & Hede, 2001).

In addition to this, extant research demonstrates the important role that employee humor plays in supporting a number of positive job attitudes, such as job satisfaction, work engagement, and intentions to remain within the organization. Although a small amount of research has failed to find a relationship between employee humor and job satisfaction (e.g., Teehan, 2006), a

majority of studies have provided evidence that such a relationship exists. For example, in a study conducted with oncology nurses, employees' humor was found to be positively related to their satisfaction with direct patient care (a facet of nurses' job satisfaction; Schickedanz, 1993). In other research, individuals' dispositional humor was found to be positively related to their satisfaction with their work tasks (Sidle, 2000). Additional research shows that employee humor may be particularly useful in fostering positive job attitudes under stressful work conditions. Specifically, research suggests that employee humor is positively associated with employee job satisfaction, partly because employees feel they are better able to cope with their jobs when they possess high levels of humor (Wanzer et al., 2005). Further, it has been found that employee humor serves to buffer employees from the negative effects of stressors on their job satisfaction (Factor, 1997) and that employees who use positive humor as a means for coping are more likely to experience high levels of job and work satisfaction (Doosje et al., 2010). In addition to job satisfaction, employees' humor has also been found to be related to their levels of work engagement. For example, in a study of clinical social workers, employees reported that humor contributed significantly to their work engagement (Greifer, 2004). Further, research has shown that employees tend to use humor to recover from job stress after work which, in turn, enhances their work engagement (Stevens, 2010) and that the use of positive humor directly enhances employee work engagement, particularly when other coping mechanisms are unavailable (e.g., when social support is low; Van den Broeck et al., 2012). Findings from prior research have also revealed a relationship between employees' humor and their intentions to leave their organization. While some research has failed to find evidence of a relationship between employee humor and actual employee turnover (e.g., Horowitz, 2001), employee humor has been

found to effectively buffer individuals from the negative effects of stressors on employee turnover intentions (Factor, 1997).

In addition to enhancing the attitudinal well-being of employees, employee humor has been found to enhance their social well-being as well. Research shows that individuals high in humor are seen by other organizational members as playing an important role and as serving many functions within organizations. Overall, the role of the humorous employee is highly valued by both coworkers and superiors (Plester & Orams, 2008). Employee humor (humor production specifically) has even been found to be positively associated with employee popularity among coworkers (Scott, 2007).

In sum, prior research has revealed several meaningful relationships between employees' humor and their work-related well-being. Important indicators of employees' work-related well-being that are affected by employee humor include their work-related cognitions, attitudes, and even their social status. Findings from this research show that, not only does employee humor have direct effects on these outcomes, but that it also serves to buffer employees from the negative effects of job stress on their work-related well-being.

Employee effectiveness. Current workplace humor theory purports that various forms of employee effectiveness (e.g., interpersonal, task, and creative performance) may be enhanced by employee humor, due in part to its positive effects on aspects of employees' well being, such as their positive affect, coping ability, and cognitive flexibility (e.g., Kaye & Fortune, 2001; Morreall, 1991; Robert & Wilbanks, 2011). Review of prior empirical findings does indeed yield some support for this contention.

Consistent with theoretical claims that employee humor is positively associated with employees' interpersonal performance (Robert & Wilbanks, 2011), prior research has found that

employees frequently utilize humor as a means for facilitating effective interpersonal interactions. Specifically, employees use humor to help them convey messages to others that may otherwise be difficult to convey, which may make effective interpersonal interactions (e.g., communication, collaboration, supporting behavior) more likely and ineffective interpersonal interactions (e.g., conflict) less likely among humorous employees. For example, research has revealed that humor helps employees to effectively convey challenges to the status quo, negative feedback to superiors and/or coworkers, and information about distressing events, as well as to express negative emotions and to signal personal distress. In addition, humor helps employees to emphasize important messages so that their communications are more likely to be understood and appreciated by others. Further, it helps employees to express their agreement with others and to signal that they share a common understanding of workplace events/situations. And finally, humor serves as a means for maintaining good working relationships with colleagues and for repairing strained ones by contributing to fun workplace interactions (e.g., Bethea, Travis, Pecchioni, 2000; Filipowicz, 2002). Likely a result of its many interpersonal functions, employee humor has been empirically linked to high levels of cooperation behaviors and low levels of conflict behaviors among employees (Dean & Major, 2008), as well as high levels of communication competence (Jones, 2006). Such findings suggest that employees who are high in humor (as compared to those who are low in humor) are more likely to possess the skills necessary for effective interpersonal performance and to actually engage in effective interpersonal behaviors.

Further, in line with the argument that employee humor is positively associated with employees' general/task performance (Robert & Wilbanks, 2011), a number of studies involving diverse samples have revealed positive relationships between employee humor and various

performance indicators. For example, several researchers have found that individuals who use humor during negotiations tend to achieve higher individual gains (Filipowicz, 2002; Kurtzberg et al., 2009). Additional research has revealed that humor enhances the performance of individuals working in musical theater groups (Friel, 2004).

Lastly, consistent with assertions that employee humor is associated with employees' creative performance, due in part to its impact on mental flexibility (Morreall, 1991), a number of studies have demonstrated significant relationships between humor and creativity in the workplace; many of them positive. For instance, employees' sense of humor has often been found to be positively associated with their creativity (e.g., teachers' sense of humor is positively related to their use of creative teaching methods, family service workers' use of humor is positively associated with their creative problem solving; Gilgun & Sharma, 2012; Horng, Hong, ChanLin, Change, & Chu, 2005; Humke & Schaefer, 1996). In a study conducted by Susa (2002), managers' actual use of positive humor was also found to be positively associated with managers' creativity. In the same study, however, negative relationships between employee humor and creativity were also found. Specifically, findings revealed a negative relationship between managers' use of negative humor and their creativity.

Research suggests that humor may be particularly important for maintaining and enhancing employee effectiveness under high-stress conditions which demand adaptive coping skills and/or emotional labor strategies. In a study of social workers conducted by Kaye and Fortune (2001) it was found that, as compared to those who do not, individuals who possess adaptive coping skills, including the ability to use humor to cope, tend to believe that they have a greater ability to perform tasks in their field and tend to view tasks assigned to them as being less difficult. In support of this, research conducted by Bizi and colleagues (1988) has revealed

significant positive relationships between employee humor and employee performance under stressful conditions. Findings from this study also revealed that humor that is self-produced as opposed to reactive seems to be the most beneficial. Whether humor is self- or other-directed does not seem to matter much in determining employee performance, however. While most studies have explored the impact of employees' own use of humor on their own performance under stressful conditions, some research has looked at whether employees' exposure to external sources of humor also has an impact on their performance under stress. In a study conducted by Yao (2005) it was found that exposure to humorous material (e.g., humorous commercials) lessened the negative effects of service workers' emotional labor strategies on their performance. It was particularly effective at reducing the negative effects of the more detrimental surface acting strategies (versus the less detrimental deep acting strategies) on performance.

In sum, the findings from prior research suggest that, although some forms of employee humor (i.e., negative humor behavior) may be detrimental to employee effectiveness, a number of other forms of humor significantly enhance employee effectiveness. These beneficial forms of humor include employees' positive humor behavior, employees' dispositional humor, and employees' exposure to humorous material. Further, extant research suggests that humor is particularly beneficial for supporting employee effectiveness under stressful conditions, likely due to its positive effects on employee well-being.

Group workplace humor and group outcomes. In addition to relationships between individual-level workplace humor and individual-level employee outcomes, recent research has included numerous examinations of relationships between workplace humor occurring at higher levels of analysis and higher-level outcomes. In examinations of this kind, group-level humor is generally conceptualized as a characteristic, not of individual employees, but of entire work units

(e.g., dyads, teams, organizations; e.g., Bolman & Deal, 1992; Henman, 1998; Kahn, 1989). As such, researchers often assess group-level humor by measuring the frequency with which humor behavior is observed within workgroups and/or the type of humor that is used (e.g., Lynch, 2010; Thompson, 2009), by measuring the degree to which workgroup members report that humor is used within their workgroup and/or the type of humor they believe is used (e.g., DaRos-Voseles, Collins, Onwuegbuzie, & Jiao, 2008; Duncan, 1984; Lang & Lee, 2010; Susa, 2002), or by aggregating workgroup members' individual-level humor (e.g., forming a mean workgroup humor variable; e.g., Niedzwiecki, 1997). In addition, some researchers have manipulated workgroup humor by scripting workgroup member interactions (e.g., Gockel, 2007; Kurtzberg et al., 2009; Morkes et al., 1999).

Throughout the workgroup humor literature, humor has been touted as having many benefits to work units/groups existing at many levels of analysis higher than the individual employee. These include dyads (Henman, 1998), teams (Bolman & Deal, 1992), organizations (Kahn, 1989), as well as a variety of other workgroups, such as the United States Congress (Yarwood, 2001). Some researchers have gone so far as to suggest that the health and wellness of the United States as a whole is linked to humor usage measured at the national level (Silberman, 1987). Further, the benefits of workplace humor have been theorized to extend beyond the boundaries of single workgroups and/or nations to enhance the outcomes of multi-party business negotiations involving entities from different countries and cultures (Adelswärd & Oberg, 1998; Kurtzberg et al., 2009; Vuorela, 2004).

Recent research examining the functions and effects of humor in workgroups has yielded a substantial amount of evidence in support of the idea that group-level humor translates into positive group-level outcomes, as well as into some positive individual-level outcomes.

Commonly studied outcomes within this research vein include various group processes and emergent states as well as multiple forms of group effectiveness.

Group processes and emergent states. Group process can be defined as the interdependent acts of group members which serve to convert group inputs to group outputs. These involve cognitive, verbal, and behavioral activities which facilitate the group's taskwork and which help the group to achieve their collective goals. Group emergent states, on the other hand, are dynamic properties of a group that vary based on group context as well as on group inputs, processes, and outcomes. These group-level properties are thought to emerge from the characteristics of the individual group members through group members' interactions with one another (Marks, Mathieu, & Zaccaro, 2001). It is widely believed among scholars that workplace humor has a significant impact on a variety of group processes and emergent states by doing things such as relieving stress in workgroups, fostering shared values among members, facilitating the integration of diverse ideas (Bolman & Deal, 1992), and by acting as a social lubricant (Morreall, 1991). In fact, there is a wealth of evidence to support this contention.

In prior research, humor has been identified by organizational members as being an important facilitator of collaboration within workgroups (e.g., educational administrative teams; Rogerson-Revell, 2006; Walkowicz, 1994). It is often used by group members to effectively communicate negative emotions to one another, reduce and manage tension and conflict within the group, and to help the group achieve consensus on important decisions (Francis et al., 1999; Thompson, 2009). Further, positive humor has been found to facilitate the development of collective communication competence within workgroups (e.g., interdisciplinary research teams), although negative humor has been found to hinder the development of such competence (Thompson, 2009). Finally, although group-level outcomes were not investigated, research

exploring the impact of computer-generated humor has found that individual group members tend to be more cooperative with and sociable towards computer-simulated workgroup members when those simulated coworkers produce humorous statements during the completion of a group task (versus non-humorous statements; Morkes et al., 1999).

In addition, prior research has unveiled important relationships between workgroup humor and the affective and attitudinal well-being of group members. For instance, humor has often been named as a critical tool for reducing tension and stress in groups (Bolman & Deal, 1992; Thompson, 2009), providing groups with relief from stressful work environments (Plester & Orams, 2008), and for boosting a group's resilience to stressors (Henman, 1998). Further, the recently developed Wheel Model of humor proposes that the use of humor in workgroups has the potential to enhance positive affect among members. It is expected to do so by creating a group climate that encourages humor which, in turn, propels positive affect spirals (Robert & Wilbanks, 2011). And in fact, the use of humor in workgroups has been found to be positively associated with member perceptions of positive group mood (Gockel, 2007). Further support for the Wheel Model of humor comes from research conducted using computer-generated humor. This research shows that when individuals complete a task with a computer-simulated coworker that is producing humorous statements or simply using a computer that produces humorous statements the individuals tend to demonstrate more signs of positive affect, such as smiling and laughing (Morkes et al., 1999). These findings suggest that employees' positive affect may be being influenced by the humor produced by their fellow group members. In addition, although not specific to workgroups, some prior research has suggested that when individuals are around others who use negative forms of humor (i.e., aggressive humor) they tend to develop more negative affect themselves (e.g., feelings of aggression; Berkowitz, 1970). In addition to

fostering affective well-being among workgroup members, humor has also been found to facilitate positive work-related attitudes. For example, at the organizational level, positive humor has been found to be positively related to member job satisfaction, organizational commitment, and perceived organizational support (negative humor, on the other hand, has been found to be negatively related to many of these same outcomes; Susa, 2002). Workplace fun, a highly related construct defined as any work activity (social, interpersonal, task) playful or humorous in nature that provides individuals with amusement, enjoyment, or pleasure, has also been found to be positively related to organizational attraction (Tews et al., 2012). Further, in negotiation groups, humor has been positively linked to feelings of satisfaction among negotiating parties (Kurtzberg et al., 2009).

Arguably, one of the most significant ways in which humor functions in workgroups is that it serves to build strong relationships between group members and helps to foster the development of a group's identity. Theory states that there are many mechanisms by which humor serves to develop meaningful relationships between people (e.g., humor may serve as an effective ingratiation behavior; Cooper, 2005; Cooper, 2008). The sheer prevalence of studies which have revealed significant relationships between group humor and various group emergent states (e.g., group cohesion, identity, culture, climate, and trust) could be seen as support for this idea.

Prior research has revealed that the use of humor in workgroups is positively associated with feelings of trust among members (e.g., trust among parties engaged in negotiations; Kurtzberg et al., 2009), member perceptions of psychological safety in the group, as well as to member perceptions of group cohesion (brought on by perceptions of positive mood in the group and similarity among members; Gockel, 2007). In addition, although group-level outcomes were

not investigated, research has shown that individuals tend to find fellow workgroup members who use humor to be more likable, even when those coworkers are computer simulated (Morkes et al., 1999). Even the prospect of fun interactions with coworkers (e.g., humorous interactions) has been shown to enhance individuals' attraction to workgroups (e.g., organizations; Tews et al., 2012). Of these outcomes, group cohesion and its relationship to group humor has been the most frequently studied by far. Although research has not always yielded evidence of a relationship between group humor and group cohesion (Niedzwiecki, 1997), the majority of studies conducted on this topic have resulted in significant positive relationships being found between humor and cohesion in workgroups. Research that is now decades old first revealed the positive associations between workgroup humor and group cohesion (e.g., Duncan, 1984; Duncan & Feisal, 1989). Since the time of these studies, significant positive relationships between humor and cohesion have continued to emerge from research, including relationships between the use of gallows humor and group cohesion among police officers (Coughlin, 2002) as well as the use of positive forms of humor (e.g., affiliative and self-enhancing) and cohesion in male basketball teams (Hester, 2010).

Not only does humor serve to bond group members together, but it also helps groups to develop their own unique identity which distinguishes them from other groups. Workgroups of various types within various occupations use humor to create a collective identity and shared understanding of group tasks, situations, and of the group itself (e.g., Lynch, 2010). Research has revealed the importance of humor in shaping shared identity and understanding among medical professionals (Francis et al., 1999; Yoels & Clair, 1995), corrections officers (Nielsen, 2011), scientists (Ritchie & Schell, 2009), and even prisoners of war (Henman, 1998), as well as in groups with extremely diverse members (e.g., groups in which members speak different

languages; de Bres, Holmes, Marra, & Vine, 2010). A significant number of related studies have examined how humor functions in the development of group culture and climate specifically. This research has revealed that humor plays an important role in creating and defining the culture/climate of workgroups, including entire organizations (e.g., Holmes & Marra, 2002; Lynch, 2010; Plester & Orams, 2008; Vinton, 1989). It helps workgroup members to establish norms for completing group tasks and for interacting with one another (e.g., Francis et al., 1999; Rogerson-Revell, 2006). Humor is so integral in shaping the workgroup environment that one study found significant relationships between the specific type of humor used and the specific types of climates found in organizations. Namely, positive forms of humor were linked to the presence of positive organizational climates while negative forms of humor were linked to the presence of negative organizational climates (Susa, 2002). Prior research reveals that humor also serves to perpetuate and maintain the culture of a workgroup after it has already been developed. Specifically, humor is often used to integrate newcomers to the workgroup's culture by helping them to make sense of the group's environment, identity, and expectations (Heiss & Carmack, 2012). In addition, it has been shown to be an effective tool for dealing with unwanted or excessive intra-group conflict and dissent (Lynch, 2010).

Intriguingly, in addition to helping develop and preserve workgroup norms, values, standards, and all the other basic components of group cultures and climates, humor also serves as a tool for challenging them. Research has consistently demonstrated that humor is often effectively used in workgroups as a safe method of criticizing group policies, challenging authority, pushing set boundaries, and offering alternatives to the status quo without sacrificing one's status or escalating intra-group conflict (Grugulis, 2002; Plester & Orams, 2008). As such, it often plays an important role in spurring positive change in workgroups (Kahn, 1989).

In sum, findings from extant research suggest that the degree of humor present and the nature of humor used in workgroups each have significant effects on important group processes and emergent states. In turn, these effects are likely to have an impact on overall group effectiveness, which is the topic of the next section.

Group effectiveness. Numerous facets of workgroup effectiveness may be impacted by the effects of workplace humor, including group productivity, viability, learning, and creativity (Holmes, 2007b; Romero & Pescosolido, 2008). It is a common belief that humor has the potential to impact such forms of workgroup effectiveness by influencing group processes and emergent states (e.g., communication, affect management, cohesion, shared goals and values; Bolman & Deal, 1992; Duncan & Feisal, 1989; Romero & Pescosolido, 2008), and some evidence to support this sentiment can be found in findings from prior research. Importantly, these findings suggest that there are no limits with regard to what size or type a workgroup must be in order to experience the performance effects of humor.

For example, in a study conducted by Sweeney (1999), humor was identified as a key characteristic of effective mixed-gender work dyads. At the organizational level, it has been found that positive humor is associated with high levels of member job performance and organizational creativity while negative humor is linked to lower member job performance and organizational creativity (Lang & Lee, 2010; Susa, 2002). Even research conducted with negotiating parties has demonstrated humor effects on the effectiveness of the negotiation group. Specifically, Kurtzberg and colleagues (2009) found that the use of humor in negotiation groups is positively related to the level of joint gains and the equality of their distribution among negotiating parties.

Interestingly, prior findings suggest that the level and type of humor used in a workgroup are not the only things that matter in determining group effectiveness. The degree to which there is variance among group members with regard to their humor also matters. In a study conducted by DaRos-Voseles and colleagues (2008), it was found that groups who perceive greater variation in member humor tend to achieve lower levels of performance than groups who perceive less such variation. This suggests that interactions may be occurring among the humor of group members which impact group members' performance. Depending on the humor levels of each group member, these interactions may occur between many group members at once (e.g., the whole group), within subsets of members (e.g., dyads), between subsets of members (e.g., a faction with high levels of humor and a faction with low levels of humor), or even between one member and the rest of the group (e.g., the leader and the rest of the group or the member with the highest/lowest humor and the rest of the group). Either way, the finding that high levels of member variation with regard to humor results in relatively low levels of group performance suggests that a high level of humor similarity among members is beneficial to group member performance, not just overall high levels of group humor (e.g., high mean humor levels).

Taken together, findings from prior research suggest that the degree of humor present, the nature of the humor used (i.e., positive versus negative), and the degree to which there is variance in member humor are all important factors in determining the effectiveness of workgroups of various types and sizes.

Leader workplace humor and subordinate outcomes. In recent years there has been a surge in research dedicated to examining the impact of leaders' humor on various outcomes. Although some of this research has explored the effects of a leader's humor on his/her own outcomes (e.g., leader effectiveness), the bulk has focused on investigating the effects of leader

humor on the outcomes of subordinates. Further, both individual- and group-level subordinate outcomes have received attention in this literature. For these two reasons, it is difficult to separate completely this stream of research from the two other streams of workplace humor research previously discussed. However, due to its recent boom and to its remarkable coherence, there is no doubt that the leader humor research stream warrants its own discussion.

Leader effectiveness. There is widespread consensus surrounding the idea that humor can significantly impact the degree to which individuals are able to be successful in leadership roles. Individuals working within numerous industries (e.g., business, education, government, non-profit) frequently rank humor as an important quality for leaders to possess (Treece, 2010). As such, calls have been made for leaders to incorporate humor into their daily work (McManus & Delaney, 2007) and some have even recommended that instruction in effective humor usage be included in leadership training and professional development programs (Taliaferro, 2007; Treece, 2010).

Leaders themselves have acknowledged the importance of humor in contributing to their effectiveness and recognize the value of humor in the workplace (e.g., Holmes & Marra, 2006). They view humor as having a significant impact on their ability to be effective leaders and on the overall functioning of the organizations in which they work (Benham, 1993). Research suggests that leaders likely view humor as a useful tool for enhancing their effectiveness because it fulfills many functions. For instance, it is often used to release tension, communicate effectively, to build relationships (Gilbert, 2009), to exert influence over their subordinates (Reece, 1998), and to achieve their leadership performance objectives, while at the same time constructing and maintaining their personal and professional identities (Schnurr, 2009). Humor may be particularly useful for leaders faced with the challenges of working within multicultural

organizations. When subordinates hold conflicting culturally-based views of what an effective leader is humor may be useful in helping the leader to be perceived as effective by all subordinates equally (Holmes, 2007a). On the other hand, leader humor could be detrimental when used ineffectively in the context of culturally diverse groups. Specifically, cultural differences in humor styles and expectations for leader humor could lead to differences in how subordinates perceive their leader's humor, thereby creating divides among subordinates with regard to their perceptions of leader effectiveness (e.g., Cash-Baskett, 2011; Decker, 1987; Romero, Alsua, Hinrichs, & Pearson, 2007; Smeltzer & leap, 1988).

A number of studies have yielded empirical evidence in support of the idea that leader humor has a significant impact on leader effectiveness. Reviews of the humor literature reveal that positive forms of humor may be used by leaders to enhance leadership effectiveness (Crawford, 1994; Romero & Cruthirds, 2006). At the same time, some negative forms of humor can have both positive and negative effects on leader effectiveness at both the individual subordinate and group/organizational levels (Vinson, 2006). Overall, it is fair to say that strong associations between leader humor and leader effectiveness have consistently emerged from prior studies. For instance, leader sense of humor has been linked to numerous effective leadership behaviors/styles (e.g., transformational and transactional leadership behaviors, adaptive conflict management styles; Campbell, 2000; Hoffman, 2007). Additionally, findings from prior studies have shown leader humor to be positively associated with numerous objective indicators of leadership effectiveness (i.e., bonus awards and nominations for average/outstanding performance; Sala, 2000). Further, it has been found that those leaders who are deemed to be highly effective tend to share a number of features in common. Specifically, effective leaders tend to value humor in the workplace (Holmes & Marra, 2006), possess a good

sense of humor (Franklin, 2008), and to use positive humor frequently and negative humor infrequently (Decker & Rotondo, 2001; Ellis, 1991; Fields, 2011; Priest & Swain, 2002). There is some research which suggests that the relationship between leader humor and leader effectiveness may depend on the leader's gender, however. Specifically, it has been found that the positive relationship between positive leader humor and subordinates' perceptions of leader effectiveness is stronger when the leader is female while the negative relationship between negative leader humor and subordinates' perceptions of leader effectiveness is stronger when the leader is male (Decker & Rotondo, 2001). In addition to perceptions of leader effectiveness, leader humor has also been positively linked to subordinates' perceptions of other positive leader characteristics. These include perceptions of leader intelligence, friendliness, confidence, wittiness, maturity, motivation, decisiveness, competence, pleasantness, popularity, and of the leader being well-respected. Younger, versus older, subordinates are particularly likely to associate leader humor with leader effectiveness and other such positive leader attributes (Decker, 1987).

In sum, prior research has demonstrated a number of important links between both positive and negative forms of leader humor and various indicators of leader effectiveness (e.g., subjective and objective indicators). In addition, a number of variables (e. g., subordinate age, leader gender) have emerged as significant moderators of the leader humor—leader effectiveness relationship. In addition to leaders' humor having a significant impact on their own levels of effectiveness, leaders' humor has also been found to have a significant impact on the outcomes of their subordinates. As such, focus will now be turned to the relationships that exist between leader humor and various individual- and group-level subordinate outcomes.

Subordinate well-being. In the extant workplace humor literature it is well-acknowledged that leader humor has a significant impact on subordinates' affective and attitudinal well-being. Recent theory suggests, for instance, that the positive affect of subordinates is positively impacted by leaders' positive humor and negatively impacted by leaders' negative humor (Hughes, 2009). Further, reviews of the workplace humor literature have revealed that positive forms of humor may be used by leaders to facilitate stress reduction among subordinates (Romero & Cruthirds, 2006). More specifically, in several studies conducted with principals and teachers, it has been found that leader humor (i.e., the degree to which leaders are humorous or non-humorous and the type of humor style leaders employ) is significantly and negatively related to teacher burnout (Mertz, 2000; Spurgeon, 1998). In other workplace humor research, not specific to leaders and subordinates, it has been found that recruiter/interviewer humor serves to decrease the anxiety of interviewees during selection interviews (Carless & Imber, 2007). This suggests that humor used by those in a position of authority (e.g., a leadership position) has the potential to reduce the anxiety levels of subordinate organizational members. Prior findings reveal that leader humor does not always enhance the affective well-being of subordinates, however. In fact, it has been found that negative forms of leader humor (e.g., aggressive humor) contribute to increases in subordinate strain which, in turn, contributes to poor health behaviors among subordinates such addiction to alcohol, tobacco, and the internet. These effects are especially likely to occur when one subordinate is singled out as the target of the negative humor (Huo et al., 2012).

In addition to these affective and associated behavioral outcomes, leader humor has frequently been associated with indicators of subordinates' attitudinal well-being. There is a large body of research, for example, which has explored relationships between leader humor and

various facets of subordinates' job satisfaction. For instance, various leader humor styles have been linked to subordinates' overall job satisfaction as well as to satisfaction with supervision, contingent rewards, operating procedures, and communication specifically (Puderbaugh, 2006). In addition, numerous studies have revealed strong positive associations between both dispositional and behavioral leader humor levels and subordinate job satisfaction in samples ranging from doctors and nurses to principals and teachers (Cooper, 2002; Decker, 1987; Fields, 2011; Hurren, 2006; Vecchio et al., 2009; Wanzer, Wojtaszczyk, & Kelly, 2009). Leader humor does not always serve to enhance subordinate job satisfaction, however. In fact, leaders' frequent use of negative humor has been found to be associated with low levels of subordinate job satisfaction (e.g., Hansel, 2006; Susa, 2002). There is some evidence to suggest that leader humor may have its effects on subordinates' job satisfaction through its influence on the strength and quality of leader-subordinate relationships (e.g., Cooper, 2002). In general, individuals across numerous industries (e.g., business, education, government, non-profit) prefer working with leaders who use humor regularly (Treece, 2010), perhaps in part because leader humor is positively associated with subordinates' trust in their leader (although some research suggests that leaders who use humor are seen as less credible; Hughes & Avey, 2009; Ramirez, 2002), perceptions of leader responsiveness and use of approach (versus avoidance) strategies for managing subordinates, as well as with subordinates satisfaction with their leader (Campbell, 2000). In addition, research has shown that subordinates tend to report holding stronger personal relationships with their leaders when their leader uses humor frequently, as opposed to infrequently (Fields, 2011). Prior research shows that which form of humor a leader uses does make a difference, however. Subordinates with leaders who use positive humor regularly are more likely to view their leader as supportive and are less likely to report problems with

supervision or the supervision processes while subordinates with leaders who use negative humor regularly are less likely to view their leader as supportive and are more likely to report problems with supervision (Hansel, 2006; Susa, 2002). As such, high levels of positive leader humor has been found to be linked to low levels of leader-follower distance (Young, 2009) and to be positively associated with leader-member exchange (LMX) relationship quality (potentially because leader humor facilitates subordinate respect and loyalty; Cooper, 2002). Negative leader humor, on the other hand, has been found to be negatively related to LMX relationship quality (Cooper, 2002).

In addition to subordinate satisfaction, both forms of leader humor (positive and negative) have demonstrated relationships with other attitudinal outcomes; including subordinates' psychological empowerment, organizational commitment, and turnover intentions. In a recent study conducted by Gkorezis and colleagues (2011), positive leader humor was found to be positively associated with subordinates' psychological empowerment, particularly among subordinates new to the organization. In the same study, however, negative leader humor was found to be negatively associated with subordinates' psychological empowerment, particularly among subordinates who have been with the organization for a long period of time. Similar relationships have been observed between leader humor and subordinates' organizational commitment. Specifically, while some research has revealed positive relationships between leader humor in general and subordinates' organizational commitment (Hughes & Avey, 2009), other research looking at negative leader humor specifically has revealed a negative association between such humor and the organizational commitment of subordinates (Susa, 2002). In addition, leader humor in general has been found to be negatively associated with subordinates' intentions to leave the organization, due in part to the positive effect of leader humor on LMX

relationship quality (Cooper, 2002). In related workplace humor research, although not specific to leaders and subordinates, a positive relationship between recruiter/interviewer humor usage during the personnel selection process and applicants' attitudes toward the organization have also been found. For instance, Carless and Imber (2007) found interviewer/recruiter humor to be positively associated with applicants' attraction to the organization and intentions to accept a position within the organization. Such findings suggest that humor used by individuals in positions of authority (e.g., leadership positions) is likely to enhance subordinates' positive organizational attitudes.

In sum, prior research suggests that the level and nature of leader humor has a significant impact on numerous indicators of subordinates' affective and attitudinal well-being. Some research suggests that leader humor may be particularly useful for enhancing the affective and attitudinal well-being of subordinates during and/or following periods of organizational change. Namely, in a study conducted by Wells (2008), several positive relationships were found between leader humor and positive subordinate outcomes such as organizational commitment, interactional and procedural justice/fairness perceptions, leader-subordinate relationship quality, job satisfaction, and even life satisfaction.

Subordinate group processes and emergent states. Although empirical research in the area is scarce, reviews of the literature suggest that positive forms of leader humor are likely to have a significant impact on many important group-level processes and states and that highly effective leaders recognize the value of using humor to achieve such outcomes (Holmes & Marra, 2006). Specifically, evidence suggests that leaders may use positive humor to facilitate group communication processes and to reduce intra-group conflict. In addition, positive humor may be used by leaders to effectively foster group cohesion and to develop a strong group/

organizational culture (Holmes & Marra, 2006; Memer-Magnus et al., 2012; Romero & Cruthirds, 2006).

Subordinate effectiveness. It is commonly believed by leaders, subordinates, and scholars alike that leader humor has a significant impact on various forms of subordinate effectiveness (e.g., task performance, contextual performance, creativity). For instance, research has demonstrated that the most effective leaders highly value humor as a means for supporting subordinate effectiveness (Holmes & Marra, 2006). At the same time, research has shown that subordinates view competent communication from leaders, such as leaders' effective use of humor, as an important contributor to subordinate effectiveness (e.g., virtual team effectiveness; Cash-Baskett, 2011).

Findings from additional research strongly support this contention. As it turns out, however, the relationship between leader humor and subordinate effectiveness is often quite complex. This is particularly true with regard to the relationship between leader humor and subordinates' general work/task performance. Numerous studies have examined this relationship and have yielded significant results. For instance, in a study conducted by Avolio and colleagues (1999), it was found that leaders' use of humor demonstrated direct positive relationships with both individual-level and unit-level subordinate performance. In the same study, however, leader humor was also found to interact with leadership style in predicting individual-level and unit-level subordinate performance. Specifically, findings from this study reveal that particular leadership styles are more strongly (e.g., contingent reward leadership) or more weakly (e.g., laissez-faire leadership) associated with subordinate performance when leaders use humor. Additional research has also revealed interactions between leader humor and leadership style in predicting subordinate performance. Namely, in their study of school principals and teachers,

Vecchio et al. (2009) found that low levels of leader humor are likely to be associated with low levels of subordinate performance and that low leader humor is particularly detrimental to subordinate performance when the leader also demonstrates low levels of contingent reward leadership and low levels of integrity. From a recent study conducted with engineers and foreman working in the construction industry (Ogunlana et al., 2006), even more complex relationships between leader humor and subordinate performance have emerged involving interactions between leader humor and various other leader characteristics (aside from leadership style). Specifically, it was found that leader humor only consistently enhances subordinate performance under certain conditions while, under other conditions, it may actually hinder it. Namely, findings suggest that the relationship between leader humor and subordinate performance depends heavily on various factors such as the leader's age, tenure, experience, and personality. For example, Ogunlana et al. (2006) found that leader humor is more consistently positively associated with subordinate performance among older, more experienced, introverted leaders, while among younger, less experienced, extraverted leaders humor demonstrates more inconsistent and negative effects on subordinate performance. Numerous other interactions similar to these were also found by Ogunlana and colleagues (2006).

In addition to subordinates' general work/task performance, the extant literature suggests that leader humor also has an impact on other forms of subordinate effectiveness. For example, theory and research suggest that significant relationships exist between leader humor and subordinates' creative performance. Specifically, it has been proposed that leaders who use positive workplace humor are likely to stimulate individual- and group-level subordinate creativity and innovation by fostering positive affect among their followers. Leaders who use negative workplace humor are likely to hinder such outcomes, however (Holmes & Marra, 2006;

Hughes, 2009; Romero & Cruthirds, 2006). Additionally, leader humor has been found to be associated with subordinates' contextual performance (i.e., behaviors that serve to maintain the broader organizational, social, and psychological environment within which the organization's technical core functions; Borman & Motowidlo, 1993). Specifically, in a study conducted by Cooper (2002), leader humor was found to positively impact subordinate organizational citizenship behaviors by fostering high-quality leader-member exchange relationships.

Taken together, findings from prior research suggest that leader humor has a significant impact on many important forms of subordinate effectiveness (e.g., task performance, contextual performance, creativity), both at the individual and group levels. Further, this research reveals that the strength and direction of the relationships between leader humor and subordinate effectiveness are heavily contingent upon many factors (e.g., various leader characteristics).

The Current Study

Purpose and scope. Review of the extant workplace humor literature reveals that, although there is a sizable body of work dedicated to understanding how employees' own humor impacts their own outcomes, as well as how leader humor impacts subordinate employees' outcomes, there is a significant paucity of research dedicated to understanding how employees are impacted by the humor of their peers (i.e., coworkers and teammates; Mesmer-Magnus et al., 2012). Addressing this gap in the workplace humor research is particularly important given recent workplace trends. Because of the increasing prevalence of organizations that rely on group/team-based work designs and because individuals spend a relatively large amount of time with their coworkers, employees tend to engage in both frequent and intensive interactions with their peers in the workplace (e.g., Basford & Offerman, 2013; Chiaburu & Harrison, 2008; Sias,

2009). Such frequent intensive interaction makes it likely that employee outcomes are being significantly influenced by the characteristics and behaviors of their coworkers, perhaps to a greater degree than they are being influenced by the characteristics and behaviors of their leaders, with whom they tend to interact less frequently and intensively (e.g., Basford & Offerman, 2013; Chiaburu & Harrison, 2008; Sias, 2009). As such, it is critical that an understanding be developed of how employees are impacted by the humor of their peers with whom they work. Thus, the primary purpose of the current study is to fill an existing gap in the workplace humor literature by examining whether, when, and in what way employees' well-being and effectiveness is affected by the humor of their coworkers.

Examination of prior workplace humor research also reveals that possible interactions occurring among an employee's humor and that of others in the workplace (e.g., leaders, coworkers) have been woefully understudied. It is critical that such interactions be explored by scholars so as to determine whether the impact of coworker humor on their fellow employees' well-being and effectiveness varies substantially depending on the humor of the employees themselves. Further, it may also be important to determine whether the impact of an employee's humor on his/her own well-being and effectiveness varies substantially depending on the humor of the individuals with whom he/she works. Exploring interactions between employee and coworker humor is important because person-environment interactions similar to these have frequently been found to occur within organizations and to contribute significantly to our understanding of various organizational phenomena, including employee well-being and effectiveness (e.g., Edwards, 1996; Greguras & Diefendorff, 2009; Jimmieson, McKimmie, Hannam, & Gallagher, 2010; Kamdar & Van Dyne, 2007; Kim, Kim, & Shin, 2011; Kristof-Brown, Barrick, & Stevens, 2005; Kristof-Brown, Jansen, & Colbert, 2002; Kristof-Brown,

Zimmerman et al., 2005; Miles & Perrewé, 2011; Perry, Dubin, & Witt, 2010; Pithers & Soden, 1999; Seong & Kristof-Brown, 2012; Totterdell, Herschovis, Niven, Reich, & Stride, 2012; Yang, Levine, Smith, Ispas, & Rossi, 2008). Without a complete understanding of how employee humor and coworker humor interact, errors may be made in trying to predict and/or to achieve specific outcomes by collecting information about or by manipulating humor within organizations. Further, prior research shows that information regarding person-environment interactions tends to explain and predict outcomes better than information regarding personal or environmental characteristics alone or combined (e.g., Barrick et al., 2001; Kristof-Brown, Zimmerman et al., 2005). Therefore, consideration of employee-coworker humor interactions would likely enhance our ability to explain variance in employee well-being and effectiveness outcomes above and beyond that which can be explained by considering each individually, either alone or combined. As such, the current study examines the ways in which coworker humor and employee humor interact to influence employee well-being and effectiveness.

By exploring the effects of coworker humor on employee outcomes, as well as the degree to which those effects are contingent upon employees' own sense of humor, the current study has the potential to contribute to organizational science and practice in a number of ways. First, although much is already known about how employees' own characteristics (e.g., humor, personality, motivation) impact their own well-being and effectiveness, the current study will help to shed light on the degree to which employees' well-being and effectiveness is also likely to be impacted by the characteristics (e.g., humor, personality, motivation) of their coworkers and, therefore, the degree to which such phenomena should be the focus of future research and considered in the prediction and manipulation of employee outcomes (e.g., development of organizational policies, such as selection and training policies). As was discussed above,

understanding how coworker humor in particular impacts employee outcomes and how it interacts with employee humor to do so has the potential to significantly heighten the success of efforts related to predicting and manipulating employee outcomes in the workplace. Second, findings from the current study may help organizations to accurately assess the value of selecting employees based on the degree to which they are humorous. Specifically, if findings from the current study indicate that a single employee's humor not only impacts his/her own well-being and effectiveness, but that it also impacts the well-being and effectiveness of those around him/her, then that would suggest that each individual employee's humor may be impacting organizations to a degree that is much different (i.e., greater or lesser) than was previously estimated. This, in turn, would suggest that organizations may wish to adjust the degree to which they include information about employee humor in their personnel selection decisions. Related to this, results of the current study will help shed light on whether organizations may benefit from selecting individuals based, not only on their own humor, but also on the humor of the individuals with whom they will be working. Further, developing a deeper understanding of how employee humor and coworker humor interact would allow organizations to place existing employees and to compose workgroups/teams (i.e., manipulate humor composition of workgroups) in ways that are likely to maximize individual employees' well-being and effectiveness and, therefore, organizational performance. Lastly, in addition to informing personnel selection and workgroup composition practices, results from the current study may inform personnel training efforts as well. In particular, if findings indicate that the humor of each individual employee has the potential to impact the well-being and effectiveness of multiple others within the organization, this would suggest that training employees to use humor

appropriately in the presence of their coworkers may be an effective and efficient way to enhance organizational performance.

As a first step toward addressing the observed gaps in the workplace humor literature and toward achieving the goals outlined above, relationships between specific forms of coworker humor, employee humor and employee well-being and effectiveness are empirically examined in the current study. Namely, this study involves an examination of *positive coworker humor behavior* specifically. Coworkers' humor *behavior* is examined in the current study, as opposed to coworkers' humor disposition, because humor behavior is the form of coworker humor that can be readily observed/noticed by others in the workplace. Therefore, it may be the form of humor that is most likely to have an effect on other employees' well-being and effectiveness. Although coworker humor behavior is the focus of the current study, it is expected that such behavior is in fact linked to and therefore perceived by others as indicative of coworkers' dispositional humor (e.g., Church et al., 2008; Fleeson & Gallagher, 2009; Martin, 1996; Martin & Lefcourt, 1984; Thorson & Powell, 1993; Wu & Clark, 2003). Further, because prior research has found several differences with regard to how positive and negative humor function in the workplace (e.g., Doosje et al., 2010; Hawkins, 2008; Malinowski, 2009), it is important that the effects of positive and negative coworker humor be studied independently. In the current study, the focus is placed on *positive* forms of coworker humor, as opposed to negative forms, in part because there is a larger body of research dedicated to positive workplace humor which could help to guide hypothesis development and study design. In addition, because coworker humor is experimentally manipulated in the current study (through the use of study confederates), ethical concerns are associated with intentionally exposing study participants to certain forms of negative humor (e.g., aggressive humor) that are likely to cause them excessive discomfort.

Lastly, because a primary goal of the current study is to find practical ways to enhance employee well-being and effectiveness, exploring the effects of positive coworker humor (versus negative coworker humor) is likely a more fruitful approach since positive workplace humor has consistently been shown to benefit employees (e.g., Doosje et al., 2010; Fitzell & Pakenham, 2010; Hawkins, 2008; Malinowski, 2009; Mesmer-Magnus et al., 2012; Riolli & Savicki, 2010), whereas negative workplace humor has not (e.g., Doosje et al., 2010; Hawkins, 2008; Malinowski, 2009).

In addition to positive coworker humor behavior, the current study involves an investigation of employees' own dispositional humor (i.e., sense of humor). *Employee sense of humor* is the focus of this study primarily because it is expected that, not only are employees' humor behaviors likely to impact their well-being and effectiveness, but their attitudes and feelings toward humor (e.g., their coworkers' humor) are likely to matter as well. Such information about employee humor is likely to be best captured using dispositional humor measures, as these measures are able to assess multiple aspects of humor including humor-related behavior, cognition, and affect (e.g., Thorson & Powell, 1993).

In addition to these specific forms of coworker and employee humor, the current study explores several specific employee outcomes. Because positive workplace humor, in general, has been shown to have a significant impact on employees' well-being and effectiveness (e.g., Decker & Rotondo, 2001; Doosje et al., 2010; Fitzell & Pakenham, 2010; Gkorezis et al., 2011; Hawkins, 2008; Hester, 2010; Mesmer-Magnus et al., 2012; Malinowski, 2009; Riolli & Savicki, 2010; Susa, 2002; Thompson, 2009; Van den Broeck et al., 2012; Wojtyna & Stawiarska, 2009; Young, 2009), the current study begins the investigation of the effects of coworker-employee humor interactions by examining their impact on a number of employee well-being and

effectiveness outcomes. Specifically, *employee strain* is examined in this study as an indicator of employee well-being. Focus is placed on examining the impact of coworker-employee humor interactions on employee strain primarily because of the important role that employee strain plays in determining the overall well-being of employees and of organizations. Employee strain has been linked to a number of negative long-term outcomes at both the individual and organizational levels (e.g., Sonnentag & Frese, 2003). This includes, but is not limited to, an increased incidence of various mental and physical disorders (e.g., Darr & Johns, 2008; Strazdins, D'Souza, L.-Y. Lim, Broom, & Rodgers, 2004) as well as increased healthcare expenditures (e.g., Manning, Jackson, & Fusilier, 1996), absenteeism (e.g., Darr & Johns, 2008), and decreases in effectiveness (e.g., Lang, Thomas, Bliese, & Adler, 2007). Further, employee strain may play a role in determining the overall well-being of society. It has been estimated, for example, that the cost of employee stress to the U. S. economy is in the billions of dollars (Aldred, 1994; Mulcahy, 1991). Because research has shown that various forms of employee strain exist (i.e., affective, cognitive, physical; de Jonge & Dormann, 2006), multiple indicators of it will be explored in the current study in an effort to capture the full criterion domain.

Employee performance is also examined in the current study as an indicator of employee effectiveness. It is important that this study includes explorations of how coworker-employee humor interactions impact employee performance because, ultimately, employee performance is what drives organizational effectiveness (e.g., Vallance, Glickman, & Suci, 1953). For this reason, it often appears as a key criterion throughout the organizational science literature; the workplace humor and occupational stress literatures included (e.g., Lang et al., 2007; Mesmer-Magnus et al., 2012). Just as there are multiple forms of employee strain, there exist multiple forms of employee performance (e.g., interpersonal performance, task performance, creative

performance; e.g., Bartram, 2005; Borman & Motowidlo, 1993; Campbell, McCloy, Oppler, & Sager, 1993; Campbell, McHenry, & Wise, 1990; Morgan, Salas, & Glickman, 1993; Zhang & Bartol, 2010; Zhou & Shalley, 2003). Thus, multiple indicators of employee performance are explored in the current study.

With the purpose and scope of the proposed research in mind, a description of the current study will begin with the presentation of complete definitions for each study variable. Following this, the relationships that are expected to exist between study variables (based on theory and prior research) will be described and a set of specific testable hypotheses will be proposed. Finally, an empirical test of the hypothesized relationships will be described and findings will be discussed in the context of prior, current, and future theory, research, and practice.

Study variables. A number of variables and the relationships existing among them are examined in the current study. As discussed above, the variables of primary interest in this research include employee and coworker humor, employee strain, and employee performance. Prior research reveals that all of these constructs are somewhat complex in nature. As such, providing a working definition of each as they are conceptualized in the context of the current study is warranted and will serve as a helpful introduction to later discussion of the expected relationships among them.

Humor. Above, a detailed description of the workplace humor construct was provided. In addition, some information has already been given about the specific forms of humor that are the focus of the current study. Here, a brief summary of how both coworker humor and employee humor are being conceptualized in the context of the present research will be provided.

Coworker humor. In the current study, the term coworker humor is used to refer to the positive humor behavior of employees' coworkers. Specifically, coworker humor is being

defined as a coworker's laughing and joking related to their own or others' self-enhancing and affiliative humor, as each of these concepts were described above. This definition is consistent with prior theory and research related to humor behavior and positive workplace humor (e.g., Mesmer-Magnus, 2012; Sala, 2000; Sala et al., 2002).

Employee humor. In the current study, the term employee humor is used to refer to the sense of humor of employees. Specifically, employee humor is being defined as an employee's dispositional tendency to produce humor, appreciate and recognize humor, hold positive attitudes toward humor, and to use humor to cope or adapt, as each of these concepts were described above. This definition is consistent with prior theory and research related to dispositional humor (e.g., Mesmer-Magnus, 2012; Thorson & Powell, 1993).

Strain. A key variable being explored in the current study is employee strain. Employee strain is most commonly conceptualized as being one of the three principal components of the larger employee stress construct or, as it is sometime referred to, the employee stress process (e.g., Jimmieson et al., 2010). The other two principal components of the employee stress process include stressors and resources. Job stressors are frequently described as events or conditions within the work environment which demand that an employee exert some form of effort (i.e., affective, cognitive, or physical effort). The second component of the employee stress process includes the resources available to the employee (i.e., affective, cognitive, or physical resources), either from internal or external sources, which help them to meet the demands placed on them by stressors and, therefore, serve to protect them from experiencing the negative consequences of stressor exposure. Whenever the stressors present in the environment exceed the resources available to an employee, the third component of the employee stress process is likely to emerge; that is, employee strain. Employee strain is frequently described as one of the

potential products of an employee's exposure to job stressors. It is commonly defined as an employee's experience of negative events or states, with which come associated costs (de Jonge & Dormann, 2006; Schaufeli & Bakker, 2004).

Just as stressors and resources may come in multiple forms, employee strain may also manifest itself in many ways. Specifically, scholars have identified three types of job strain; affective strain, cognitive strain, and physical strain (de Jonge & Dormann, 2006). Therefore, employee strain is typically measured by assessing disruptions in employees' affective, cognitive, and/or physical systems following stressor exposure using either (or both) subjective (e.g., self-report inventories; e.g., de Jonge & Dormann, 2006; Jimmieson et al., 2010; Lin, Kain, & Fritz, 2013) and/or objective (e.g., cognitive functioning tests, blood pressure monitors, hormone testing; e.g., Ganster, Fox, & Dwyer, 2001; Kim, 2006; Schwartz, Pickering, & Landsbergis, 1996) methods of measurement. Prior research demonstrates that, in response to stressor exposure (even exposure to a single stressor), employees may experience just one type of strain or they may experience multiple types. As a result, it is not uncommon for employees to experience many forms of job strain simultaneously. In order to thoroughly explore the employee strain construct and its relationships with employee/coworker humor and employee performance, all three forms of strain are explored in the current study. In addition, employees' overall perceived strain is also explored.

Affective strain. In the current study, the term affective strain is used to refer to the unpleasant affective experiences of employees which serve to disrupt employees' affective systems and which vary from employees' regular affective state. This definition is consistent with prior conceptualizations of affective strain found in the theoretical and empirical literatures (e.g., Edwards, Caplan, & Harrison, 1998; Cheung & Tang, 2010; Lin et al., 2013).

Cognitive strain. In the current study, the term cognitive strain is used to refer to the unpleasant cognitive experiences of employees which serve to disrupt employees' cognitive systems and which vary from employees' regular cognitive state. This definition is consistent with prior conceptualizations of cognitive strain found in the theoretical and empirical literatures (e.g., Cheung & Tang, 2010; Lin et al., 2013).

Physical strain. In the current study, the term physical strain is used to refer to the unpleasant physiological experiences of employees which serve to disrupt employees' physiological systems and which vary from employees' regular physiological state. This definition is consistent with prior conceptualizations of physical strain found in the theoretical and empirical literatures (e.g., Edwards et al., 1998; Cheung & Tang, 2010; Lin et al., 2013).

Perceived strain. In the current study, the term perceived strain is used to refer to employees' own perceptions of the degree to which are experiencing strain in general. This definition is consistent with prior conceptualizations of perceived strain found in the literature (e.g., Kim, 2006; Wofford & Goodwin, 2002).

Performance. Much like employee strain, employee performance is a multidimensional construct. As such, scholars have proposed that employee performance may take many forms (Bartram, 2005; Borman & Motowidlo, 1993; Campbell, et al., 1993; Campbell et al., 1990; Morgan et al., 1993). Due to the social nature of the modern workplace and the widespread use of workgroups and teams, employees are often required to engage in both technical behaviors involving interactions with their own personal job tasks, as well as social behaviors involving interactions with others at work (e.g., coworkers, customers). Because of this, the employee performance construct has often been conceptualized as including both interpersonal performance and task performance (e.g., Barrick, Parks, & Mount, 2005; Campbell, et al., 1993;

Campbell et al., 1990; Viswesvaran, Ones, & Schmidt, 1996; Wisecarver, Carpenter, & Kilcullen, 2007; Zazanis, Zaccaro, & Kilcullen, 2001). Use of this performance taxonomy is common throughout the organizational science literature, including the literature related to workplace humor (e.g., Robert & Wilbanks, 2011). Throughout the extant literature, task performance is generally defined as being specific to the position that an employee holds and as being based on the degree to which employees successfully complete their technical tasks and interact with various aspects of their assigned tasks, such as tools, equipment, technology, data, and/or customers. Interpersonal performance, on the other hand, is not necessarily specific to an employee's position and/or technical responsibilities. Instead, it is a form of performance that is based on the degree to which employees successfully interact with others in the workplace. Within a workgroup/team setting, employees' interpersonal performance is largely based upon the degree to which they help their coworkers achieve their own personal goals as well as the degree to which they work cooperatively with their coworkers in order to achieve group/team goals (e.g., Barrick et al., 2005; Campbell, et al., 1993; Campbell et al., 1990; Viswesvaran et al., 1996; Wisecarver et al., 2007; Zazanis, et al., 2001). In order to thoroughly explore employee performance and its relationships with coworker/employee humor and employee strain, it is important that the full performance domain be examined (e.g., Bartram, 2005; Morgan et al., 1993; Motowidlo, Borman, & Schmit, 1997; Wisecarver et al., 2001). Thus, in the current study, both the interpersonal and task performance of employees are investigated.

Interpersonal performance. In the current study, the term interpersonal performance is used to refer to the degree to which employees successfully interact with their coworkers in order to assist them in the achievement of their own personal goals and in order to cooperate with them in the achievement of workgroup goals. This definition of interpersonal performance is

consistent with prior theory and research related to employee performance (e.g., Barrick et al., 2005; Campbell, et al., 1993; Campbell et al., 1990; Viswesvaran et al., 1996; Wisecarver et al., 2007; Zazanis, et al., 2001).

Task performance. In the current study, the term task performance is used to refer to the degree to which employees successfully complete the technical tasks to which they are assigned and successfully interact with the tools, equipment, technology, and data associated with their position. This definition of task performance is consistent with prior theory and research related to employee performance (e.g., Barrick et al., 2005; Campbell, et al., 1993; Campbell et al., 1990; Morgan et al., 1993; Viswesvaran et al., 1996; Wisecarver et al., 2007; Zazanis, et al., 2001).

Expected relationships between study variables. Prior theory and research suggests that complex relationships exist between coworker humor, employee humor, and employee strain and performance. Specifically, it is likely that coworker humor and employee humor interact to directly impact both employee strain and employee performance. In addition, employee strain likely plays a role in mediating the relationship between coworker/employee humor and employee performance. Below, the precise nature of the relationships expected to exist between the variables included in this study will be detailed and support for these relationships will be presented from the extant literature.

Evidence for coworker humor effects. “*He’s comic relief*” (anonymous long-duration spaceflight astronaut, National Aeronautics and Space Administration).

The above words were spoken by a NASA LDSF astronaut when describing one of his fellow LDSF crew members during a recent interview conducted as part of an LDSF crew training needs analysis (Smith-Jentsch et al., 2011). Although succinct, this statement speaks

volumes about how LDSF astronauts view humorous coworkers and how coworker humor potentially impacts crew members' strain and performance during LDSF missions.

In line with sentiments expressed by LDSF astronauts, extant theory coupled with findings from prior research suggest that employees' strain and performance is likely to be heavily influenced by the humor of their coworkers (e.g., Avolio et al., 1999; Cash-Basket, 2011; Francis et al., 1999; Gockel, 2007; Grugulis, 2002; Holmes & Marra, 2006; Hughes, 2009; Huo et al., 2012; Kahn, 1989; Kurtzberg et al., 2009; Locke, 1996; Lynch, 2010; Moran, 1996; Morkes et al., 1999; Ogunlana et al., 2006; Plester & Orams, 2008; Robert & Wilbanks, 2011; Romero & Cruthirds, 2006; Susa, 2002; Thompson, 2009; Vecchio et al., 2009; Walkowicz, 1994; Yao, 2005). This theory and research comes not only from the workplace humor literature, but also from the non-workplace humor literature, as well as from other streams of research found throughout the organizational science literature.

Evidence from the non-humor literature. The significant degree to which individuals' outcomes may be impacted by the characteristics and the behaviors of others around them has been widely acknowledged by scholars for decades. In fact, a number of well-supported theories found in the psychological literature are based almost completely upon the idea that individuals' thoughts, feelings, attitudes, and behaviors are significantly influenced by the observable actions of those around them. Social Learning Theory (Bandura, 1977), Social Information Processing Theory (Salancik & Pfeffer, 1978), and theory involving the concepts of sensemaking and sensegiving (e.g., Gioia & Chittipeddi, 1991), for example, each center around the notion that individuals tend to observe the behavior of others in order to determine (either consciously or unconsciously) how they themselves should feel, what they should think, and how they should behave in social situations. As a result of this phenomenon, several researchers have

demonstrated that meaningful relationships exist between various work-related outcomes experienced by individuals and the characteristics of those around them. These include outcomes related to individuals' well-being (e.g., strain) and effectiveness (e.g., performance).

For example, individuals' attitudes (e.g., job attitudes; Savell, Teague, & Tremble, 1995), affective states (e.g., emotions, moods; e.g., Bono & Ilies, 2006; Cherulnik, Donley, Wiewel, & Miller, 2001; Johnson, 2008, 2009; Sy, Côté, & Saavedra, 2005), and motivational states (e.g., goals; Aarts, Gollwitzer, & Hassin, 2004; Dik & Aarts, 2007; Loersch, Aarts, Payne, & Jefferis, 2008) have all been shown to be directly influenced by the attitudes, affect, and motivation (respectively) of those surrounding them (e.g., leaders, observable others). In addition, recent research suggests that individuals' own strain levels may be directly impacted by the strain levels of the individuals around them, causing them to experience what has been called second-hand stress. Specifically, a series of studies have shown that inhalation of others' emotional stress-induced sweat increases individuals' attention to and alertness of potential threats in their environment as well as the degree to which they startle in response to a potential threat (e.g., Mujica-Parodi et al., 2009; Prehn, Ohrt, Sojka, Ferstl, & Pause, 2006; Pause, Adolph, Prehn-Kristensen, & Ferstl, 2009; Rubin, Botanov, Hajcak, & Mujica-Parodi, 2011). Taken together, these findings suggest that just by being around others who hold particular characteristics (e.g., attitudes, feelings) individuals are more likely to adopt those characteristics themselves. This is because the characteristics of others manifest themselves in the form of observable behaviors; behaviors that may be as obvious as goal-setting or as subtle as sweating. In turn, individuals interpret these behaviors as clues regarding which attitudes, feelings, thoughts, and behaviors they themselves ought to adopt and to display in that particular situation. In other words,

individuals often look to the behaviors of others around them in order to determine which characteristics are most appropriate to adopt at any given moment and in any given situation.

In addition to the contagion-like processes that have been shown to affect individuals' outcomes, several other social and psychological forces also serve to facilitate relationships between individuals' strain and performance and the various characteristics of others around them. For instance, theory and research suggests that the characteristics of others can serve as both stressors and resources to individuals and, as such, they can have a significant impact on individuals' strain and ultimately their performance. A number of interpersonal and social factors that have been identified as common workplace stressors (e.g., interpersonal conflict; e.g., Adams & Buck, 2010; Ilies, Johnson, Judge, & Keeney, 2011; Jaramillo, Mulki, & Boles, 2011; Repetti, 1993; Story & Repetti, 2006), for example, may stem from negative characteristics of other individuals in the workplace (e.g., personality characteristics such as disagreeableness that involve the tendency to engage others in conflict; e.g., Graziano, Jensen-Campbell, & Hair, 1996). Conversely, a number of factors that have been identified as common workplace resources (e.g., social support; e.g., Beehr, Jex, Stacy, & Murray, 2000; Mayo, Sanchez, Paster, & Rodriguez, 2012) may stem from the positive characteristics of others in the workplace (e.g., personality characteristics such as agreeableness and extraversion that involve the tendency to provide social support to others; e.g., Bowling, Beehr, & Swader, 2005).

There are a number of other processes by which individuals' performance in particular may be impacted by the characteristics and behaviors of those around them. Dating back to the now classic Hawthorne studies conducted at the Western Electric Company's Hawthorne Works in Illinois during the 1920s and 1930s (Roethlisberger & Dickson, 1939), researchers have been finding that employees' social environment often plays a greater role in determining their

performance than their own characteristics or the characteristics of their job or organization.

During the wage incentive plan studies conducted at the Western Electric Company's Hawthorne Works, for example, despite the fact that employees were told that their pay would be based on their own productivity, researchers observed employees systematically underperforming relative to their potential. It was concluded that this phenomenon occurred primarily due to the influence of their coworkers and, specifically, the performance norms established and enforced by their coworkers. Observing the performance levels of others in their workgroup, employees adjusted their own performance to match that of their coworkers; in part because of the negative social repercussions that were associated with outperforming the rest of the group.

In addition to the Hawthorne studies, several other studies have yielded support for the idea that individuals' performance is significantly impacted by the characteristics, behaviors, and sometimes the mere presence of their coworkers. Research conducted in the field of social psychology, for instance, has led to the identification of several workgroup phenomena based on this idea. Specifically, it has been found that individuals' tend to perform differently when working with others in a group, as compared to when they complete work independently. In some cases, individuals' performance increases when working in a group through the process of social facilitation (i.e., individuals tend to perform better when they feel that members of their workgroup are evaluating their performance; e.g., Aiello & Douthitt, 2001; Griffith, Fichman, & Moreland, 1989). In other cases, however, individuals' performance decreases when working in a group through the processes of social loafing and free riding (i.e., individuals tend to underperform relative to their potential when they believe that other members of the group will make up for their poor performance; e.g., Griffith et al., 1989; Karau & Williams, 1993; Latané, Williams, & Harkins, 1979). Research related to Equity Theory (Adams, 1963) has also provided

support for the idea that individuals' performance is significantly impacted by the characteristics of others around them. This theory states that individuals compare their own work input/work output ratio to the work input/work output ratio of others around them in order to determine whether there are any discrepancies. If discrepancies are observed, individuals are likely to make attempts to adjust their own ratio in order to achieve equity. One way in which they do this is by adjusting how much they put into their work (e.g., their performance). Thus, individuals' own performance may be heavily impacted by the performance of others around them when it is compared to the work outputs (e.g., compensation) both they themselves and their coworkers receive. Indeed, there is a wealth of empirical evidence emerging from several studies which supports this (e.g., Adams, 1963; Adams & Jacobsen, 1964; Adams & Rosenbaum, 1962; Pritchard, Dunnette, & Gorgenson, 1972).

To summarize, the extant literature suggests that various coworker characteristics do in fact have a significant impact on numerous employee outcomes, including outcomes related to employees' well-being (e.g., strain) and effectiveness (e.g., performance). This supports the idea that coworker humor is likely to play a role in determining employees' strain and performance. In addition to the research already presented, several theoretical arguments and empirical findings found throughout both the workplace and the non-workplace humor literatures also lend support to this idea.

Evidence from the workplace humor literature. Within the workplace humor literature itself, several findings suggest that coworker humor is likely to have an impact on employee strain and performance. Recent research has revealed that individuals tend to be attracted to situations in which they are likely to have fun interactions with coworkers (Tews et al., 2012), to highly value humorous coworkers (Plester & Orams, 2008), to find humorous coworkers to be

more likable (even computer-simulated coworkers; Morkes et al., 1999), to report coworker humor as being positively associated with coworker popularity (Scott, 2007), and to seek social support from coworkers who are likely to provide humorous exchanges when they are experiencing job stress (Jacobs, 2003). These findings suggest that employees believe they receive benefits (e.g., in terms of reductions in their own strain and increases in their own performance) from interactions with humorous coworkers. Several additional findings suggest that, in fact, they may.

A number of scholars have investigated the degree to which employees' personal well-being is impacted by the humor of others around them (e.g., leaders) and by other external sources of humor (e.g., humorous media). Their findings support the idea that employees' strain can be significantly impacted by humor originating from sources other than themselves (i.e., humor in their environment). Although there are several types of strain that employees may experience (e.g., affective, cognitive, physical; de Jonge & Dormann, 2006), most of this research has focused on investigating employees' affective strain, leaving the impact of environmental humor on employees' cognitive and physical strain largely unexplored. For example, current humor theory suggests that the positive affect of employees (an aspect of well-being and potential indicator of strain) is likely to be positively influenced by their coworkers' humor (Robert & Wilbanks, 2011). Although direct tests of this theory have yet to be conducted, it has been found that medical professionals often use humor in order to regulate the positive and negative affect (indicators of affective strain) of their patients (Francis et al., 1999; Locke, 1996) and proposed that leaders' use of positive humor is positively associated with their subordinates' positive affect (leaders' negative humor is expected to be negatively related to subordinates' positive affect, however; Hughes, 2009). Further, research related to the effects of computer-

generated humor has shown that employees' affective well-being is likely to be impacted by their coworkers' humor. Specifically, it has been shown that when individuals work on a task with computer-simulated coworkers that produce humorous statements (or even just computers that produce humorous statements) they tend to demonstrate more behavioral signs of positive affect, such as smiling and laughing (Morkes et al., 1999). This literature suggests that individuals' positive affect is in fact likely to be impacted by the humor of others' around them (e.g., coworkers). In addition, the effects of external sources of humor on other indicators of employee well-being/strain have also been explored. For example, a significant negative relationship has been observed among interviewers' humor and the anxiety levels of interviewees during selection interviews (Carless & Imber, 2007). In addition, reductions in the anxiety levels of healthcare workers have been observed after they were instructed to watch videos with humorous content (Moran, 1996). Further, several findings suggest that leaders' positive humor serves to reduce strain among subordinates (leaders' negative humor has been associated with increased subordinate strain, however; Huo et al., 2012; Romero & Cruthirds, 2006) and is negatively related to subordinates' level of burnout (Mertz, 2000; Spurgeon, 1998). Finally, findings from the group-level workplace humor literature also suggest that individuals' strain may be impacted by the humor of others in their workgroup. Humor has been acknowledged to be an important tool for reducing tension in workgroups and for protecting group members from the negative effects of stressors (Bolman & Deal, 1992; Henman, 1998; Plester & Orams, 2008; Thompson, 2009). In addition, research has found it to be positively associated with group members' perceptions of positive affect within the group (Gockel, 2007). Although the extant research related to group-level humor has not considered its impact on individual group-members' well-being/strain, these prior findings suggest that group members' humor may be impacting the well-

being and strain of their fellow group members, resulting in the emergence of group-level well-being/strain. Taken together, these findings suggest that individual employees' well-being is significantly influenced by the humor they are exposed to in their environment.

In addition to the studies investigating the degree to which employees' personal well-being (e.g., strain) is affected by the humor originating from sources in their environment, several studies have examined the effects of such humor on various form of employee effectiveness. A number of studies investigating the effects of environmental humor on individuals' interpersonal performance specifically have yielded findings which suggest that employees are more likely to engage in effective interpersonal behaviors when others in their work environment use humor. Some researchers have found, for example, that when individuals were asked to complete a task with a computer-simulated coworker, in addition to being more sociable in their interactions with their coworker, they also were more cooperative when their simulated coworker used humor (as compared to when their simulated coworker did not use humor; Morkes et al., 1999). Other researchers have suggested that leaders' use of humor is positively related to subordinates' interpersonal performance. Effective leaders often use positive humor to enhance interpersonal performance among their subordinates, which is believed to result in enhanced communication among subordinates, as well as reduced conflict (e.g., Holmes & Marra, 2006; Romero & Cruthirds, 2006). Findings from the group-level workplace humor research also suggest that individual employees' interpersonal performance may be positively impacted by the humor of their coworkers. Specifically, it has been found that positive humor is often used by workgroup members to facilitate communication, collaboration, decision-making, and positive group change, as well as to minimize conflict (negative humor has been found to hinder some forms of interpersonal performance, however; e.g., Grugulis, 2002; Kahn, 1989;

Lynch, 2010; Plester & Orams, 2008; Thompson, 2009; Walkowiec, 1994). Although these findings come from research which did not specifically investigate the effects of humor on individual-level interpersonal performance, the results suggest that group members' humor may be impacting the interpersonal performance of their fellow group members, resulting in the emergence of effective group-level interpersonal processes. This phenomenon may be due in part to the fact that, compared to non-humorous coworkers, employees are more likely to find their humorous coworkers to be likable (Morkes et al., 1999). Therefore, just as it is expected that employees are more likely to provide social support to humorous coworkers who they find to be more likable (Moran & Hughes, 2006), employees may also be more motivated to engage in effective interpersonal interactions with such coworkers. Thus, the likability of humorous coworkers may be one mechanism by which they impact their fellow group members' interpersonal performance. Taken together, these findings suggest that individual employees' interpersonal performance behaviors are significantly influenced by the humor they are exposed to in their environment.

In addition to employees' interpersonal performance, several studies have explored the impact of environmental humor on employees' task performance. For example, one study found that individuals who viewed commercials with humorous content performed better on tasks involving emotional labor than individuals who had not viewed the humorous content (Yao, 2005). Additional research related to the effects of leaders' humor on subordinates' effectiveness has produced findings that are consistent with these results. Leader humor is viewed by many as being an effective tool for promoting subordinates' effectiveness (Cash-Baskett, 2011; Holmes & Marra, 2006) and findings from prior research tend to support this belief. Specifically, in several studies leaders' use of humor has been found to be positively related to both individual-level and

group-level subordinate performance (Avolio et al., 1999; Ogunlana et al., 2006; Vecchio et al., 2009). Findings from the group-level workplace humor research also provide support for the idea that employees' task performance may be enhanced by the humor of others in their workgroup. Humor has been identified as an effective facilitator of workgroup performance (Holmes, 2007b; Romero & Pescosolido, 2008; Sweeney, 1999) and there is a substantial amount of empirical evidence to support this. For example, positive organizational-level humor has been found to be linked to high levels of job performance among organizational members (negative humor has been linked to low levels of job performance, however; Susa, 2002). In addition, within negotiation groups, the use of humor has been linked to gains that are both higher and fairer for each member involved in the negotiation (Kurtzberg et al., 2009), suggesting that the performance of each member is enhanced by the use of humor. Taken together, these findings suggest that individual employees' performance on their job tasks is significantly influenced by the humor they are exposed to in their environment.

Finally, researchers have also investigated the degree to which other forms of employee performance are impacted by environmental humor, such as employees' creative and contextual performance. For example, significant positive relationships have been proposed to exist between leaders' use of positive humor and both individual- and group-level subordinate creativity and innovation, and some qualitative support for this has been found (leaders' negative humor is expected to hinder subordinates' creativity and innovation, however; Holmes & Marra, 2006; Hughes, 2009; Romero & Cruthirds, 2006). In addition, leader humor has been shown to be positively related to subordinates' organizational citizenship behaviors (Cooper, 2002). Again, findings from the group-level research also suggest that employees' effectiveness may be facilitated by humor in their work environment. For instance, group-level research has revealed

significant associations between positive humor in the organization and organizational creativity (Susa, 2002), further supporting the idea that exposure to positive humor in the workplace may enhance the creativity of organizational members.

Although extant theory and prior research suggest that humor present in employees' work environment, and their coworkers' humor in particular, may have direct effects on employees' performance, some evidence suggests that the effects of coworker humor on employees' performance are likely to be due, at least in part, to its effects on employees' strain. For example, it has been proposed that one way in which leaders' humor positively impact subordinates' creative performance is by increasing subordinates' positive affect (Hughes, 2009), which is an indicator of well-being that is often examined to assess individuals' strain (e.g., Dowd, Zautra, & Hogan, 2010; Simpson et al., 2008). In addition, research has found that employees' exposure to humor in their environment may be particularly related to their performance under stressful conditions. Specifically, employees' exposure to humor (i.e., humorous commercials) has been found to buffer them from experiencing performance decrements as a result of exposure to a work stressor (i.e., having to engage in emotional labor). Further, employees' exposure to humor demonstrated a stronger buffering effect on their performance when the nature of the stressor was more intense (i.e., when surface acting emotional labor strategies were used versus deep acting strategies; Yao, 2005). This suggests that the relationship between employees' exposure to humor in their environment (e.g., coworker humor) and their performance may be at least partially due to the fact that it helps them to effectively cope with work stressors.

Evidence from the non-workplace humor literature. In addition to the workplace humor literature, the non-workplace humor literature also offers evidence in support of the idea that coworker humor is likely to impact employee strain and performance. Humor has been found to

reduce strain and to enhance performance among individuals in a variety of settings other than in workgroups and organizations, ranging from classroom to therapeutic settings (e.g., Chiarello, 2010; Dziegielewski, Jacinto, Laudadio, & Legg-Rodriguez, 2004; Prerost, 1983). These findings reveal that various forms of individuals' strain and performance are significantly impacted by humor originating from sources external to themselves (i.e., humorous content found in their environment). As such, they suggest that various forms of employees' strain and performance are also likely to be significantly impacted by humor found in their work environment (e.g., humor originating from their coworkers).

With regard to individuals' strain specifically, a number of studies have been conducted in both laboratory and applied settings which have provided evidence in support of the idea that significant negative relationships exist between individuals' exposure to humorous content and their perceived, affective, cognitive, and physical strain levels. For example, results from one study reveal that individuals who watch humorous videos prior to exposure to a stressor (i.e., prior to completing a graded classroom public speaking assignment) tend to report having lower levels of perceived stress following exposure to the stressor than individuals who did not view such videos (Smies, 2003). Additional research has supported this finding, demonstrating that individuals who are exposed to 20 minutes of humorous content (i.e., a stand-up comedy video) tend to report less psychological distress and greater well-being than individuals who are exposed to a non-humorous documentary for a similar period of time (Szabo, 2003).

Findings from several studies suggest that individuals' affective strain may be particularly impacted by their exposure to humorous stimuli. Specifically, research suggests that humor is associated with relatively low levels of negative affect and high levels of positive affect among individuals who are exposed to stressors (and even among those who are not directly

exposed to a stressor). Several studies have found, for example, that when individuals (e.g., college students) are exposed to humorous material (e.g., stand-up comedy videos, humorous cartoons, humorous lyrics) during or following a stressor (e.g., a test, a crowded room), or even without exposure to a stressor, they tend to experience less negative affect (e.g., anxiety, fatigue, irritation, annoyance, anger) than individuals who are exposed to non-humorous material (e.g., non-humorous poems, documentaries; Abel & Maxwell, 2002; Aiello, Thompson, & Brodzinsky, 1983; Cann, Holt, & Calhoun, 1999; Ford, Ford, Boxer, & Armstrong, 2012; Szabo, 2003) or who engage in other stress-reducing activities (e.g., physical exercise; Szabo, 2003) and less negative affect than they themselves experience prior to their exposure to the humorous material (e.g., Abel & Maxwell, 2002; Geisler & Weber, 2010; Grases Colom, Trias Alcover, Sanchez-Curto, & Zarate-Osuna, 2011; Iocin, 2009). Further, research has revealed that therapeutic interventions which incorporate humor can result in significant decreases in depression among the clinically depressed (Tanyi, Berk, Lee, Boyd, & Arechiga, 2011).

In addition to minimizing individuals' negative affect, evidence suggests that exposure to humor can enhance individuals' positive affect. In particular, research has revealed that individuals who are exposed to humorous material (e.g., stand-up comedy video, humorous lyrics) prior to, during, and/or following exposure to a stressor (e.g., a test, a crowded room), as well as in the absence of a specific stressor, tend to experience greater positive affect (e.g., positive mood, vigor, interest, engagement, enjoyment, hopefulness) than those who are exposed to non-humorous material (e.g., non-humorous videos or lyrics; e.g., Abel & Maxwell, 2002; Aiello et al., 1983; Cann et al., 1999; Dillard, 2006; Filipowicz, 2002; Filipowicz, 2006; Geisler & Weber, 2010) and greater positive affect than they themselves experience prior to their exposure to the humorous material (e.g., Abel & Maxwell, 2002; Vilaythong, Arnau, Rosen, &

Mascaro, 2003). This research suggests that exposure to humorous material may be particularly beneficial for enhancing individuals' positive affect in stressful situations, versus non-stressful situations. For example, it has been shown that individuals enjoy humor more when the nature of the stressor is more intense (e.g., when they are in an uncomfortably crowded room versus a less crowded room; Aiello et al., 1983), suggesting that individuals appreciate the strain-reduction function of environmental humor. In addition to the research which has examined the impact of humorous materials such as video, audio, and written passages, some research has examined the degree to which individuals' positive affect is influenced by the humor of others around them. Specifically, it has been found individuals often use humor in order to regulate the affect of others in a variety of settings (Francis, 1994) and there is some evidence to suggest that their efforts may be met with success. For example, Bippus (2000) found that when distressed individuals are comforted by others who use humor effectively (versus less effectively), they are likely to develop a more positive mood. Finally, findings from prior research related to emotional contagion lend support to the idea that employees' positive affect is likely to be influenced by their coworkers' humor. Specifically, because humor behaviors can be considered indicators of positive affect (e.g., Else-Quest, Hyde, & Hejmadi, 2008; Giuliani, McRae, & Gross, 2008), employees who observe their coworkers' humor behaviors are likely to perceive that their coworkers hold high levels of positive affect. As a result, these employees may be likely to adopt a positive affective state that matches their coworkers' (e.g., Bono & Ilies, 2006; Cherulnik et al., 2001; Johnson, 2008, 2009; Sy et al., 2005). Empirical support for this comes from a recent study conducted by Else-Quest and colleagues (2008) in which humor was conceptualized as an indicator of positive affect. These researchers found a significant positive correlation between the humor usage of children and their mothers' during the completion of their mathematics

homework, suggesting that humor, as an indicator of individuals' positive affect, may be contagious among individuals engaged together in a task.

Taken together, these findings from the non-workplace humor literature strongly suggest that employees' affective strain levels (as indicated by both high negative affect and low positive affect) are likely to be significantly influenced by the humor they encounter in the workplace. This includes humor that is produced by their coworkers.

Findings from several non-workplace humor studies suggest that employees' cognitive strain is also likely to be influenced by the humor of their coworkers. For example, it has been shown that when individuals are asked to complete humorous test item, versus equivalent non-humorous test items, they tend to report that the humorous items are less difficult and tend to prefer them over the non-humorous items (e.g., McMorris, Boothroyd, & Pietrangelo, 1997; McMorris, Urbach, & Connor, 1985). This suggests that employees are likely to perceive tasks to be less difficult when they are simultaneously exposed to humorous content. Because perceived task difficulty has been used as an indicator of cognitive strain (e.g., Ljungberg & Neely, 2007), these findings indicate that exposure to humorous content may significantly decrease employees' cognitive strain. This phenomenon is likely to be due, at least in part, to the demonstrated effects that exposure to humorous environmental stimuli have on individuals' cognitions regarding stressors (e.g., Aiello et al., 1983; Geisler & Weber, 2010) and their cognitive approaches to coping with them (e.g., Aiello et al., 1983; Bippus, 2000).

Research has found that significant relationships exist between individuals' exposure to humor and how they perceive and interpret stressors in their environment. For instance, it has been found that individuals are less likely to perceive a small crowded room (a significant stressor) as being small and depriving them of privacy when they are provided with humorous

audio to listen to while in the room. Instead, they are likely to perceive it as being larger than it is (Aiello et al., 1983). In addition, it has been found that individuals who read humorous lyrics (versus non-humorous lyrics) are more likely to attribute their failure on a test composed of only unsolvable items (a significant stressor) to external causes versus internal causes, which are more likely to threaten their self-esteem (Geisler & Weber, 2010). Taken together these findings suggest that exposure to humor may actually change employees' perceptions of stressors at work, making them less threatening to them and thereby freeing up cognitive resources that might have been used for coping that can instead be used to successfully complete other work-related activities (e.g., Johns, Inzlicht, & Schmader, 2008; Kanfer & Ackerman, 1989; Ståhl, Van Laar, & Ellemers, 2012). Moreover, research suggests that when individuals are exposed to the humor of others around them, they are more likely to utilize adaptive cognitive approaches to dealing with stressors (e.g., Bippus, 2000), which is also likely to reduce the amount of cognitive resources spent on coping instead of on successfully completing other activities (e.g., Johns et al., 2008; Kanfer & Ackerman, 1989; Ståhl et al., 2012). Specifically, it has been found that when distressed individuals are comforted by others who use humor effectively (versus less effectively), they are less likely to spend time ruminating over their problems and are more likely to, instead, develop productive attitudes regarding their problems and to develop confidence in their own ability to successfully deal with their problems (Bippus, 2000). In addition, research has found that when individuals are placed in stressful situations (e.g., a crowded room) they are less likely to seek cognitive distractions (e.g., music, magazines) if they are provided with humorous audio to listen to. This suggests that exposure to humor (e.g., coworker humor) may result in individuals becoming more focused and less distracted during stressful situations (e.g.,

stressful work tasks) because it prevents them from expending their cognitive resources on seeking ways to release their tension (Aiello et al., 1983).

Taken together, these findings from the non-workplace humor literature suggest that employees' cognitive functioning and states are likely to be significantly influenced by their coworkers' humor in the presence of work-related stressors. Specifically, individuals who are exposed to humor in the workplace (e.g., coworker humor) are less likely to expend cognitive resources on coping with workplace stressors (because they are both less likely to perceive the stressors as threatening and are more likely to adopt effective/efficient cognitive approaches to dealing with stressors), leaving more resources free to expend on work-related tasks. This, in turn, is likely to result in less cognitive strain (e.g., indicated by perceptions of their tasks as being less difficult).

Finally, several non-workplace humor studies have yielded findings which suggest that employees' physical strain is likely to be significantly impacted by exposure to their coworkers' humor. Specifically, research has found that individuals' exposure to humor buffers them from experiencing the various negative physiological effects of exposure to stressors. For example, it has been found that individuals who watch humorous videos, versus non-humorous videos, are less likely to experience increases in skin conductance (a common indicator of physical strain/anxiety; e.g., Collet, Averty, & Dittmar, 2009; Ganster, Schaubroeck, Sime, & Mayes, 1991; Trimmel, Meixner-Pendleton, & Haring, 2003) following exposure to a stressor. Additionally, these individuals are likely to experience faster reductions in their heart rate following their exposure to a stressor (Dillard, 2006). Increases in heart rate (and other cardiovascular functions such as blood pressure) and slow cardiovascular recovery are also

common physiological indicators of strain/anxiety (e.g., Collet et al., 2009; Dowd et al., 2010; Ganster et al., 1991; Trimmel et al., 2003).

In addition, exposure to humorous environmental stimuli has also been shown to provide individuals with a number of other physical benefits (extending to improvements in erectile functioning; Kimata, 2008). Some of the most commonly studied physiological benefits of humor exposure include reductions in pain and increases in pain tolerance, as well as increases in immune system functioning. Several empirical studies have revealed that individuals who view humorous material (e.g., stand-up comedy videos) benefit from enhanced immune functioning (Martin, 2001). For example, exposure to humor has been found to contribute to increased concentrations of immunoglobulin A (S-IgA; e.g., Burns, 1996), which play a critical role in defending the human body from illness and has often been used as an indicator of physical strain (with low levels indicating high physical strain; Gallagher, Phillips, Evans, Der, Hunt, & Carroll, 2008). This research has shown that exposure to humor effectively enhances the human immune system even when individuals do not overtly laugh in response to it (Labott, Ahleman, Wolever, & Martin, 1990). This suggests that, in addition to individuals' physical responses to humor (e.g., laughing) having an impact on physiological outcomes (e.g., Martin, 2001; Mesmer-Magnus et al., 2012; Whalen, 2010), the psychological effects of humor exposure also directly play a role in determining physiological benefits. This may explain why scholars have found that exposure to humor is more effective at enhancing the immune system than other physically-focused interventions, such as muscle relaxation therapy (e.g., Burns, 1996). Prior research has also revealed that exposure to humorous environmental stimuli (e.g., stand-up comedy videos, situation comedy videos, parents' use of humor), contributes to individuals perceiving less pain (e.g., post-surgical pain) and to individuals developing a higher tolerance for pain/physical

discomfort (e.g., Chambers, 2001; Martin, 2001; Zillmann, Rockwell, Schweitzer, & Sundar, 1993). As a result, it has been linked to fewer requests for pain medication following surgery (Rotton & Shats, 1996). Unlike its effects on the immune system, the effects of humor exposure on pain-related outcomes has been found to be equivalent to other effective methods of pain management, such as muscle relaxation techniques (Martin, 2001).

Taken together, these findings from the non-workplace humor literature suggest that employees are less likely to experience common negative physiological consequences of being exposed to work stressors when they are also exposed to humorous environmental stimuli (e.g., coworker humor). Some consequences that might be averted following exposure to humor in the workplace include decrements in immune system functioning as a result of physical or psychological stressors (e.g., Burns, 1996; Gallagher et al., 2008; Labott et al., 1990; Martin, 2001), pain/discomfort from physical work demands (e.g., Courvoisier et al., 2011; Chambers, 2001; Martin, 2001; Zillmann et al., 1993), as well as increases in skin conductance and various cardiovascular symptoms of anxiety resulting from workplace stressors (e.g., Dillard, 2006; Ganster et al., 2001; Kim, 2006; Schwartz et al., 1996).

Beyond explorations of how humorous environmental stimuli impact individuals' perceived, affective, cognitive, and physical strain, non-workplace humor researchers have conducted several investigations related to the effects of exposure to humor on various forms of individual performance. Although interpersonal performance is not a commonly studied criterion outside of the workplace humor literature, the effects of humor exposure on other forms of performance (e.g., task performance, creative performance) have been frequently studied by non-workplace humor researchers. Findings from this research suggest that employees' performance

is likely to be significantly influenced by humor they are exposed to in the workplace (e.g., coworker humor).

With regard to individuals' task performance, findings from several studies have revealed that when individuals are presented with messages that involve humorous content, versus non-humorous content, they are likely to exert more cognitive effort and elaboration as well as to exhibit more focus and attention when processing them (e.g., Schmidt & Williams, 2001; Sparks, 2006; Takahashi & Inoue, 2009). As a result of the increased cognitive resources spent on processing it, information that is presented in a humorous fashion tends to be more thoroughly encoded. In turn, such information is more likely to be recalled and recognized correctly later (e.g., Carlson, 2011; Chapman, 1973; Schmidt & Williams, 2001; Sparks, 2006; Takahashi & Inoue, 2009; Thompson, 2000). There is evidence to suggest that these effects of humor on information processing, storage, and retrieval occur even when individuals are not explicitly instructed to remember the information presented to them (e.g., Schmidt & Williams, 2001; Takahashi & Inoue, 2009). Likely a consequence of individuals' tendency to remember humorous material, several studies have shown that students (e.g., statistics students, social psychology students) who receive handouts and/or cartoons with humorous content that is related to the subject of instruction tend to perform better on course tasks (e.g., tests) than individuals who do not receive such humorous content (e.g., Sadowski, Gulgoz, & LoBello, 1994; Zeedyk, 2006).

In addition to its effects on individuals' memory functions (potential indicators of cognitive strain; e.g., Elovainio, Singh-Manous, Ferrie, Shipley, Gimeno, De Vogli, & Kivimäki, 2012), it is also thought that individuals tend to perform better on tasks after exposure to humorous stimuli due to the effects of humor on individuals' anxiety (a common indicator of

affective strain; e.g., Lin et al., 2013; Liu, Yang, & Nauta, 2013). There is a substantial amount of evidence to support this idea. For example, recent research has revealed that individuals who are shown a humorous cartoon prior to taking a difficult math test, versus a non-humorous poem, perform better on the test. This relationship between exposure to humor and test performance was found to be mediated by individuals' state anxiety (Ford et al., 2012). Additional evidence suggests that these effects occur even when it is the task itself which exposes individuals to humorous content. For example, it has been found that when test directions and/or items are written to include humorous content, individuals' tend to perform better on the test (e.g., a biostatistics test with open-ended questions) than when the directions/items are written to be non-humorous (e.g., Berk & Nanda, 2006; McMorris et al., 1997; Smith, Ascough, Ettinger, & Nelson, 1971). Although these effects of humorous task instructions/items may be attributable to their impact on individuals' cognitive functioning (Berk & Nanda, 2006), these effects are particularly likely to occur when the test-takers have high levels of test anxiety (Smith et al., 1971). This suggests that the effects of humorous task content on task performance are in part due to its effects on individuals' anxiety. Further, there is some research to suggest that individuals' perceptions of the humorous task content also matters. Specifically, it has been shown that individuals who perceive test items that were written to be humorous as actually being humorous tend to demonstrate better task performance than individuals who do not perceive such items to be humorous (McMorris et al., 1997).

Finally, there is evidence to suggest that the effects of exposure to humorous stimuli on individuals' task performance may be partially due to its impact on individuals' self-efficacy. Prior research has found that individuals who watch a humorous video prior to engaging in a graded classroom public speaking activity reported higher levels of self-efficacy for future public

speaking activities than individuals who did not watch such a video (Smies, 2003). Such self-efficacy is likely to enhance current and future performance (e.g., Stajkovic & Luthans, 1998). Since these same individuals are also likely to experience lower levels of perceived stress following the activity (Smies, 2003), this suggests that individuals' strain may mediate the relationships between their exposure to humorous stimuli and their task-related self-efficacy (and ultimately their task performance).

Likely a result of all of the above-mentioned mechanisms combined (e.g., cognitive functioning/strain, affective strain, self-efficacy), recent research has revealed that, in some cases (in middle schools), principals' humor has been found to be positively related to students achievement on standardized tests (Lusignolo, 2010). In addition, research has found that children who complete their mathematics homework with mothers who use humor during the process of completing the homework tend to perform better on mathematics tests administered at a later time than children who complete their homework with mothers who do not use humor (Else-Quest et al., 2008).

Taken together, this collection of non-workplace humor findings suggest that employees' task performance is likely to be significantly impacted by the humor they are exposed to in the workplace, such as humor produced by their coworker. Further, these effects of coworker humor on employee task performance are likely to occur via the same mechanisms found in the non-workplace humor literature. Thus, mechanisms likely include various forms of employee strain (e.g., cognitive, affective, and anxiety-related physical strain).

In addition to the studies dedicated to exploring the impact of individuals' exposure to humorous environmental stimuli on their task performance, a number of studies have been conducted which have focused on examining the impact of humor exposure on individuals'

creative performance. For example, a number of studies have found that individuals who are exposed to humorous material (e.g., humorous video/audio) prior to engaging in a creative task tend to demonstrate higher levels of creative performance than individuals who are exposed to equivalent non-humorous material prior to engaging in the task (e.g., Berg, 1980; Filipowicz, 2006; Ziv, 1976). Further, findings from this research suggest that the effects of the humorous stimuli on creative performance are due in part to their effects on individuals' positive affect (an indicator of affective strain; Filipowicz, 2006), providing additional evidence in support of the idea that employees' strain is likely to mediate relationships between coworker humor and employee performance.

Summary of evidence in support of coworker humor effects. In sum, extant theory and findings from prior research conducted within various fields of science support the idea that employees' strain and performance is significantly influenced by their coworkers' characteristics. Further, there is evidence from both the workplace humor and the non-workplace humor literatures to suggest that coworker humor specifically is likely to have a substantial impact on employees' affective, cognitive, and physical strain, as well as their interpersonal and task performance, and that the effects of coworker humor on employees' performance are likely to be due, at least in part, to its effects on employees' strain.

Evidence for coworker-employee interactions. "I think it's really important. [Crew members] have to learn how each other react under all these different stresses... they have to learn what the other people like... what kind of humor they like so you can use the right humor, what works and doesn't work in the team" (anonymous long-duration spaceflight astronaut, National Aeronautics and Space Administration).

A substantial amount of evidence clearly exists which suggests that coworker humor plays a significant role in determining employees' strain and performance. There is also evidence to suggest, however, that the nature of the influence that coworker humor has on employee strain and performance depends heavily upon the employee's own characteristics; namely, their own sense of humor (e.g., Crandall, 2002; DaRos-Voseles et al., 2008; Robert & Wilbanks, 2011; Sidle, 2000; Thorson & Powell, 1993; Tschanh et al., 2005). The likelihood of this is supported by the words above, spoken by a NASA LDSF astronaut during an interview conducted as part of a recent LDSF crew training needs analysis (Smith-Jentsch et al., 2011). Statements such as the one above indicate that LDSF astronauts believe that the impact of coworker humor on crew members' strain and performance during LDSF missions is contingent upon the humor of the crew members themselves. The extant literature further supports this belief, providing evidence for the idea that interactions occur between employees' humor and that of their coworkers which impact employees' strain and performance at work. Both the workplace humor and non-workplace humor literatures provide such evidence, as well as the literature related to various other streams of organizational science.

Evidence from the non-humor literature. For over half of a century scholars have recognized the importance of considering interactions occurring between individuals' own characteristics and the characteristics of their environment in predicting individual outcomes. It is this idea which lies at the core of what has been called the interactionist perspective in psychology (e.g., Lewin, 1951; Mischel, 1977; Murray, 1951; Pervin, 1989; Schneider, 1983; Terborg, 1981; Weiss & Adler, 1984) and which serves as the foundation for several well-supported psychological theories. Some of these include Trait Activation Theory (Tett & Burnett, 2003; Tett & Guterman, 2000), Affective Events Theory (Weiss & Cropanzano, 1996),

Person-Environment Fit Theory (Kristof-Brown, Zimmerman et al., 2005), Attraction-Selection-Attrition Theory (Schneider, 1983), and the Strong Situation Hypothesis (Mischel, 1977), all which center around the idea that individuals' outcomes (e.g., behavior, affect, attitudes) are the result of interactions occurring between their own personal characteristics and those of their environment. Findings from research related to these theories and others like them consistently support the notion that individuals' outcomes are best predicted by consideration of both personal characteristics and situational/environmental characteristics, as well as the interactions occurring among them (e.g., Barrick et al., 2001; Kristof-Brown, Zimmerman et al., 2005; Endler & Magnusson, 1976; Stewart & Barrick, 2004). This is because such outcomes are nearly always determined jointly by both individuals' and their environment and also because the degree to which either individual or situational characteristics themselves influence outcomes very often depends on the characteristics of the other.

Throughout the extant literature, coworkers have frequently been viewed as being a significant component of an employee's work environment (e.g., Kristof-Brown, Zimmerman et al., 2005) and, as is evidenced by the literature previously reviewed (e.g., Morkes et al., 1999; Roethlisberger & Dickson, 1939), they are often a very influential one. This suggests that the characteristics of one's coworkers are not only likely to have a significant impact on his/her outcomes, but that the nature of their impact likely depends on the personal characteristics of the individual. Findings from several studies support the existence of such interactions. For example research has shown that employees' delinquency is significantly influenced by interactions that occur between their coworkers' delinquency and their own personal self-control. Specifically, employees with low self-control are more likely to engage in to delinquent behavior when their coworkers also engage in delinquent behavior (Gibson & Wright, 2001). In other research, it has

been shown that the relationship between coworkers' withdrawal behavior (e.g., tardiness) and individual employees' withdrawal behavior is stronger when the employees' perceptions of organizational support are low (Eder & Eisenberger, 2008). In addition, it has been found that employees' abusive behavior toward their coworkers is a result of interactions which occur between their own personality and the nature of their relationships with their coworkers (Harris, Harvey, & Booth, 2010), suggesting that coworker characteristics which influence the nature/quality of the coworker-employee relationships may interact with employees' characteristics to influence their outcomes.

Some of the studies conducted within this vein have examined the effects of coworker-employee interactions on employee well-being (e.g., strain) and effectiveness (e.g., performance) outcomes specifically. For example, one recent study found employees who experience unpleasant interactions occurring among their coworkers are more likely to experience negative affective outcomes when they have the tendency to take the perspective of the target of the interaction (Totterdell et al., 2012). In another study, it was shown that social support provided by coworkers is more likely to increase employee well-being (e.g., job satisfaction) when the employee has a tendency to identify strongly with their workgroup (Jimmieson et al., 2010). With regard to effectiveness outcomes, employees' personality (e.g., conscientiousness, agreeableness) has also been found to interact with the quality of their relationships with coworkers, as well as with supervisors, to determine both employee task performance and employee contextual performance (e.g., organizational citizenship behaviors). Specifically, the relationships between employee personality and employee performance have been found to vary based on the quality of the employee-coworker/supervisor social exchange relationships (Kamdar & Van Dyne, 2007), again suggesting that coworker characteristics which serve to

influence coworker-employee relationship quality are likely to interact with employee characteristics to determine employee performance.

Several of the studies investigating how coworker characteristics and employee characteristics interact to determine employee outcomes, including employee well-being and effectiveness, have followed the person-environment fit approach. Person-Environment (PE) Fit refers to the degree to which there is compatibility between an individual and his/her environment or, in other words, the degree to which there is a good match (supplementary or complementary) between an individual's characteristics and the characteristics of his/her environment (Kristof-Brown, Zimmerman et al., 2005). PE fit can occur along numerous dimensions, including needs, goals, values, attitudes, skills, and traits, along with any other characteristics that individuals are able to share with their environment. Numerous types of PE fit have been theorized to exist, a number of which have demonstrated significant and unique relationships with various employee outcomes (Cable & DeRue, 2002; Kristof-Brown, Zimmerman et al., 2005). These include person-job (PJ) and person-organization (PO) fit, which have frequently been the topic of empirical research. Other forms of fit exist that have been less frequently studied, however. These include person-supervisor (PS) and person-group (PG) fit (Kristof-Brown, Zimmerman et al., 2005). A number of types of fit have been shown to be related to various employee outcomes, including multiple indicators of employee strain (e.g., dissatisfaction, tension, physical symptoms) and performance (e.g., task and contextual performance; Edwards, 1996; Miles & Perrewé, 2011; Perry et al., 2010; Pithers & Soden, 1999; Yang et al., 2008). Further, various forms of PE fit have demonstrated incremental validity over the main effects of individual characteristics and environmental characteristics in predicting employee outcomes (e.g., Yang et al., 2008).

The form of PE fit that is most relevant to the study of coworker-employee interactions is PG (person-group) fit. A number of researchers have examined PG fit along numerous dimensions (e.g., extraversion, goals, values, demographics; Adkins, Ravlin, & Meglino, 1996; Cunningham, 2009; Kristof-Brown, Barrick et al., 2005; Kristof-Brown & Stevens, 2001; Perry et al., 2010) and its impact on various employee outcomes, including employee strain and performance (e.g., job/coworker satisfaction, strain, performance; Greguras & Diefendorff, 2009; Kim et al., 2011; Kristof-Brown, Barrick et al., 2005; Kristof-Brown et al., 2002; Kristof-Brown, Zimmerman et al., 2005; Perry et al., 2010; Seong & Kristof-Brown, 2012). Along some dimensions, PG *misfit* has been found to be associated with a variety of negative employee outcomes (e.g., dissatisfaction with one's coworkers, interpersonal deviance, strain; Kristof-Brown, Zimmerman et al., 2005; Liao, Joshi, & Chuang, 2004; Perry et al., 2010). Along other dimensions, however, PG *fit* has been found to be associated with negative employee outcomes (e.g., low levels of interpersonal attraction towards one's coworkers, high levels of interpersonal deviance; Kristof-Brown, Barrick et al., 2005; Liao et al., 2004). Findings from research conducted at the group-level of analysis also highlight the importance of considering the degree to which coworkers are compatible with one another when predicting work outcomes. Specifically, it has been found that variance with regard to group members' personality (e.g., extraversion, conscientiousness) is significantly related to group performance, either positively or negatively depending on the nature of the trait (e.g., Humphrey, Hollenbeck, Meyer, & Ilgen, 2011).

Taken together, findings from prior research suggest that employee strain and performance is significantly impacted by complex interactions that occur between individual employees' characteristics and those of their coworkers. Despite this, researchers have yet to

examine how coworker humor and employee humor in particular interact to affect these outcomes. Several findings, theories, as well as general trends found in both the workplace humor and the non-workplace humor literatures strongly suggest, however, that employee strain and performance is likely to be impacted by interactions between coworkers' and employees' humor.

Evidence from the workplace humor literature. First, review of the extant workplace humor literature reveals that research has provided mixed findings with regard to whether employees' own humor buffers them from the negative effects of stress. It has been proposed that these inconsistent findings are the result of unidentified moderators of the employee humor – employee outcome relationship (e.g., Bowling et al., 2004; Dorz et al., 2003; McKenzie, 2009; Wallace et al., 2010). It is possible that one of the moderators responsible for the mixed findings is coworker humor. In addition, while significant relationships found between leaders' humor and subordinates' outcomes as well as between exposure to humorous media and employees' performance suggest that coworker humor may also have a significant impact on employees' performance, a number of moderators to the leader humor – subordinate outcomes (e.g., the subordinate's age; Decker, 1987) and the humorous media – employee performance (e.g., the employees' emotion regulation strategies; e.g., Yao, 2005) relationships have been identified. This suggests that additional moderators may also have an impact on similar relationships (e.g., coworker humor – employee strain/performance relationships); employees' own dispositional humor potentially being one of them.

Theory and research found throughout the extant workplace humor literature has provided several clues which may help to clarify the precise nature of the interactions that are likely occurring between coworker humor and employee humor. To start, the previously

discussed Wheel Model of humor proposes that employees' positive affect (an aspect of well-being and a potential indicator of affective strain) is likely to be positively impacted by the humor of their fellow workgroup members, but that those employees must have an appreciation for the humor used by their coworkers in order for the positive effects to occur (Robert & Wilbanks, 2011). Because the ability to recognize and to appreciate humor is a key component of one's dispositional humor (Thorson & Powell, 1993), this suggests that coworker humor is likely to be most beneficial to those with high dispositional humor and least beneficial to those with low dispositional humor. In other words, employees are likely to benefit most when both they themselves and their coworkers share high levels of humor.

In addition, it has been suggested that work environments which encourage and support humor are likely to reduce employees' strain and to enhance employees' satisfaction and performance, but only if it such an environment is consistent with the personal characteristics of the employees' (e.g., their personalities and moods). If such an environment is inconsistent with employees' characteristics, such as their sense of humor, then it may actually enhance their strain and hinder their satisfaction and performance. Research conducted to test these propositions has yielded some support for the idea that employees' own humor-related characteristics interact with the humor-related aspects of their work environment to influence their outcomes. Specifically, it has been found that employees tend to report higher levels of strain and lower levels of satisfaction when they perceive that the display rules (i.e., behavioral norms or demands) present in their work environment conflict with their own characteristics (i.e., when they feel as though they cannot be themselves), purportedly because it results in higher levels of emotional labor (i.e., efforts associated with attempting to display emotions to others that differ from one's actual emotions; Hochschild, 1983; Hülshager & Schewe, 2011; Rafaeli & Sutton,

1987; Sidle, 2000). This suggests that when employees perceive that they are expected to act based on humor display rules that are inconsistent with their own sense of humor they are likely to experience high levels of emotional labor which, in turn, is likely to enhance employees' strain and hinder their satisfaction (Sidle, 2000). In other research, emotional labor has also been shown to negatively impact a variety of other employee outcomes related to employee well-being and performance (e.g., Hülshager & Schewe, 2011). Because one's coworkers are a significant part of their work environment (e.g., Kristof-Brown, Zimmerman et al., 2005) and play an important role in developing and conveying workplace norms, values, and standards to employees (e.g., Bandura, 1977; Gioia & Chittipeddi, 1991; Robert & Wilbanks, 2011; Roethlisberger & Dickson, 1939; Salancik & Pfeffer, 1978), the humor of one's coworkers is likely to have a significant impact on the humor display rules they are exposed to in the work environment. In fact, theory states that coworkers' humor behavior is instrumental in shaping the workplace humor climate (i.e., the degree to which humor is tolerated, accepted, expected, and encouraged as a legitimate form of discourse in the workplace; Robert & Wilbanks, 2011). Thus, coworker humor is likely to interact with employees' humor to impact employee outcomes (e.g., strain). Specifically employees are likely to benefit most (e.g., experience less strain) when their coworkers' humor is consistent with their own dispositional humor, in part because such conditions would result in relatively low levels of emotional labor.

Finally, computer-generated and group-level humor research found in the workplace literature provides further support for the idea that coworker-employee similarity is likely to be beneficial to employee performance. For example, it has been found that the same interactions with computer-simulated coworkers that result in employees perceiving more similarity between their coworkers and themselves also result in employees engaging in more cooperative behaviors

(i.e., interpersonal performance) with their coworkers (although the significance of the direct relationships between perceived similarity and cooperation were not tested; Morkes et al., 1999). In addition, it has been found that variance in workgroup member humor is negatively related to workgroup performance (DaRos-Voseles et al., 2008). Taken together, these findings suggest that employees are likely to perform better when they possess levels of humor similar to those of their coworkers.

Evidence from the non-workplace humor literature. In addition to findings from the workplace humor literature, several findings from the non-workplace humor literature coupled with findings from other related areas of research shed light on the possible nature of the interactions that are likely to occur between coworker humor and employee humor. In line with the conclusions that can be drawn from examination of the workplace humor literature, these findings also suggest that employees are likely to experience less strain and greater performance when their humor is similar to that of their coworkers. For example, several findings suggest that individuals tend to recall information better (i.e., perform better on tests of their memory) when they *perceive* that information to be humorous (Carlson, 2011; Chapman, 1973) and tend to perform better on humorous test items when they *perceive* those items to be humorous (McMorris et al., 1997). Because high levels of dispositional humor are associated with individuals' recognition and appreciation of humorous content (Thorson & Powell, 1993), those high in dispositional humor are more likely to perceive humorous content to actually be humorous than those low in dispositional humor. Thus, these findings suggest that employees' performance is most likely to be enhanced by exposure to humorous content (e.g., humorous coworkers) when they themselves are also high in humor (i.e., possess high dispositional humor).

In addition to the above findings, research related to Trait Activation Theory suggests that employees are likely to experience less strain and greater performance when their humor is similar to that of their coworkers. This research has shown that employees tend to prefer and enjoy working with coworkers who create environments which allow them to express their own personal characteristics and, as a result, interactions between coworkers' and employees' characteristics tend to influence a number of employee outcomes (e.g., satisfaction; Burnett, 2005; Tett & Burnett, 2003; Tett & Guterman, 2000; Tett & Murphy, 2002). One reason for this may be that employees tend to find interactions with their coworkers that are fun and pleasant to be more appealing than coworker interactions that are not as fun (Tews et al., 2012) and interactions with coworkers who do not hold characteristics which allow employees to express their own characteristics may result in relatively unpleasant interactions involving high levels of emotional labor (e.g., Sidle, 2000). Research has shown that emotional labor does often result from interactions with coworkers, and that the emotional labor resulting from such interactions does hinder employees' well-being (Tschanh et al., 2005). Thus, employees may experience decrements in their well-being when their own dispositional humor conflicts with that of their coworkers due to the fact that such conditions are likely to result in high levels of employee emotional labor (Sidle, 2000).

Even when employees attempt to avoid emotional labor in their interactions with coworkers by expressing their own personal characteristics despite the fact that they conflict with the characteristics of their coworkers, research suggests that they still may experience decrements in their well-being. Findings from the non-workplace humor literature support the likelihood of this. Specifically, in one study, humor production was shown to significantly buffer individuals from experiencing strain (e.g., decrements in positive affect) as a result of a stress

associated with public speaking, but only when the audience found the individual to be humorous (i.e., when the audience appreciated the humor used; Crandall, 2002). These findings suggest that when employees with high dispositional humor behave in ways consistent with their sense of humor (e.g., produce humor) they are likely to experience strain if their coworkers do not also demonstrate behaviors consistent with high dispositional humor (e.g., demonstrate appreciation for the employee's humor; Thorson & Powell, 1993).

Thus, coworker-employee dissimilarity with regard to humor may be likely to result in negative employee outcomes regardless of whether employees choose to behave in ways that are consistent with their dispositional humor or they choose to behave in ways that are inconsistent with their dispositional humor. Research has demonstrated that employees are more likely to violate behavioral norms (e.g., display rules) in interactions with their coworkers (as opposed to customers), but that, overall, they are also likely to engage in emotional labor in such interactions. Further, it has been found that both methods of responding to coworker interactions tend to result in decrements in employees' well-being (Tschanh et al., 2005). As such, when employees' sense of humor is dissimilar to the humor of their coworkers they may choose to either violate the behavioral norms set by their coworkers by behaving in ways consistent with their own sense of humor or to conform to them by behaving in ways inconsistent with their own sense of humor. Either way, they are likely to experience negative outcomes as a result of the humor dissimilarity.

Although employees have been shown to both engage in emotional labor at times and to deviate from behavioral norms at others, research suggests that in interactions with coworkers employees are generally more inclined to engage in emotional labor (Tschanh et al., 2005). In other words, when faced with a choice, employees most often choose to conform to behavioral

norms even if it means they must refrain from behaving in ways that are consistent with their dispositions. While the general dangers of engaging in emotional labor in general have already been discussed (e.g., increased strain and decreased performance; e.g., Hülsheger & Schewe, 2011), refraining from engaging in behaviors that are consistent with one's dispositional humor specifically may be particularly detrimental to employees. In particular, employees with high levels of dispositional humor are most likely to be harmed (in terms of increased strain and decreased performance) by such humor-related emotional labor. When employees with high dispositional humor work with others who create a climate that is unsupportive of workplace humor and decide to respond to the work environment by refraining from using humor, they are not only likely to suffer from the strain that has been associated with emotional labor, but they are also likely to suffer from not utilizing their own humor in ways that they normally would. Specifically, limiting their displays of humor (e.g., humor production, laughing, using humor to cope) makes it unlikely that they will be able to enjoy the low levels of strain and high levels of performance that are normally associated with their high levels of dispositional humor (e.g., Abel, 2002; Bizi et al., 1988; Ford et al., 2004; Fry, 1995; Jones, 2006; Kuiper et al., 1995; Moran & Hughes, 2006; Martin, 2001; Nezu et al., 1988; Sidle, 2000).

Summary of evidence in support of coworker-employee humor interactions. In sum, extant theory and findings from prior research conducted within various fields of science support the idea that interactions between employees' characteristics and those of their coworkers significantly influence employees' strain and performance. Further, there is evidence to suggest that, for numerous reasons, interactions are likely to occur between employee humor and coworker humor specifically, and that such interactions are likely to have a substantial impact on employees' affective, cognitive, and physical strain, as well as their interpersonal and task

performance. Finally, the literature suggests that the expected effects of coworker-employee humor interactions on employees' performance are likely to be due, at least in part, to their expected effects on employees' strain.

Hypotheses. Principles of extant theory (e.g., PE Fit Theory, Trait Activation Theory, Wheel Model of humor; e.g., Kristof-Brown, Zimmerman et al., 2005; Robert & Wilbanks, 2011; Tett & Burnett, 2003; Tett & Guterman, 2000), coupled with what is known about the nature and effects of humor (e.g., Abel, 2002; Bizi et al., 1988; Crandall, 2002; DaRos-Voseles et al., 2008; Ford et al., 2004; Fry, 1995; Jones, 2006; Kuiper et al., 1995; Moran & Hughes, 2006; Martin, 2001; Nezu et al., 1988; Robert & Wilbanks, 2011; Sidle, 2000; Thorson & Powell, 1993; Tschanh et al., 2005), combined with numerous findings from the non-humor literature (e.g., Humphrey et al., 2011; Jimmieson et al., 2010; Kamdar & Van Dyne, 2007; Kristof-Brown, Zimmerman et al., 2005; Liao et al., 2004; Perry et al., 2010; Totterdell et al., 2012) may inform the development of hypotheses regarding how coworker humor and employee humor interact to impact employee strain and performance. Namely, theory and research strongly suggest that the degree to which an employee's humor is compatible with that of his/her coworkers has a significant influence on his/her strain and performance. Specifically, the literature indicates that coworker humor is likely to be beneficial to some employees while it is likely to be detrimental to others and that whether coworker humor is beneficial or detrimental depends on the employee's own sense of humor. In particular, employees who possess high dispositional humor may stand to benefit from exposure to coworker humor and thereby experience relatively low levels of strain and high levels of performance (as compared to employees with high dispositional humor who are not exposed to coworker humor). Employees who possess low dispositional humor, on the other hand, may suffer from exposure to coworker

humor and thereby experience relatively high levels of strain and low levels of performance (as compared to employees with low dispositional humor who are not exposed to coworker humor).

When employees who possess low dispositional humor have coworkers who tend to use positive humor in the workplace they may be likely to experience high strain and low performance for several reasons. First, because low levels of dispositional humor are associated with individuals' inability to recognize and appreciate humor (Thorson & Powell, 1993), any of the potential benefits of their coworkers' humor (e.g., low levels of strain and high levels of performance; e.g., Avolio et al., 1999; Cash-Baskett, 2011; Francis et al., 1999; Gockel, 2007; Grugulis, 2002; Holmes & Marra, 2006; Hughes, 2009; Huo et al., 2012; Kahn, 1989; Kurtzberg et al., 2009; Locke, 1996; Lynch, 2010; Moran, 1996; Morkes et al., 1999; Ogunlana et al., 2006; Plester & Orams, 2008; Robert & Wilbanks, 2011; Romero & Cruthirds, 2006; Susa, 2002; Thompson, 2009; Vecchio et al., 2009; Walkowiec, 1994; Yao, 2005) are likely to be lost on them because they will not recognize their coworkers' behaviors as being humorous. In addition, individuals with low levels of dispositional humor tend to hold negative attitudes toward humor and toward those who use it (Thorson & Powell, 1993). Thus, when they do recognize it, humor used by their coworkers may actually serve to irritate and annoy them, and may cause them to hold negative attitudes toward their coworkers. Such negative affect and cognitions may spur other negative outcomes, such as symptoms of physical anxiety, decrements in cognitive functioning, and ultimately decreases in performance (e.g., Isen, 1990; Lang et al., 2007; Rothbard & Wilk, 2011; Ree, French, MacLeod, & Locke, 2008; Salthouse, 2012; Verkuil, Brosschot, Meerman, & Thayer, 2012; Watson, 1988). Lastly, because their coworkers are likely to create a humor climate that conflicts with their own dispositional humor (i.e., one that supports and encourages humor; Robert & Wilbanks, 2011; Sidle, 2000), these employees are

likely to experience the negative effects of their poor fit with their environment. Specifically, whether they experience emotional labor by engaging in humor behaviors (e.g., humor production or laughing) despite the fact that they are inconsistent with their dispositional humor or whether they deviate from the workplace norms set by their coworkers by engaging in behaviors that are consistent with their dispositional humor, strain and performance decrements are likely to result (e.g., Hülshager & Schewe, 2011; Sidle, 2000; Tschanh et al., 2005). In contrast, when employees who possess low dispositional humor have coworkers who do not tend to use positive humor in the workplace, they are likely to experience significantly less strain and higher performance than their counterparts with humorous coworkers. Under these conditions, employees with low dispositional humor are not likely to be irritated or annoyed by their coworkers' lack of humor behavior, since it would be consistent with their own attitudes toward humor. In addition, because their coworkers are likely to create a humor climate that is consistent with their own dispositional humor (i.e., one that does not support humor), they are likely to experience the positive effects of their good fit with their environment. In other words, they will be less likely to have to engage in emotional labor and/or deviate from the behavioral norms set by their coworkers. Thus, they will be less likely to experience the negative outcomes associated with each.

In contrast to employees with low dispositional humor, when employees who possess high dispositional humor have coworkers who do not tend to use positive humor in the workplace they may be likely to experience high strain and low performance. Again, this is likely for several reasons. First, because their coworkers are likely to create a humor climate that is inconsistent with their sense of humor (i.e., one that does not support humor; Robert & Wilbanks, 2011; Sidle, 2000), they are likely to experience the negative outcomes (i.e., increased

strain and decreased performance) associated with having to engage in emotional labor (i.e., by refraining from the humor behaviors they are inclined to engage in) and/or with having to deviate from the behavioral norms set by their coworkers (i.e., engaging in the humor behaviors they are predisposed to despite the fact that they conflict with the humor climate; Hülshager & Schewe, 2011; Sidle, 2000; Tschanh et al., 2005). In addition, because employees are more likely to engage in emotional labor than they are to deviate from workplace behavioral norms (Tschanh et al., 2005), this suggests that when non-humorous coworkers establish a climate that does not support workplace humor, employees are most likely to refrain from engaging in humor behaviors that are consistent with their high dispositional humor (i.e., humor production and laughing). As a result, they are unlikely to reap the many benefits associated with possessing high levels of dispositional humor (i.e., low strain and high performance; e.g., Abel, 2002; Bizi et al., 1988; Ford et al., 2004; Fry, 1995; Jones, 2006; Kuiper et al., 1995; Moran & Hughes, 2006; Martin, 2001; Nezu et al., 1988; Sidle, 2000). Further, because employees with high dispositional humor have a tendency to use humor as a method for coping with job stressors (Thorson & Powell, 1993), such employees may find themselves unable to cope with stressors effectively when the workplace climate discourages coping humor behavior. This may result in employees becoming frustrated in their attempt to find other effective coping strategies, which may then result in high levels of strain and, ultimately, low levels of performance (e.g., Keenan & Newton, 1984; Lang et al., 2007). In contrast, when employees who possess high dispositional humor have coworkers who tend to use positive humor in the workplace, they are likely to experience significantly lower levels of strain and higher levels of performance than their counterparts with non-humorous coworkers. First, because their coworkers are likely to create a humor climate that is consistent with their own dispositional humor (i.e., one that supports and

encourages humor), they are unlikely to engage in humor-related emotional labor or in deviations from humor-related behavioral norms. Thus, they will be less likely to experience the negative outcomes associated with each. In addition, when humorous coworkers establish a climate that is supportive of workplace humor, employees with high dispositional humor will be more likely to freely engage in the beneficial humor behaviors associated with their disposition (e.g., humor production and laughing), including the use of workplace humor as a means for effectively coping with job stressors. As such, they will be more likely to reap the benefits associated with their high levels of dispositional humor (e.g., low strain and high performance).

In strong support of the idea that employees are likely to benefit from possessing high levels of dispositional humor *and* being able to use it freely in the workplace, theory and findings from both the workplace humor and the non-workplace humor literatures indicate that employees personally benefit from possessing high levels of dispositional humor and from engaging in humor behaviors in the workplace. Specifically, strong negative associations have been found between employees' humor and their perceived (e.g., Friel, 2005; Fry, 1995; Mesmer, 2000; Moran & Hughes, 2006; Sidle, 2000; Williams, 2001), affective (e.g., Dean & Major, 2008; Fitzell & Pakenham, 2010; Locke, 1996; Stevens, 2010), cognitive (e.g., Fry, 1995), and physical (e.g., Fry, 1995; Kuiper & Nicholl, 2004) strain, while strong positive associations have been found between employees' humor and their interpersonal (e.g., Dean & Major, 2007; Jones, 2006) and task (e.g., Bizi et al., 1988; Filipowicz, 2002; Friel, 2005; Kurtzberg et al., 2009) performance. This suggests that individuals who employ their humor in the workplace will benefit by experiencing relatively low levels of strain and high levels of performance, as compared to individuals who do not employ their humor. Thus, if the work environment discourages employees with high dispositional humor from utilizing their humor in the

workplace, they are likely to miss out on these benefits. If the work environment encourages and supports humor in the workplace, however, then these employees are more likely to reap the benefits of their own dispositional humor. In this way, coworker humor is likely to have a significant impact on the extent to which employees with high dispositional humor enjoy the benefits of that disposition; given the significant influence that coworker humor likely has on the degree to which the work environment supports humor (e.g., Robert & Wilbanks, 2011).

There is some research to support the idea that coworker humor has an impact on the degree to which employees express their humor at work. Specifically, it has been found that when individuals complete a task with a computer-simulated coworker that produces humorous statements (or even just a computer that produces humorous statements) they tend to engage in more humor behaviors themselves (e.g., joking and laughing); that is compared to the number of humor behaviors produced by individuals working with computers that only produce non-humorous statements (Morkes et al., 1999). In addition, research found in the non-workplace humor literature suggests that individuals' humor behavior is significantly influenced by the humor behavior of those around them. For example, it has been found that individuals can be primed to engage in more humor production behavior during a stressful task simply by showing them a film that discusses the uses of productive humor prior to having them complete the task (i.e., individuals who view this video produce more humor during the task than individuals who view a video that does not discuss the value of productive humor; Lehman, Burke, Martin, Sultan, & Czech, 2001). This finding suggests that individuals are more likely to engage in humor behavior when they perceive that humor behavior is valued and useful in the current situation. Thus, when employees observe their coworkers engaging in humor behavior, they may be more likely to engage in humor behaviors themselves if they see their coworkers' behavior as

an indication that humor is valued and useful in the workplace. In support of this, additional research has revealed a significant positive correlation between the humor usage of children and their mothers' during the completion of children's mathematics homework (Else-Quest et al., 2008). This finding lends additional support to the idea that employees' use of humor may be influenced by the humor usage of others they work with.

Findings from the large body of research related to the relationships between individuals' workplace and non-workplace humor and various indicators of their strain and performance compel a greater appreciation for the significance of the possibility that the degree to which individuals may benefit from their own dispositional humor depends heavily on the degree to which they are able to freely express it in the workplace (which is likely to result from the degree to which their coworkers use humor). As such, a brief summary of this literature is warranted, within which current study hypotheses may be presented.

Throughout the workplace humor literature there is a significant amount of evidence which suggests that employees' own humor is negatively related to employee strain (as well as other indicators of well-being) and positively related to employee performance (as well as other indicators of effectiveness). Although an extensive review of this literature has already been provided, a summary of its important findings will be provided here in order to foster a greater appreciation for how restraints placed on the expression of employees' dispositional humor in the workplace may heighten their strain and hinder their performance. In addition, this summary of the relevant workplace humor research will be supplemented with several additional findings sampled from the non-workplace humor literature, as well as from other areas of organizational science (e.g., the occupational stress literature).

Employee humor and perceived strain. It is widely believed that, in terms of their health and well-being, employees benefit from possessing and using humor. This is in large part because humor (positive humor in particular) helps employees to cope with job stressors and protects them from experiencing various forms of strain (e.g., negative affect, burnout, decrements in well-being; e.g., Filipowicz, 2002; Fry, 1995; Hawkins, 2008; Morreall, 1991; Moran & Massam, 1999; Sim et al., 2004; Stoeber & Janssen, 2011). While humor itself serves as an effective coping tool for employees, it has also been shown to be positively associated with employees' use of other adaptive coping strategies and resources. These include cognitive coping strategies such as positively reappraising stressful situations so as to frame them as being opportunities for growth (Fry, 1995). Also included is the use of social support as a coping resource. Research has shown that employees' humor is positively associated with the amount of social support they receive from their coworkers and supervisors (Factor, 1997), potentially because their use of humor increases the degree to which others like them and wish to help them by providing them with social support (Moran & Hughes, 2006). In addition to the research which has revealed associations between employees' humor and their actual ability to effectively cope with stress, other research has shown that humorous employees are more likely than non-humorous employees to feel confident in that ability (Wanzer et al., 2005). This coping efficacy may, in turn, contribute to coping effectiveness (e.g., Nicholls, Polman, Levy, & Borkoles, 2010). Likely a result of its positive relationships with both coping effectiveness and coping efficacy, employee humor (e.g., use of coping humor, dispositional humor) has been found to be negatively associated with employees' perceived levels of stress/strain (Friel, 2004; Fry, 1995; Mesmer, 2000; Moran & Hughes, 2006; Sidle, 2000; Williams, 2001) and positively related to several other indicators of general well being (e.g., self esteem, general psychological well-

being, satisfaction; Fry, 1995; Sim et al., 2004; Sidle, 2000; Spruill, 1992; Stevens, 2010; Von Kirchheim, 1996).

These findings from the workplace humor literature are generally consistent with trends found in the non-workplace humor literature. Specifically, prior research has revealed that individuals can benefit from possessing a high sense of humor and from using humor in a wide variety of non-workplace settings. Positive humor in particular serves to benefit individuals by enhancing their capacity to cope with stressors (Ward, 2009). It has been found, for example, that individuals use humor in their marriage to cope with stressors at home (Moss, 2006) and in multiplayer online game play in order to foster a low-stress environment (Peterson, 2012). Individuals who are naturally inclined to use humor to cope and who actually do laugh and joke during stressful events (e.g., dental surgery) also tend to have lower levels of subjective stress (e.g., Abel, 2002; Kuiper et al., 1993; Trice & Price-Greathouse, 1986; Williams, 2000). Research suggests that decreases in individuals' perceived stress levels and increases in their coping efficacy (e.g., their perceived ability to cope with problems related to peer interactions) can even be obtained by training them to use humor effectively (Crawford & Caltabiano, 2011; Lodico, 1997). In addition to finding humor itself to be an effective coping mechanism, the non-workplace humor literature also supports the idea that individuals' humor is positively associated with their use of other adaptive coping strategies (e.g., Abel, 2002). For example, it has been found that among both children and older adults, individuals who use humor to cope with stressors (e.g., pain) tend to use more adaptive coping strategies (e.g., problem-focused coping strategies), tend to receive a greater amount of social support, and tend to have higher levels of self efficacy (e.g., self efficacy for coping with health problems) than individuals who do not use humor to cope (e.g., Goodenough & Ford, 2005; Marziali, McDonald, & Donahue, 2008).

Taken together, findings from the non-workplace humor literature strongly support those found in the workplace humor literature which suggest that employees are likely to generally benefit from having high levels of dispositional humor *and* from being able to freely use humor in the workplace. This, coupled with evidence for the effects of coworker humor and coworker-employee humor interactions on employees' perceived strain, serves as a basis for the following hypothesis.

***Hypothesis 1:** Employee sense of humor will moderate the effect of coworker humor on employee perceived strain. High sense of humor employees will experience less perceived strain with humorous coworkers than with non-humorous coworkers. Low sense of humor employees will experience more perceived strain with humorous coworkers than with non-humorous coworkers.*

Employee humor and affective strain. In addition to perceived stress and general well-being, employees' humor has been linked to several individual states that are commonly used as indicators of affective, cognitive, and physical strain specifically. With regard to the effect of employee humor on employees' affective strain, workplace humor scholars have suggested that the use of humor in work groups serves to enhance positive affect among those group members who initiate it (Robert & Wilbanks, 2011). In support of this, several researchers have found that employees' humor (e.g., use of coping humor, dispositional humor) helps them to effectively manage their affect and to deal with job stress during and following work, which enhances their positive affect (Dean & Major, 2008; Fitzell & Pakenham, 2010; Locke, 1996; Stevens, 2010) and decreases their negative affect following exposure to stressors (Gilgun & Sharma, 2012; Moran & Massam, 1999; Riolli & Savicki, 2010). Employees' positive humor in particular has

been found to be the most beneficial to employees. It has been found to be positively related to employees' positive affect and negatively related to their negative affect (employees' negative humor has been found to have the opposite effects, however; Doosje et al., 2010). Further, employees' humor (especially their positive humor) has frequently been found to be negatively associated with symptoms of burnout, particularly those with a significant affective component (e.g., emotional exhaustion; employee's negative humor has been found to be positively associated with burnout, however; Alvarado, 2000; Bowden, 2000; Hawkins, 2008; Killian, 2004; Malinowski, 2009; Mesmer, 2000; Talbot & Lumden, 2000; Van den Broeck et al., 2012; Wojtyna & Stawiarska, 2009), and to buffer employees from experiencing burnout following exposure to stressors (Fry, 1995).

A large number of findings from the non-workplace humor literature lend additional support to the idea that individuals' humor is likely to be related to their affective strain levels. Within this literature it is widely acknowledged that individuals from all walks of life use humor to regulate their own emotions (e.g., Francis, 1994). And, indeed, a wealth of support for this belief has been found. Specifically, in several studies involving diverse samples (e.g., students, adolescents, older adults, individuals diagnosed with fatal diseases, and individuals undergoing surgery) individuals' dispositional humor as well as their use of humor (particularly positive humor such as coping humor) has been linked to high levels of positive affect and low levels of negative affect (e.g., anxiety, depression, negative mood), both in general and following their exposure to a stressor (e.g., Abel, 2002; Abel & Maxwell, 2002; Crandall, 2002; Kuiper, Grimshaw, Leite, & Kirsh, 2004; Kuiper et al., 1995; Lebowitz, 2002; Maas, 2003; Martin, Kuiper, Olinger, & Dance, 1993; Marziali et al., 2008; Merz, Malcarne, Hansdottir, Furst, Clements, & Weisman, 2009; Moran & Massam, 1999; Newman & Stone, 1996; Paredes,

Pereira, Simoes, & Canavarro, 2012; Roesch, Vaughn, Aldridge, & Villodas, 2009; Roussi, Krikeli, Hatzidimitriou, & Koutri, 2007; Svebak, Jensen, & Gotestam, 2008; Vera et al., 2012). Individuals' humor has also been linked to marked increases in positive affect and decreases in negative affect over time, whether the individuals possess high humor naturally or they are trained to use humor effectively (e.g., Crawford & Caltabiano, 2011; Lehman et al., 2001; Lodico, 1997; Wade, Borawski, Taylor, Drotar, Yeates, & Stancin, 2001; Wong, 2005). In addition, there is a substantial amount of evidence to suggest that individuals' humor buffers them from experiencing the negative affective consequences of exposure to stressors. Specifically, a number of researchers have found that, in response to stressors, individuals who are high on humor (dispositional and behavioral) experience less of a decrease in positive affect and less of an increase in negative affect as compared to individuals who are low on humor (e.g., Abel, 1998; Eisengart, Singer, Fulton, & Baley, 2003; Lefcourt, Davidson, Sheperd, Phillips, Prkachin, & Mills, 1995; Martin & Lefcourt, 1983; Nezu et al., 1988; Vera et al., 2012).

Findings from the non-workplace humor literature, coupled with those from the workplace literature, strongly suggest that employees are likely to benefit from having high levels of dispositional humor *and* from engaging in humor behaviors in the workplace by experiencing lower levels of affective strain in response to job stressors. This, paired with evidence for the effects of coworker humor and coworker-employee humor interactions on employees' affective strain, serves as a basis for the following hypothesis.

Hypothesis 2: Employee sense of humor will moderate the effect of coworker humor on employee affective strain. High sense of humor employees will experience less affective strain with

humorous coworkers than with non-humorous coworkers. Low sense of humor employees will experience more affective strain with humorous coworkers than with non-humorous coworkers.

Employee humor and cognitive strain. With regard to the impact of employees' humor on their cognitive strain, workplace humor scholars suggest that employees' humor helps them to develop an understanding of their experiences within their organizations and to interpret and frame work events, including work stressors (Hatch, 1997; Tracy et al., 2006). Regarding the interpretation of work stressors specifically, employees' humor has been positively associated with a their tendency to positively reappraise and reframe stressful situations so that they perceive them as being opportunities for growth as opposed to hindrances to their well-being and effectiveness (Fry, 1995). As a result of their tendency toward positive cognitive reappraisal, employees with high levels of humor are less likely to experience the negative outcomes associated with exposure to stressors (e.g., high levels of strain and low levels of performance; e.g., Fladung, Baron, Gunst, & Kiefer, 2010; Harvey, Nathens, Bandiera, & LeBlanc, 2010; Lazarus & Folkman, 1984; LePine, Podsakoff, & LePine, 2005; Podsakoff, LePine, & LePine, 2007; Rood, Roelofs, Bögels, & Arntz, 2012; Troy, Wilhelm, Shallcross, & Mauss, 2010), including various forms of cognitive strain (e.g., Richardson, Jixia, Vandenberg, Dejoy, & Wilson, 2008). In addition to being benefited by their tendency to cognitively reframe stressors, employees with high levels of humor are also likely to experience less cognitive strain as a result of how they tend to perceive their ability to perform their job tasks. Specifically, research has shown that, as compared to those who do not, employees who possess effective coping skills, including an ability to use humor to cope, tend to perceive that they have a greater ability to perform their job tasks (Kaye & Fortune, 2001). Such self-efficacy has been linked to low levels

of employee strain in prior studies (e.g., Jex & Bliese, 1999; Nauta, Cong, & Chaoping, 2010). Likely as a result of both their positive perceptions of work events and their perceptions of their ability to effectively deal with them, a positive relationship has been found between employees' effective coping skills (such as humor) and their self-reported job task difficulty (Kaye & Fortune, 2001), a variable that has been considered a valid indicator of cognitive strain (e.g., Ljungberg & Neely, 2007).

Several findings from the non-workplace humor literature provide additional support for the idea that individuals are likely to experience less cognitive strain when they possess and use humor. First, these findings suggest that individuals with high dispositional humor tend to have more realistic perceptions of stressors, preventing them from overestimating the number and intensity of the stressors they are exposed to (Abel, 2002; Martin, 1996). Thus, they are less likely to expend cognitive resources worrying about stressors that do not exist. In addition, they tend to have more functional standards for evaluating themselves and the situations they are faced with and to set realistic expectations that are based on their past experiences (Kuiper et al., 1993), making it less likely that they will experience disappointment and other negative feelings and cognitions that will consume cognitive resources (e.g., Johns et al., 2008; Kanfer & Ackerman, 1989; Ståhl et al., 2012). Further, individuals high in humor tend to have a greater ability to change their perspective on situations more easily and in a way that is beneficial to them (i.e., a way that causes less strain; Klein, 2009; Kuiper et al., 1993; Kuiper et al., 1995). As such, it has been found that individuals' dispositional humor as well as their use of humor (particularly positive humor such as coping, self-enhancing, and affiliative humor) is positively associated with the tendency to cognitive reappraise stressful situations so as to reframe them as being something positive as opposed to negative. As a result, humorous individuals tend to view

stressors as less threatening to them (e.g., less of a hindrance) and as more of a positive challenge for them (e.g., an opportunity for growth) or as something that is amusing. This, in turn, protects them from experiencing negative attitudes and cognitions that demand cognitive resources and that could be distracting to them in their daily lives (e.g., Abel, 2002; Kelly, 2002; Klein, 2009; Kuiper et al., 1993; Kuiper et al., 1995; Martin, 1996; Martin et al., 1993; Williams, 2000).

Finally, research has shown that individuals' humor is positively associated with various important cognitive functions. These include individuals' working memory (i.e., ability to hold information in their mind), ability to focus their attention on details, ability to visually search their environment for details, as well as their verbal abstraction and mental shifting ability (Shammi & Stuss, 1999). Because these processes are easier for individuals who are high on humor (versus those who are low on humor) engaging in these processes is likely to consume relatively few cognitive resources during tasks that require them. As such, individuals who are high on humor are less likely to have their cognitive resources overwhelmed during tasks (i.e., to experience cognitive strain) and, therefore, are more likely to have enough cognitive resources free so that tasks feel relatively easy to them (e.g., Kanfer & Ackerman, 1989).

Taken together, findings from the workplace and non-workplace humor literature suggest that employees are likely to benefit from possessing high levels of dispositional humor *and* from using humor in the workplace due to the effect that humor has on facilitating adaptive cognitive processes in response to stressors and to freeing up cognitive resources during tasks. This, coupled with evidence for the effects of coworker humor and coworker-employee humor interactions on employees' cognitive strain, serves as a basis for the following hypothesis.

Hypothesis 3: *Employee sense of humor will moderate the effect of coworker humor on employee cognitive strain. High sense of humor employees will experience less cognitive strain with humorous coworkers than with non-humorous coworkers. Low sense of humor employees will experience more cognitive strain with humorous coworkers than with non-humorous coworkers.*

Employee humor and physical strain. Finally, with regard to the impact of employees' humor on their physical strain, it is widely believed by workplace humor scholars that employees' own humor (i.e., humor behavior and dispositional humor) affords them numerous physical health benefits and protects them from physical well-being decrements following exposure to stressors (e.g., decrements related to blood pressure, pulse rate, respiration, pain tolerance, and immune functioning; Morreall, 1991). In the workplace humor literature itself, there are a number of findings which support this belief. In one study, for example, employees' use of humor as a means for coping with stress was found to be positively associated with their perceptions of their own physical health (Kuiper & Nicholl, 2004), suggesting that employees' humor buffers them from experiencing the negative physical effects of job stressors. Other research has yielded findings consistent with this notion. Specifically, it has been found that employees' humor effectively protects them from suffering decrements in their physical health following exposure to job stressors (Fry, 1995).

Findings from the non-workplace humor literature provide additional evidence for the idea that individuals' humor has a negative relationship with various indicators of physical strain. For example, it has been found that individuals' humor production during periods of high stress (e.g., creation of a humorous monologue versus a serious monologue during the viewing of a stressful silent film) is linked to lower levels of physiological reactivity to stressors as well as

faster rates of physiological recovery following stressors. Specifically, humor production has been found to be negatively related to individuals' heart rate, skin conductance, and skin temperature during their exposure to a stressor and positively related to the time individuals take to return to baseline on all of those measures following their exposure to a stressor (Newman & Stone, 1996). Individuals' use of humor during their exposure to a stressor has also been negatively associated with neuroendocrine stress responses, such as the production of cortisol (i.e., a hormone released in response to stress; Wong, 2005). In addition to humor behavior (e.g., humor production), individuals' dispositional humor has been linked to relatively low levels of physical strain in response to stressors. It has been found, for instance, that individuals with high levels of dispositional humor (e.g., coping humor) are more likely to experience relatively low levels of blood pressure (systolic and diastolic) during their exposure to a stressor, are less likely to experience increases in their blood pressure in response to a stressor, and are more likely to have their blood pressure return to baseline quickly following their exposure to a stressor (Lefcourt, Davidson, Prkachin, & Mills, 1997; Lefcourt et al., 1995). In addition, individuals' sense of humor has been shown to buffer them from experiencing various somatic symptoms of anxiety (e.g., headache, fatigue, muscle ache) in response to life stress (Abel, 1998). It has also been linked to lower levels of perceived pain and higher levels of pain tolerance (Martin, 2001). For example, it has been found that children who tend to use humor to cope with pain also report their pain to be less unpleasant (Goodenough & Ford, 2005). Further, there is some evidence to suggest that individuals with painful diseases (e.g., progressive rheumatic diseases) are less likely to experience pain and disability when they possess high levels of humor, although these effects of humor appear to fade away once other variables are controlled for (e.g., demographics, illness severity; Merz et al., 2009). Several additional findings suggest that individuals' humor

may provide them with a number of more long-term health benefits. Although findings are not wholly consistent, some researchers have found there to be significant relationships between individuals' humor and their immune system functioning (e.g., S-IgA levels; Martin, 2001). In addition, individuals' sense of humor has been found to buffer them from the negative immune system effects of exposure to daily hassles (Martin & Dobbin, 1988). Perhaps as a result of this, a number of studies have yielded findings which suggest that individuals' sense of humor is negatively related to the number of illness symptoms they experience, the number of days they suffer from an infectious illness, and the number of health complaints they report, while it is positively related to individuals' perceptions of their own physical health over time (e.g., Lebowitz, 2002; Martin, 2001; Svebak et al., 2008).

Taken together, these findings from both the workplace and the non-workplace humor literature suggest that employees are likely to experience relatively low levels of physical strain, and potentially other more long-term physical benefits, when they possess high levels of humor *and* use humor in the workplace. This, coupled with evidence for the effects of coworker humor and coworker-employee humor interactions on employees' physical strain, serves as a basis for the following hypothesis.

***Hypothesis 4:** Employee sense of humor will moderate the effect of coworker humor on employee physical strain. High sense of humor employees will experience less physical strain with humorous coworkers than with non-humorous coworkers. Low sense of humor employees will experience more physical strain with humorous coworkers than with non-humorous coworkers.*

In addition to its effects on various forms of employee strain, the effects of employees' humor on various forms of their effectiveness have also been the focus of prior workplace humor research. This includes investigations regarding the impact of employee humor on employees' interpersonal and task performance; variables of interest in the current study. It also includes investigations regarding the impact of employee humor on employees' creativity. Several findings from the non-workplace humor literature and from other streams of science are also relevant to the humor—performance relationships studied workplace humor literature.

Employee humor and interpersonal performance. The relationship between employees' own humor and their individual interpersonal performance in particular has been the focus of very few workplace humor studies. It is believed, however, that employees' humor is positively associated with their interpersonal performance (Robert & Wilbanks, 2011). There is, in fact, some empirical evidence to support this. For example, qualitative research has revealed that employees use humor when engaged in task-based interactions with others to help them to communicate information that may otherwise be difficult to communicate (e.g., information challenging the status quo, information involving problems in the group, feelings of anger), to provide negative feedback to others, to communicate that they are experiencing strain to others, to repair relationships between themselves and others, to bond with others in the group, to help establish norms for interaction and boundaries between themselves and others, to help establish roles and status hierarchies, to foster collaboration and sometimes competition, to emphasize the importance of information in order enhance communication effectiveness, to express agreement and to acknowledge that they share a common understanding of the situation with others, and sometimes just to initiate a fun interactions with others (e.g., Bethea et al., 2000; Filipowicz, 2002; Francis et al., 1999; Rogerson-Revell, 2006). These findings suggest that humor is a tool

that employees rely on to facilitate a variety of interpersonal interactions. Findings from quantitative research lend support to this idea. For example, high levels of employee humor have been found to be linked to high levels of cooperation behavior as well as low levels of conflict behavior among employees (Dean & Major, 2008). In addition, high levels of humor have been linked to higher levels of communication competence among employees, suggesting that individuals high in humor possess a higher level of the skills necessary to effectively engage in interpersonal interaction (Jones, 2006). Further, findings from group-level investigations of workplace humor and interpersonal performance may provide some support for the idea that individual employees' humor contributes to their individual interpersonal performance. It has been shown that, although negative humor has been shown to hinder interpersonal performance, employees can use their positive humor to enhance various interpersonal processes within the workgroup. These include communication and collaboration among workgroup members as well decision-making and change processes. In addition, positive humor is used by employees to prevent and address conflict in workgroups and to safely challenge group policies and offer alternatives to the status quo without harming their own status or causing intra-group conflict (Grugulis, 2002; Kahn, 1989; Lynch, 2010; Plester & Orams, 2008; Thompson, 2009; Walkowiec, 1994). Finally, research suggests that employees are able to use humor as a social lubricant to make their interactions with other group members as easy and beneficial as possible (Morreall, 1991). These findings suggest that, within the context of workgroups, individual employees' humor does serve to enhance their ability to engage in effective interpersonal behaviors by providing them with a useful tool for interacting with fellow group members on matters related to the group's work without it resulting in negative consequences (e.g., conflict). This may, in turn, enhance their willingness and motivation to engage in such interpersonal

behaviors (e.g., Mueller, 2012; Savolainen, 2012; Vroom, 1964). Thus, employees' humor is likely to enhance their interpersonal performance.

In addition to these findings from the workplace humor literature, findings from the non-workplace literature support the idea that individuals' humor is likely to enhance their interpersonal performance. Generally, it has been found that individuals use humor (particularly positive forms of humor) in a variety of contexts (e.g., marriage, multiplayer online games) to facilitate close bonds with others, define boundaries between members of their in-group and members of various out-groups, and also to enhance the quality of their interactions with others (e.g., Francis, 1994; Moss, 2006; Peterson, 2012; Ward, 2009). For example, it has been found that individuals engaged in multiplayer online games use humor in order to facilitate collaborative relationships with others that involve high levels of interpersonal interaction, such as communication and back-up behavior (Peterson, 2012).

Findings from the non-workplace humor literature support those found in the workplace humor literature which suggest that individuals who possess high levels of humor *and* who use humor in the workplace are more likely to achieve high levels of interpersonal performance. This, coupled with evidence for the effects of coworker humor and coworker-employee humor interactions on employees' interpersonal performance, serves as a basis for the following hypothesis.

Hypothesis 5: Employee sense of humor will moderate the effect of coworker humor on employee interpersonal performance. High sense of humor employees will demonstrate higher interpersonal performance with humorous coworkers than with non-humorous coworkers. Low

sense of humor employees will demonstrate lower interpersonal performance with humorous coworkers than with non-humorous coworkers.

Employee humor and task performance. With regard to the impact of employees' humor on their task performance, it is generally believed that positive relationships exist between employee humor and employee performance on their job tasks (Robert & Wilbanks, 2011). In support of this, findings from a number of workplace humor studies have shown significant positive relationships between employee humor and employee task performance (e.g., Bizi et al., 1988; Friel, 2004). For example, it has been found that employees engaged in negotiations tend to achieve higher individual gains when they use humor during the negotiation process (Filipowicz, 2002; Kurtzberg et al., 2009). Research suggests that employees' humor is particularly beneficial for enhancing their task performance under stressful work conditions (Bizi et al., 1988). In addition to these findings, it has been found that, as compared to those who do not, employees who possess good coping skills, including coping humor skills, believe that they have a greater ability to successfully perform their job tasks and tend to view their job tasks as being less difficult (Kaye & Fortune, 2001). This performance efficacy is likely to, in turn, result in higher levels of actual performance (e.g., Stajkovic & Luthans, 1998).

A number of findings from the non-workplace humor literature lend further support to the idea that individuals' humor is positively associated with their task performance. For example several studies have found that individuals tend to recall information better if they initially found that information to be humorous (e.g., Carlson, 2011; Chapman, 1973). This suggests that individuals' sense of humor (e.g., humor appreciation) is likely to be positively associated with their memory and recall of task-related information since it increases the likelihood that they will

find humor in such information. In support of this, research has found that children's use of humor during completion of mathematics homework has been found to be positively associated with their performance on math tasks and examinations (Else-Quest et al., 2008), suggesting that humor aided their memory and recall of mathematical principles. Several additional findings also suggest that humor is likely to enhance individuals' task performance. Specifically, it has been found that groups of individuals that spend more time laughing during task completion perform better on simple anagram tasks (Pollio & Bainum, 1983). In addition, research shows that the degree to which individuals find test items to be humorous is positively associated with their performance on the test (McMorris et al., 1997). This suggests that individuals' sense of humor may enhance their task performance by increasing the likelihood that they will find humor in the task itself. A number of additional studies have found that individuals' coping humor, specifically, contributes to their task performance, likely through its impact on individuals' strain. For example, positive relationships have been found between individuals' coping humor and their performance on academic examinations (e.g., Ford et al., 2004; Kuiper et al., 1993). Because these individuals who are high on coping humor also tend to appraise such examinations as being positive challenges (as opposed to negative hindrances), to hold other positive cognitions about themselves, and to report less stress, it is likely that the effects of individuals' coping humor on their examination performance is due in part to its positive impact on their cognitive well-being (Kuiper et al., 1993). Additional research suggests that the effects of coping humor on individuals' test performance may also be due in part to its impact on individuals' affective well-being. Specifically, it has been found that women's coping humor serves to buffer them against the negative effects of stereotype threat (i.e., an anxiety provoking stressor involving an individual's perception that he/she is at risk of confirming a negative stereotype

associated with a group that he/she is a member of; Steele & Aronson, 1995) on their mathematical test performance and that women's state anxiety mediates this effect (Ford et al., 2004). Finally, individuals' sense of humor has also been found to be positively associated with their motivation to perform well on tasks, potentially through its impact on individuals' cognitive strain, since both individuals' sense of humor and their task motivation are positively related the degree to which they appraise tasks to be positive challenges (versus negative hindrances; Kuiper et al., 1995). This increased motivation, in turn, is likely to translate into increases in task performance (e.g., Callahan, Brownlee, Brtek, & Tosi, 2003; Millette & Gagné, 2008). Likely a result of the numerous processes (e.g., cognitive, affective, motivational) which positively impact their task performance, research suggests that individuals' who use humor to cope with stressors may be more likely to achieve high levels of academic success. For example, it has been found that gifted students in college preparatory programs and students with high class rankings are more likely to report that they use humor to cope with stressors than other students, suggesting that their use of such humor may have contributed to their performance on academic tasks (Shaunessy & Suldo, 2009). Taken together, these findings from the workplace and non-workplace humor literatures support the idea that employees who possess high levels of humor and use humor in the workplace are likely to demonstrate relatively high levels of task performance.

In addition to employees' interpersonal and task performance, scholars have investigated relationships between employees' humor and their creativity. Employees' humor is believed to be positively associated with their creativity, due in part to its positive impact on their cognitive flexibility (Morreall, 1991). In support of this, a number of researchers have found significant positive relationships between employees' positive humor (i.e., employees' use of humor and

dispositional humor) and employees' creativity (employees' negative humor has been linked to low levels of creativity, however; Gilgun & Sharma, 2012; Horng et al., 2005; Humke & Schaefer, 1996; Susa, 2002).

Taken together, these findings from the workplace and non-workplace humor literatures support the idea that employees who possess high levels of humor *and* who use humor in the workplace are likely to demonstrate relatively high levels of task performance (as well as other forms of performance). This, coupled with evidence for the effects of coworker humor and coworker-employee humor interactions on employees' task performance, serves as a basis for the following hypothesis.

Hypothesis 6: *Employee sense of humor will moderate the effect of coworker humor on employee task performance. High sense of humor employees will demonstrate higher task performance with humorous coworkers than with non-humorous coworkers. Low sense of humor employees will demonstrate lower task performance with humorous coworkers than with non-humorous coworkers.*

Employee humor—strain—performance relationships. Although employees' humor may have a direct impact on both their strain and their performance, it is widely believed by workplace humor scholars that strain serves as a mechanism by which employee humor has its effects on employee performance. In other words, theory suggests that the positive relationships observed between employee humor and employee effectiveness are due in large part to the positive impact of employees' humor on their well-being. For example, employees' positive affect, coping ability, and cognitive flexibility have all been named as potential mediators of the

employee humor – employee effectiveness relationship (e.g., Kaye & Fortune, 2001; Morreall, 1991; Robert & Wilbanks, 2011); suggesting that the effects of employees' humor on their affective, cognitive, and physical responses to work stressors could play a role in determining their interpersonal and task performance. In support of this, research has shown that employees' humor is strongly related to their performance in stressful situations in particular; situations which demand adaptive coping skills (e.g., Bizi et al., 1988). Findings from this research suggest that one reason employees' performance is enhanced by humor is because it helps them to cope with stressors more effectively. Research which shows that employees' coping humor in particular is likely related to their performance (e.g., Kaye & Fortune, 2001) lends support to this idea. Finally, findings from the group-level workplace humor literature suggest that employees' humor may be linked to their interpersonal performance specifically because it impacts the likelihood that employees will be exposed to common interpersonal stressors within their workgroup (e.g., interpersonal conflict; e.g., Adams & Buck, 2010; Ilies et al., 2011; Jaramillo et al., 2011; Repetti, 1993; Story & Repetti, 2006). Because employees' humor is linked to their ability to avoid such interpersonal stressors within their workgroup (e.g., Grugulis, 2002; Kahn, 1989; Lynch, 2010; Plester & Orams, 2008; Thompson, 2009; Walkowicz, 1994), it likely has a significant impact on the degree to which they experience strain as a result of having interactions with their fellow workgroup members (i.e., humor is likely to minimize the occurrence of strain following such interactions by limiting the occurrence of interpersonal stressors; e.g., Adams & Buck, 2010; Ilies et al., 2011; Jaramillo et al., 2011). In turn, the level of strain they experience (or expect to experience) as a result of coworker interactions is likely to impact employees' motivation to engage in interpersonal behaviors and, as such, their interpersonal performance is likely to be affected (i.e., individuals who experience less strain as a result of coworker

interactions are more likely to be motivated to engage in them, and therefore more likely to actually engage in them; e.g., Mueller, 2012; Savolainen, 2012; Vroom, 1964).

Several findings from the non-workplace humor and general occupational stress literatures also provide support for the idea that employees' humor impacts their performance through its effects on employee strain. The numerous studies which have found significant positive relationships between individuals' coping humor specifically and their performance on stressful academic tasks (i.e., tests; Ford et al., 2004; Kuiper et al., 1993), and on their overall academic success (Shaunessy & Suldo, 2009), suggest that it is the degree to which humor helps individuals to cope with stressors which contributes to their enhanced task performance. In support of this, research has found that individuals' state anxiety (i.e., affective strain) mediates the effect of coping humor on test performance (Ford et al., 2004) and that positive cognitions (e.g., indicators of cognitive well-being/strain) are directly linked to both individuals' humor and their motivation to perform well on tasks (Kuiper et al., 1993; Kuiper et al., 1995). Finally, there are a number of findings in the occupational stress literature which reveal strong negative associations between various forms of individual strain and various forms of performance (e.g., Lang et al., 2007). Such findings suggest that the strain which individuals with low levels of humor are likely to experience has the potential to contribute to subsequent decrements in their performance. These findings, coupled with others from the workplace and non-workplace humor literatures, strongly suggest that individuals' humor operates through their perceived, affective, cognitive, and physical strain to impact their interpersonal and task performance.

Moreover, other research suggests that humor found in the environment (e.g., leader humor, exposure to humorous media, humorous task elements) is particularly important in determining employees' performance under stressful conditions that demand effective coping

strategies (e. g., Yao, 2005) and that such humor has its effects on employee performance through various indicators of employee strain (e.g., positive affect, anxiety; Filipowicz, 2006; Ford et al., 2012; Hughes, 2009). These findings suggest that, in addition to employees' own humor, environmental humor (e.g., coworker humor) is also likely to have an impact on employee performance outcomes via its effects on employee strain.

Taken together, prior findings from multiple streams of research suggest that employees' strain levels, as they result from interactions between their own humor and that of their coworkers, do in fact have the potential to impact employees' performance. Although, other mediators may also play a role in the hypothesized humor—performance relationships (e.g., motivation, self-efficacy, ability, likability; e.g., Callahan et al., 2003; Jones, 2006; Kaye & Fortune, 2001; Kuiper et al., 1995; Millette & Gagné, 2008; Morkes et al., 1999; Moran & Hughes, 2006; Mueller, 2012; Savolainen, 2012; Stajkovic & Luthans, 1998; Vroom, 1964), it is expected that at least some of the effects that coworker-employee humor interactions have on employees' performance will occur through their effects on employees' strain. As such, the following hypotheses are proposed.

Hypothesis 7: *Employee a) perceived b) affective, c) cognitive, and d) physical strain will partially mediate the interactive effect of coworker humor and employee sense of humor on employee interpersonal performance.*

Hypothesis 8: *Employee a) perceived b) affective, c) cognitive, and d) physical strain will partially mediate the interactive effect of coworker humor and employee sense of humor on employee task performance.*

A summary of the proposed hypotheses are presented in Figure 1. Next a method for testing these hypotheses will be described.

CHAPTER THREE: METHOD

Participants

Undergraduate level college students from the University of Central Florida (UCF) were recruited to participate in either the current study or a pilot study of the experimental manipulation (i.e., the coworker humor manipulation). Individuals enrolled in psychology courses at UCF were primarily targeted for recruitment. All volunteers received compensation for their participation in the form of university course credit.

Pilot study sample. The pilot study of the coworker humor manipulation included 50 undergraduate students naïve to the nature of the experimental manipulation. Participants were randomly assigned to one of two experimental conditions (i.e., humorous coworker condition and non-humorous coworker condition). Twenty-two (44%) of the pilot study participants were assigned to the humorous coworker condition and the remaining 28 (56%) were assigned to the non-humorous coworker condition. The pilot study sample was comprised of 30 females (60%) and 20 males (40%) ranging in age from 18-29 ($M = 19.90$, $SD = 2.42$). Of the participants, approximately 46% were Caucasian, 8% were Black, 18% were Hispanic, 8% were Asian, and 20% were of mixed, another, or of unreported ethnicity.

Current study sample. Participants included in the current study were 152 undergraduate students. This sample did not include any individuals who had also participated in the pilot study of the coworker humor manipulation. Eighty (53%) of the current study participants were randomly assigned to the humorous coworker condition while 72 (47%) were randomly assigned to the non-humorous coworker condition. Participants included 96 females (63%) and 56 males (37%) ranging in age from 18-29 ($M = 19.43$, $SD = 2.03$). Of the

participants, approximately 43% were Caucasian, 13% were Black, 18% were Hispanic, and 9% were Asian, while 17% either indicated that they were of another ethnicity, of mixed ethnicity, or did not report their ethnicity.

Procedure

Study timeline. Prior to their participation, all individuals who volunteered to participate in either the pilot or the current study were informed of the potential risks (which were deemed minimal), benefits, and expectations associated with their involvement in the study and were asked to provide informed consent. Throughout both the pilot and the current studies, all participants were treated in accordance with ethical guidelines and the requirements set forth by the University of Central Florida's Office of Research & Commercialization (see Appendix A for Institutional Review Board outcome letter). Upon arrival, all participants (i.e., all individuals participating in both the pilot study and the current study) completed an informed consent form (see Appendix B), a demographic questionnaire (see Appendix C), a sense of humor measure, trait-level positive and negative affect measures, and a trait-level somatic anxiety measure. In addition, baseline levels of participants' perceived strain, performance on an anagram task (a measure of cognitive strain), and systolic blood pressure (a measure of physical strain) were assessed. In total, participants took approximately 45-60 minutes to complete this collection of measures.

Participants then took part in an interactive multi-media simulation during which they were asked to imagine that they were hospital employees in an emergency room (ER) waiting area. Prior to the simulation, participants were introduced to a study confederate who was to play the role of their coworker for the duration of the simulation. It is at this time that the

manipulation of positive coworker humor commenced (the nature of the positive coworker humor manipulation is detailed below). Following a brief introduction to their coworker, participants (alongside their coworkers) received a 15-minute training presentation which provided them with instructions regarding how to complete the simulation. Upon conclusion of the training, participants began the simulation which lasted approximately 45 minutes. The simulation and the events which immediately preceded it are described in greater detail below.

Immediately following the 45-minute simulation, participants' strain was assessed using a collection of multiple measures, including state-level positive and negative affect measures (measures of affective strain), an anagram task and a measure of perceived task difficulty (measures of cognitive strain), as well as systolic blood pressure readings and a state-level somatic anxiety measure (measures of physical strain). In addition, the degree to which participants' expended mental effort on the ER simulation task was assessed. Participants took approximately 10-15 minutes to complete these measures. Following completion of these measures, confederate coworkers were removed from the room and kept separate from participants for the remainder of the session. Confederate coworkers were escorted out of the room by a researcher under the pretense that the remainder of the participants' tasks had to be completed individually, without assistance from their coworkers. Following the study confederate's departure, pilot study participants' perceptions of their coworkers' positive and negative humor were assessed. This measure served as a manipulation check and as a subjective measure of coworker humor. This measure took participants approximately 5 minutes to complete. To assess participants' interpersonal performance, video recordings of participants were made during their participation in the study and were later observed and coded by independent raters. To assess participants' task performance, participants were asked to enter

information into a number of spreadsheet documents during the time that they were engaged in the ER simulation. These documents were later collected and coded by independent raters.

In total, each experimental session lasted approximately 2.5 hours. During this time, participants were exposed to a confederate coworker for approximately 2 hours and 15 minutes. For the entire time that participants and confederate coworkers were in the same room together, confederates were engaged in the same activities as the participants (e.g., training events, simulation events, completion of measures). During the remaining time, participants were engaged in independent tasks and were told that their coworker was simultaneously completing the same tasks in an adjacent room. Upon completion of all study tasks, participants both received a written debriefing form (see Appendix D) and were verbally debriefed by a study researcher. During the debriefing process participants were informed of the study's purpose and were told that the individual with whom they were working (i.e., their coworker who they were previously told was a fellow research participant) was actually a study confederate acting in concert with researchers.

Simulation. Participants took part in an interactive multi-media simulation during which they were asked to imagine that they were hospital employees in an ER waiting area (Smith-Jentsch, 2007). To augment its fidelity, the physical environment in which the simulation took place was similar in appearance to an ER reception/waiting area.

Prior to the simulation, participants were told that they would be completing the simulation with a fellow research participant who would serve as their coworker. In reality, coworkers were confederates acting in concert with the researchers conducting the study. Following the introduction of their coworker, participants were positioned at a fixed computer station next to their coworker at a reception desk. Participants and their coworkers were then

informed of their individual and team responsibilities. Team responsibilities included interacting with patients and coworkers both verbally and in writing, keeping track of all events that took place during the simulation, and properly completing hospital paperwork. Participants and coworkers each occupied specialized roles throughout the simulation. Coworkers always played the role of a customer service representative and participants were always assigned to the role of a hospital clerical assistant. The nature of each role will be described further below. Participants then completed training (alongside their coworker) which covered general information about team tasks as well as detailed information about role-specific functions and responsibilities. Participants were trained in both roles and the importance of being aware of their coworker's job responsibilities was stressed.

Following training, a 45-minute multi-media simulation filmed in first-person perspective was projected onto an adjacent wall so that it appeared as though multiple projected characters were speaking directly to participants and coworkers. Although all individuals participating in the simulation were facing the projected content, only the customer service representative (i.e., the coworker) interacted with the projected characters via a microphone and keyboard. Simultaneously, the hospital clerical assistant (i.e., the participant) completed paperwork which contained information about the characters in the simulation, received instructions from a simulated coworker via a computer-based chat program, and interacted with the coworker occupying the customer service representative role. The simulation was identical for all participants (i.e., it was not adaptive) and it was scripted so that participants were required to attend to all information provided during the simulation in order to successfully fulfill their regular job functions.

Coworker humor manipulation. Coworker humor was manipulated through the use of study confederates who were working in concert with researchers. Each study participant was paired with one confederate coworker prior to their participation in the study. Participants paired with a coworker who played the role of a humorous coworker comprised the “humorous coworker” (HC) experimental group. Participants paired with a coworker who played the role of a non-humorous coworker comprised the “non-humorous coworker” (NHC) experimental group. Participants were randomly assigned to one of these two experimental groups upon arrival to the study location. The same set of confederates served as coworkers for participants in both experimental groups so that each confederate ultimately played the role of both a humorous coworker as well as a non-humorous coworker multiple times throughout the course of the study. Whether a confederate followed the humorous coworker script or the non-humorous coworker script (the nature of which will be described in detail below) during any given experimental session depended entirely upon which experimental group the participant in that session was assigned to.

Study confederate selection and training. Four undergraduate-level college students served as confederates in this study. To maintain appropriate levels of control over as many extraneous variables as possible, all confederates were similar in terms of their age, gender, ethnicity, and physical appearance (i.e., confederates were Caucasian females between the ages of 18-21). Further, all confederates received approximately 80 hours of training administered by the principal investigator, during which they received intensive instruction on how to behave in the presence of participants, demonstration of both appropriate and inappropriate confederate behaviors, numerous opportunities to practice the trained behaviors, and detailed performance feedback immediately following practice sessions. Each of these training elements alone and

combined have been found to greatly contribute to training effectiveness (e.g., as components of behavior modeling training; Taylor, Russ-Eft, & Chan, 2005) and, therefore, were expected to result in standardized practices among confederates. To further ensure the integrity of the experimental manipulation, confederates' performance was monitored closely by the principal investigator and refresher training was provided as needed. In addition, to avoid possible contamination of the experimental manipulation, all confederates were blind to the study hypotheses (although they were necessarily aware of the nature of the experimental manipulation). It is expected that this practice prevented study confederates from behaving in ways that would increase the likelihood of achieving significant findings.

The content of the training was the same for all study confederates. Confederates were trained to play the role of customer service representative for the duration of the ER simulation activity while posing as a fellow research participant and coworker to actual study participants. All confederates received training in how to serve as both a humorous coworker as well as a non-humorous coworker to study participants (although during any given experimental session they played the role of only one or the other). Confederates were trained to follow two different confederate scripts in the presence of participants, one for each type of coworker they would be playing (i.e., humorous and non-humorous). The humorous coworker script directed confederates to demonstrate both positive humor production and positive humor appreciation behaviors in response to experimental events. The non-humorous coworker script directed confederates to refrain from demonstrating either type of positive humor behavior (i.e., production or appreciation behaviors) and to, instead, respond to experimental events in a non-humorous manner. Both scripts provided confederates with a series of written and verbal responses to be given following each experimental event and were detailed enough so that virtually no written or

verbal responses originating from confederates would be unscripted. To ensure that only positive coworker humor was being manipulated, both scripts were equivalent to one another in terms of the number and timing of responses given by confederates as well as the clarity, length, and general meaning (i.e., information provided by) of each response. Further, confederates were trained to behave consistently across both conditions in all ways unrelated to the positive workplace humor manipulation. To ease the cognitive burden and training requirements placed on confederates, many experimental events were associated with confederate responses that were identical across both scripts (approximately 56% of confederate responses were identical across experimental conditions).

Study confederate script development. The confederate scripts were developed and tested by a team of 15 researchers, which included the principal investigator. To develop the scripts, 9 researchers independently developed humorous and otherwise equivalent non-humorous responses to each experimental event (i.e., coworker introductions, training events, and simulation events) based on the definition of positive coworker humor provided by Mesmer-Magnus et al. (2012). The same 9 researchers then met to discuss the independently generated responses and to achieve consensus regarding which responses would be used for each event. The resulting script was then presented to a group of 6 researchers who were not involved in its initial development. These researchers were asked to identify any responses that they believed to be (non-)humorous when they were not intended to be as well as to identify any responses that they believed involved negative humor, based on the definition of negative humor provided by Mesmer-Magnus et al. (2012). The scripts were then revised to modify/eliminate responses that were intended to be (non-)humorous but were not perceived as such by the majority and to modify/eliminate any responses that were perceived by the majority as involving negative

humor. Final versions of the confederate coworker scripts can be found in Appendix E. To ensure that these scripts resulted in the manipulation of positive coworker humor (and not in the manipulation of negative coworker humor), participants in the pilot study sample reported their perceptions of their coworker's positive and negative humor at the end of the experimental session. The nature of this manipulation check is described in greater detail below.

Measures

Coworker humor manipulation check. To evaluate whether positive coworker humor was in fact manipulated across conditions, and to ensure that negative coworker humor was not, participants in the pilot study sample completed a coworker humor measure. Completion of this measure was the last activity that pilot study participants engaged in before the study session was terminated so that their exposure to the measure did not influence their perceptions of or responses to other study events or measures. Pilot study participants' perceptions of both positive coworker humor and negative coworker humor were assessed using this measure. Five items were used to assess positive coworker humor and 2 items were used to assess negative coworker humor.

Items on the positive coworker humor subscale were adapted from the 5-item Positive Supervisor Humor Scale (Decker & Rotondo, 2001) such that the referent in each item was changed from the participant's supervisor to his/her coworker. Pilot study participants responded to items on this subscale using a 5-point Likert scale (1 = *Strongly Disagree*, 5 = *Strongly Agree*). Sample items include, "My coworker communicates with humor" and "My coworker enjoys jokes." The full subscale, as well as the full coworker humor scale in which it is embedded, can be found in Appendix F. The Positive Supervisor Humor Scale has demonstrated

sufficient reliability ($\alpha = .86$) as well as construct and criterion-related validity (e.g., predicting leader effectiveness: $\beta = .43, p < .001$) in a sample of 359 business school alumni (Decker & Rotondo, 2001). Similarly, the positive coworker humor subscale demonstrated a high level of reliability in the pilot study sample ($\alpha = .95$).

Items on the negative coworker humor subscale were developed based on the definition of negative humor provided by Mesmer-Magnus and colleagues (2012). Two items were written to capture the 2 primary forms of negative humor (i.e., self-defeating humor and aggressive humor) and therefore include, “My coworker uses humor to put others down” and “My coworker uses humor to put themselves down.” Like items on the positive coworker humor subscale, pilot study participants responded to items on the negative coworker humor subscale using a 5-point Likert scale (1 = *Strongly Disagree*, 5 = *Strongly Agree*). The items comprising this subscale are included in the full coworker humor scale found in Appendix F. In the pilot study sample, the negative coworker humor subscale demonstrated a high degree of reliability ($\alpha = .83$).

Sense of humor. Current study participants’ sense of humor was assessed using the Multidimensional Sense of Humor Scale (MSHS; Thorson & Powell, 1993). This self-report measure was comprised of 24 items, which assessed 6 elements of participants’ sense of humor (i.e., recognition of oneself as a humorous person, recognition of others’ humor, appreciation of humor, propensity to laugh, humorous perspective on life, and use of humor to adapt/cope) falling along 4 dimensions (i.e., humor production and social use of humor, coping/adaptive humor, humor appreciation, and attitudes toward humor). Although sense of humor is comprised of four distinct but related dimensions, research demonstrates that these dimensions comprise a stable general factor representing individual sense of humor (Thorson & Powell, 1993). As such, participants’ scores on the complete measure (all subscales included) were used in the current

study. Participants responded to items on the MSHS using a 5-point Likert scale (1 = *Strongly Disagree*, 5 = *Strongly Agree*). Sample items include “I use humor to entertain my friends,” “Humor helps me cope,” “I like a good joke,” and “I’m uncomfortable when everyone is cracking jokes.” The full scale can be found in Appendix G. Items 1-11 assessed humor production and social use of humor, items 12-18 assessed coping/adaptive humor, items 19-20 assessed humor appreciation, and items 21-24 assessed attitudes toward humor. The MSHS has demonstrated sufficient reliability (e.g., $\alpha = .92$; Thorson & Powell, 1993) as well as construct and criterion-related validity across multiple samples (e.g., Thorson & Powell, 1993; Thorson, Powell, Sarmany-Schuller, & Hampes, 1997). In the current study sample, the full MSHS (all subscales included) also demonstrated a high level of reliability ($\alpha = .92$).

Strain. Information regarding current study participants’ affective, cognitive, and physical strain was collected using a combination of subjective and objective measures. Multiple indicators of these three forms of strain were assessed. Further, participants’ perceived strain was assessed via a subjective measure. Some measures of participants’ strain were collected at multiple times throughout their participation in the current study. Specifically, participants’ perceived strain, performance on an anagram task, and systolic blood pressure were assessed immediately upon participants’ arrival (T1; i.e., immediately following their provision of informed consent to participate in the study), so that participants’ baseline levels of these indicators of strain could be controlled for during statistical tests of the study hypotheses. These indicators of participants’ strain were then measured a second time immediately following participants’ completion of the work simulation (T2; i.e., approximately 2 hours into the study session), along with several other indicators of participants’ strain that were not assessed at T1.

These included measures of participants' state-level positive affect, state-level negative affect, perceived task difficulty, and state-level somatic anxiety.

Perceived strain. Participants' perceived strain was assessed using a 4-item measure developed for the purpose of the current study. This measure asked participants to indicate the degree to which any part of the task they just completed (e.g., the work, coworkers, supervisors, clients) made them feel "generally stressed," "emotionally distressed," "physically uncomfortable," and "mentally overloaded" using a 7-point Likert-type scale (1 = *Not at All*, 7 = *Extremely*). The complete measure and the instructions provided to participants may be found in Appendix H. High scores on this measure were considered an indication of high levels of perceived strain. Items similar to those comprising this measure have frequently been used as reliable and valid indicators of perceived strain across numerous samples (e.g., Kim, 2006; Wofford & Goodwin, 2002). The measure developed for the current study also demonstrated a high level of reliability at both T1 ($\alpha = .88$) and T2 ($\alpha = .85$).

Affective strain. Participants' affective strain was assessed using the Positive and Negative Affect Scale –State Version (PANAS-State; Watson, Clark, & Tellegen, 1988). This measure asked participants to rate the degree to which 20 different emotions described the way they felt at the present moment using a 5-point Likert-type scale (1 = *Not at All*, 5 = *Extremely*). Ten emotions on this scale were indicators of positive affect (PA; e.g., interested, excited, enthusiastic) while the remaining 10 emotions were indicators of negative affect (NA; e.g., upset, irritable, afraid). The full scale can be found in Appendix I. In prior research, both high scores on NA and low scores on PA have been widely used as reliable indicators of affective strain (e.g., Dowd et al., 2010; Simpson et al., 2008). Thus, high scores on the NA subscale and low scores on the PA subscale were considered indicative of high levels of participant strain in the current

study. In the current study sample, both the PA and NA subscales of the PANAS-State demonstrated sufficient levels of reliability (PA: $\alpha = .92$, NA: $\alpha = .82$).

Cognitive strain. Both objective and subjective measures were used to assess participants' cognitive strain. Performance on an anagram task served as an objective measure and self-reported task difficulty served as a subjective measure.

Anagram task performance. An anagram solving task was used as a measure of participants' cognitive strain. During this task, participants were given 2 minutes to solve 10 single-solution 5-letter anagrams. Participants were provided with 5 easy anagrams and 5 difficult anagrams to solve at once. Anagram difficulty is determined by the order in which the letters are arranged in the anagram compared to the way in which the letters are arranged in the anagram solution (Mayzner & Tresselt, 1958). Letter orders used to form easy anagrams for this measure included 12354, 23451, 51234, 34512, 45123, while letter orders used to form difficult anagrams for this measure included 14253, 25314, 52413, 31425, 42513. Using the letter orders specified by Mayzner and Tresselt (1958), single-solution anagrams were formed from 5-letter words composed of a combination of letters that, when rearranged, form no other words in the English language. Such words were randomly selected from a list of anagram solutions presented by Olson and Schwartz (1967). Examples of resulting anagrams include "OUTHY," which is an easy anagram with the letter order of 23451 (the solution is "YOUTH") and "RPCOH," which is a difficult anagram with the letter order of 31425 (the solution is "PORCH"). Each time participants' cognitive strain was measured (i.e., T1 and T2), participants received different parallel sets of 10 anagrams so that practice effects would not influence anagram performance (see Appendix J for complete T1 and T2 anagram sets). Participants' performance on the anagram task was determined by the number of anagrams that participants correctly solved in the

2-minute period. Providing participants with 2 minutes to solve 10 anagrams is consistent with prior research that has utilized similar tasks. In prior studies, participants have been given various amount of time to solve each anagram they are presented (e.g., ranging from 5-60 seconds per anagram; Harleston, Smith, & Arey, 1965; Kassoff, 2009; Martin & Manning, 1995; Miller, Chapman, Chapman, & Collins, 1995). In the current study, participants were provided with an average of 12 seconds to solve each anagram, although they may have taken more or less time on any one anagram since they were presented with all 10 anagrams simultaneously. Consistent with prior research, lower performance on this task (i.e., fewer anagrams solved) was considered indicative of higher cognitive strain. Performance on similar tasks has been shown to be a reliable and valid measure of cognitive strain indicators (i.e., cognitive functioning; Harleston et al., 1965; Kassoff, 2009; Martin & Manning, 1995; Miller et al., 1995). As such, it was expected that performance on the task used in the current study would demonstrate sufficient reliability and validity as a measure of cognitive strain in the current study sample.

Subjective task difficulty. Participants were asked to report the degree to which they perceived the task they just completed to be difficult. Participants' subjective report of task difficulty served as an indicator of their cognitive strain. Participants' perceptions of task difficulty were measured using one item adapted from an item developed by Yeo and Neal (2004). This item read, "How difficult did you find the task you just completed?". Participants responded to this item using an 11-point scale (1 = *Not at all*, 11 = *Extremely Difficult*). The complete item and instructions provided to participants may be found in Appendix K. High scores on this measure were considered an indication of high cognitive strain. Similar measures of subjective task difficulty have previously been used as reliable and valid indicators of cognitive strain (e.g., Ljungberg & Neely, 2007). As such, it was expected that the measure used

in this research would serve as a reliable and valid indicator of cognitive strain in the current study sample.

Physical strain. Both objective and subjective measures were used to assess participants' physical strain. Participants' recorded systolic blood pressure served as an objective measure and participants' self-reports of somatic anxiety served as a subjective measure.

Systolic blood pressure. Participants' systolic blood pressure (SBP) was assessed using an automatic digital blood pressure monitor. Elevated SBP readings have been widely used in prior stress research as reliable and valid indicators of physical strain (e.g., Ganster et al., 1991; Kim, 2006; Schwartz et al., 1996). To estimate the reliability of the blood pressure monitoring device in the current study, participants' SBP was assessed two consecutive times at each measurement time (i.e., twice at T1 and twice at T2; see Appendix L for the form used to record participants' SBP) and an estimate of the device's test-retest reliability was calculated using Pearson's product-moment correlation analysis. In the current study, this device demonstrated sufficient reliability in measuring SBP at both T1 ($r = .91$) and T2 ($r = .82$).

Somatic anxiety. Participants' somatic anxiety was assessed using 11 items from the State-Trait Inventory for Cognitive and Somatic Anxiety-State Version (STICSA-State; Ree et al., 2008). Participants were instructed to respond to items on this measure using a 4-point Likert-type scale (1= *Not at All*, 4 = *Very Much*) in order to report the degree to which statements associated with each of the 11 items were indicative of how they felt at the moment. Sample items include, "My palms feel clammy" and "My heart beats fast." The somatic anxiety subscale of the STICSA-State measure can be found in Appendix M. This measure of somatic anxiety has demonstrated reliability and validity as an indicator of physical strain across a number of

samples (e.g., Gros, Antony, Simms, & McCabe, 2007; Ree et al., 2008). Similarly, this measure demonstrated sufficient reliability in the current study sample ($\alpha = .79$).

Performance. Ratings produced by trained coders were used to assess both participants' interpersonal performance and their task performance. Behavioral ratings served as a measure of participants' interpersonal performance. Ratings of the degree to which participants' correctly completed their assigned tasks served as a measure of their task performance.

Interpersonal performance. Behavioral ratings of current study participants' interpersonal performance were made based on the degree to which participants engaged in a number of specific interpersonal behaviors throughout the course of their participation in the ER simulation activity. These interpersonal behaviors included *supporting behavior* and *cooperative behavior*. In the current study, supporting behavior was conceptualized as providing a suggestion or direction to one's coworker regarding how he/she should complete a task, offering or providing one's coworker with help in completing a task, offering or providing one's coworker with assistance when they encountered a problem at work, or noting and/or correcting an error committed by one's coworker. Making a suggestion about what a coworker should say during a simulation event, offering to help complete a coworker's task, offering to back a coworker up when he/she got in trouble with a supervisor/coworker, and noting/correcting a coworker's verbal or written error are all examples of how participants could have engaged in this type of interpersonal behavior in the context of the current simulation. In the current study, cooperative behavior was conceptualized as sharing information related to a workgroup task with one's coworker or asking one's coworker for information related to a workgroup task. Sharing the contents of a message they received from other sources, providing or asking for information about events that occurred during the simulation, and providing or asking for information about a

simulation character are examples of how participants could have engaged in this type of interpersonal behavior in the context of the current simulation.

The above interpersonal behaviors were chosen to represent participants' interpersonal performance in the current study largely because, given its nature, it was both possible and probable for participants to engage in each of them during their participation in the ER simulation. Further, inclusion of these specific interpersonal behaviors in participants' interpersonal performance scores was consistent with prior definitions of interpersonal performance (e.g., Barrick et al., 2005; Campbell, et al., 1993; Campbell et al., 1990; Viswesvaran et al., 1996; Wisecarver et al., 2007; Zazanis, et al., 2001). Review of these definitions suggests that the interpersonal behaviors included in the current study encapsulate a substantial and representative portion of the interpersonal performance domain.

Trained interpersonal performance raters reviewed footage of participants engaged in the ER simulation in order to count the number of discrete instances that each participant engaged in a specified interpersonal behavior (see Appendix N for the interpersonal performance rating form). For each participant, the numerical sum of interpersonal behaviors he/she displayed during the ER simulation formed the participant's interpersonal performance score, with higher sums indicating higher levels of interpersonal performance. Two trained coders were utilized to produce participants' interpersonal performance scores. The interpersonal performance of 62 participants was rated by both coders so that an interrater reliability estimate for the resulting interpersonal performance scores could be obtained. A Pearson's product-moment correlation analysis yielded an interrater reliability estimate of $r = .98$.

Task performance. Ratings of current study participants' task performance were made based on the degree to which participants correctly completed the administrative tasks assigned

to them throughout the course of their participation in the ER simulation activity. Specifically, participants' task performance scores were based on the degree to which they correctly entered 86 independent pieces of information into 4 separate spreadsheet documents as per the instructions they received for correctly entering this information into the spreadsheets during their training prior to the simulation and according to instructions they received from their simulated supervisors/coworkers during the simulation. The first document was a Customer Log Form into which participants were instructed to enter the name, gender, and age of any simulated customers they encountered during the ER Simulation, as well as the identity of any other individuals who accompanied the customer to the ER and the reason for their visit to the ER. The second document was an Insurance Claim form into which participants were instructed to enter various pieces of information such as the customers' birthdates, birthplaces, occupations, insurance companies, and insurance policy numbers, as well as the reason for the customers' visit to the ER and any additional comments relevant to processing customer insurance claims. The third document was an Employee Tracking Form into which participants were instructed to enter the names of all simulated employees who were working in the ER during their shift and the date on which they arrived. The fourth document was a Complaint Form into which participants were instructed to enter the date on which any complaints were lodged against the ER or individuals working within it, the name of the individual who made the complaint, the name of the individual towards whom the complaint was directed, a description of the event associated with the complaint, and the names of any witnesses to the event. Participants received the information they needed to correctly complete each of these forms from a variety of sources, including paper documents they were provided with at their workstation, online chat messages they received from simulated coworkers/supervisors, voicemails and e-mails they received as

part of the simulation, and directly from the simulation characters projected on the wall in front of them.

Trained task performance raters examined each of the 4 spreadsheet documents that participants were tasked with completing throughout the simulation in order to count the number of independent pieces of information that were correctly entered by each participant (see Appendix O for the correctly-completed spreadsheets against which raters scored participants' task performance and Appendix P for the task performance rating form). For each participant, the numerical sum of correctly entered pieces of information across the 4 spreadsheet documents formed the participant's task performance score, with higher sums indicating higher levels of task performance. Incorrectly entered information (i.e., information entered in the wrong place or inaccurate information) and extra information (i.e., information that participants were not requested to enter) were not counted toward the participant's task performance score. Two trained coders were utilized to produce participants' task performance scores. The task performance of 145 participants was rated by both coders so that an interrater reliability estimate for the resulting task performance scores could be obtained. A Pearson's product-moment correlation analysis yielded an interrater reliability estimate of $r = .96$.

Control variables. There were a number of non-study variables likely to be directly related to the variables included in the current study. As such, information regarding these variables was collected from current study participants and used as control variables in statistical tests of the study hypotheses.

Trait-level affect. Prior research suggests that significant relationships exist between individuals' trait-level affect and their affective strain (as well as other outcomes such as performance; e.g., Barsky, Thoresen, Warren, & Kaplan, 2004; Zellars, Perrewé, Hochwarter, &

Anderson, 2006). As such, both participants' trait-level positive affect and their trait-level negative affect were assessed so that these variables could be controlled for in tests of study hypotheses related to affective strain. Trait-level positive and negative affect were assessed using the Positive and Negative Affect Scale –Trait Version (PANAS-Trait; Watson et al., 1988). This measure asked participants to rate the degree to which 20 emotions described the way they generally feel (i.e., the way they feel on average) using a 5-point Likert-type scale (1 = *Not at All*, 5 = *Extremely*). Ten of the emotions on this scale were indicators of positive affect (PA; e.g., interested, excited, enthusiastic) while the remaining 10 emotions were indicators of negative affect (NA; e.g., upset, irritable, afraid). The full scale is provided in Appendix Q. High scores on both the PA and NA subscales indicate high levels of trait-level positive and negative affect, respectively. Prior research has yielded a large amount of evidence in support of the reliability and the validity of the PANAS-Trait as a measure of trait-level affect (e.g., Barsky et al., 2004; Watson et al., 1988; Zellars et al., 2006). Likewise, in the current study, both the PA ($\alpha = .92$) and the NA ($\alpha = .84$) subscales of the PANAS-Trait demonstrated high levels of reliability.

Trait-level somatic anxiety. Trait-level somatic anxiety has been found to be associated with individuals' physical strain (as well other forms of strain; Grös, Antony, Simms, & McCabe, 2007; Ree et al, 2008). As such, participants' trait-level somatic anxiety was assessed so that this variable could be controlled for during tests of study hypotheses related to participants' physical strain; in particular, their state-level somatic anxiety. Trait-level somatic anxiety was assessed using 11 items from the State-Trait Inventory for Cognitive and Somatic Anxiety- Trait Version (STICSA-Trait; Ree et al., 2008). Participants were instructed to respond to items on this measure using a 4-point Likert-type scale (1= *Not at All*, 4 = *Very Much*) in order to indicate how often statements associated with each of the 11 items were true of them in

general. Sample items include, “My palms feel clammy” and “My heart beats fast.” The somatic anxiety subscale of the STICSA-Trait measure is provided in Appendix R. This measure of somatic anxiety has demonstrated sufficient reliability and validity in numerous studies (e.g., Grös et al., 2007; Grös, Simms, & Antony, 2010; Ree et al., 2008). Similarly, this STICSA-Trait subscale demonstrated a sufficient level of reliability ($\alpha = .79$) in the current study sample.

Baseline strain variables. As described above, several indicators of participants’ strain were assessed immediately upon participants’ arrival (i.e., T1; immediately following their provision of informed consent to participate in the study and prior to their exposure to the study manipulation) so that baseline levels of those indicators of strain could be controlled for during statistical tests of study hypotheses involving relevant study variables. Indicators of strain that were measured at T1 included participants’ perceived strain, performance on an anagram task, and SBP. Each of these variables were assessed so that they could be controlled for in tests of study hypotheses related to participants’ T2 perceived strain, T2 anagram task performance (an indicator of cognitive strain), and T2 SBP (and indicator of physical strain), respectively. For perceived strain and SBP, participants’ baseline levels (T1 levels) were assessed using the same measures that were used to assess their perceived strain and SBP levels following their exposure to the manipulation and their participation in the ER simulation task (T2 levels). For participants’ anagram task performance, parallel measures were used at T1 and T2. Complete descriptions of these measures and their reliabilities were provided above.

Subjective mental effort. Prior research has shown that the degree to which individuals find tasks to be difficult is highly related to the degree to which they expend mental effort on the tasks. As such, it has been suggested that whenever one variable is being predicted, the other should be measured and controlled for (Yeo & Neal, 2004; 2008). Therefore, because perceived

task difficulty was used as a measure of participants' cognitive strain, participants' perceived mental effort was also assessed so that it could be controlled for during statistical tests of study hypotheses involving participants' subjective task difficulty. In order to do this, participants were asked to respond to one item adapted from an item developed by Yeo and Neal (2004). This item read, "How hard were you trying during the task you just completed?". Participants responded to this item using an 11-point scale (1 = *Not at all*, 11 = *Extremely Hard*). The complete item and the instructions provided to participants are provided in Appendix K. High scores on this measure were considered to be an indication of high mental effort. Similar measures have been used as reliable and valid indicators of mental effort (e.g., Odle-Dusseau, Bradley, & Pilcher, 2010; Yeo & Neal, 2008). As such, the measure used in the current study was expected to serve as a reliable and valid indicator of mental effort.

CHAPTER FOUR: RESULTS

Pilot Test of Experimental Manipulation

To ensure that the study confederate scripts served their intended purpose and no other, a pilot study of the coworker humor manipulation was conducted. Fifty undergraduate students naïve to the nature of the experimental manipulation participated in the pilot study while study confederates served as their coworkers. Twenty-two of the participants were paired with confederates who followed the humorous coworker script for the duration of an experimental session while the remaining 28 were paired with confederates who followed the non-humorous coworker script. All individuals who participated in the pilot study completed the entire study protocol (detailed above), at the end of which they provided their perceptions of their coworker's humor via the coworker humor manipulation check described above. All participants reported their perceptions of their coworker's positive humor so that the degree to which the confederates following the humorous coworker script were perceived as using more positive humor than those following the non-humorous coworker script could be assessed (i.e., to ensure that the experimental manipulation actually involved the manipulation of positive humor). Further, all participants also reported their perceptions of their coworker's negative humor so that the degree to which the confederates following the humorous coworker script were perceived as using negative humor could be assessed (i.e., to ensure that the experimental manipulation did not involve the manipulation of negative humor).

To assess the validity of the experimental manipulation 2 independent samples t-tests were conducted. In the first t-test, the mean positive coworker humor ratings of participants in the humorous coworker (HC) experimental condition were compared to the mean positive

coworker humor ratings of participants in the non-humorous coworker (NHC) experimental condition. Results reveal that participants' in the HC condition reported more positive coworker humor ($M = 4.09$, $SD = 0.52$) than participants in the NHC condition ($M = 2.44$, $SD = 0.69$) and that the difference between the mean positive coworker humor ratings across experimental groups was statistically significant ($t = -9.26$ (48), $p < .01$). In the second t-test, the mean negative coworker humor ratings of participants in the HC experimental condition were compared to the mean negative coworker humor ratings of participants in the NHC experimental condition. Results of this analysis reveal that there was no significant difference between the HC condition ($M = 1.43$, $SD = 0.50$) and the NHC condition ($M = 1.71$, $SD = 0.75$) with regard to participants' ratings of negative coworker humor ($t = 1.50$ (48), *n. s.*) and that, overall, participants reported low levels of negative coworker humor ($M = 1.59$, $SD = 0.66$) across conditions. These findings strongly support the validity of the experimental manipulation as they demonstrate that participants' perceptions of their coworker's positive humor were in fact impacted by the condition they were assigned to while their perceptions of their coworker's negative humor were not.

To ensure that the validity of the experimental manipulation was consistent across study confederates, 6 additional analysis of variance (ANOVA) tests were conducted to determine whether any significant differences existed between confederates with regard to the ratings of positive/negative coworker humor they received from participants. First, two one-way ANOVAs were conducted to determine whether there were differences among the four study confederates with regard to the mean positive coworker humor ratings they received from participants in each experimental condition. Results demonstrate that there were no significant differences in mean positive coworker humor ratings across confederates in either the HC condition ($F = 2.37$ (3, 18),

n. s.) or the NHC condition ($F = 0.59 (3, 24)$, *n. s.*). Second, two additional one-way ANOVAs were conducted to determine whether there were differences among the four study confederates with regard to the mean negative coworker humor ratings they received from participants. Results demonstrate that there were no significant differences in mean negative coworker humor ratings across confederates in either the HC condition ($F = 0.77 (3, 18)$, *n. s.*) or the NHC condition ($F = 1.32 (3, 24)$, *n. s.*). Findings from these 4 one-way ANOVAs demonstrate that, within each experimental condition, participants' perceptions of both positive coworker humor and negative coworker humor were similar across all 4 study confederates. Lastly, to further rule out the possibility of differential validity among study confederates, 2 factorial ANOVAs were conducted to determine whether the difference between the mean positive and negative coworker humor ratings provided by participants across the experimental conditions was contingent on the identity of the study confederate. Results reveal that the difference between group means across experimental conditions with regard to both positive coworker humor ratings ($F = 1.47 (3, 42)$, *n. s.*) and negative coworker humor ratings ($F = 0.45 (3, 42)$, *n. s.*) did not differ significantly across study confederates. These findings suggest that the 4 study confederates demonstrated similar levels of effectiveness across experimental conditions with regard to impacting participants' perceptions of positive coworker humor without impacting their perceptions of negative coworker humor. Taken together, ANOVA results suggest that the validity of the experimental manipulation was stable and not influenced by the identity of the study confederate.

Test of Current Study Hypotheses

Means, standard deviations, and correlations between study variables are presented in Table 1 (see Appendix T). All study hypotheses were tested using a series of hierarchical

multiple regression analyses (Aiken & West, 1991). In order to reduce multicollinearity between the predictors and to facilitate interpretation of the resulting regression coefficients, all continuous predictors were mean centered prior to calculating a multiplicative term representing the interaction between coworker humor and employee sense of humor and prior to conducting multiple regression analyses (West, Aiken, & Krull, 1996).

Effects of coworker-employee humor interactions on employee strain. Hypotheses 1-4 stated that the interaction between coworker humor and employee sense of humor would have a significant impact on employees' perceived, affective, cognitive, and physical strain, respectively. In order to test these hypotheses, 7 separate hierarchical multiple regression analyses were conducted. The effects of the coworker-employee humor interaction on 7 indicators of employee strain were examined. These included 1 indicator of perceived strain, 2 indicators of affective strain, 2 indicators of cognitive strain, and 2 indicators of physical strain. Results of these multiple regression analyses are presented below and summarized in Figures 2-8 (see Appendix S) and Tables 2-8 (see Appendix T).

Effects on perceived strain. As stated in Hypothesis 1, it was expected that employee sense of humor would moderate the effect of coworker humor on employees' perceived strain. Specifically, it was expected that employees with high sense of humor would experience a lesser degree of perceived strain with a humorous coworker than they would with a non-humorous coworker. In contrast, it was expected that employees with low sense of humor would experience a greater degree of perceived strain with a humorous coworker than they would with a non-humorous coworker.

A single hierarchical multiple regression analysis was conducted to test this hypothesis. In the first block, participants' T2 perceived strain scores were regressed on participants' T1

perceived strain scores, the coworker humor experimental condition, and participants' scores on the sense of humor measure. In the second block, participants' T2 perceived strain scores were regressed on the above variables as well as the multiplicative term representing the interaction between coworker humor and employee sense of humor. As shown in Table 2, after controlling for participants' T1 perceived strain and the main effects of coworker humor and employee sense of humor, the interaction between coworker humor and employee sense of humor accounted for a significant amount of unique variance in participants' T2 perceived strain scores ($\beta = -0.52, p < .05$, one-tailed). In order to determine whether the pattern of simple effects supported Hypothesis 1, this interaction was plotted following the procedure suggested by Aiken and West (1991). The minimum and maximum observed values of both coworker humor and employee sense of humor were used to plot the interaction. As can be seen in Figure 2, the pattern of simple effects was consistent with Hypothesis 1, such that high sense of humor employees experienced less perceived strain with a humorous coworker (versus a non-humorous coworker) whereas low sense of humor employees experienced more perceived strain with a humorous coworker (versus a non-humorous coworker). Further, Figure 2 shows that, when paired with a non-humorous coworker, high sense of humor participants experienced more perceived strain than low sense of humor participants. In contrast, when paired with a humorous coworker, high sense of humor participants experienced less perceived strain than low sense of humor participants.

Effects on affective strain. As stated in Hypothesis 2, it was expected that employee sense of humor would moderate the effect of coworker humor on employees' affective strain. Specifically, it was expected that employees with high sense of humor would experience a lesser degree of affective strain with a humorous coworker than they would with a non-humorous coworker. In contrast, it was expected that employees with low sense of humor would experience

a greater degree of affective strain with a humorous coworker than they would with a non-humorous coworker.

Two separate hierarchical multiple regression analyses were conducted to test this hypothesis. The first examined participants' state-level positive affect as an indicator of their affective strain. In the first block of this analysis, participants' state-level positive affect scores were regressed on participants' trait-level positive affect scores, the coworker humor experimental condition, and participants' scores on the sense of humor measure. In the second block, participants' state-level positive affect scores were regressed on the above variables as well as the multiplicative term representing the interaction between coworker humor and employee sense of humor. As shown in Table 3, after controlling for participants' trait-level positive affect and the main effects of coworker humor and employee sense of humor, the interaction between coworker humor and employee sense of humor accounted for a significant amount of unique variance in participants' state-level positive affect scores ($\beta = 0.37, p < .05$, one-tailed). In order to determine whether the pattern of simple effects supported Hypothesis 2, this interaction was plotted following the procedure suggested by Aiken and West (1991). The minimum and maximum observed values of both coworker humor and employee sense of humor were used to plot the interaction. As can be seen in Figure 3, the pattern of simple effects was consistent with Hypothesis 2, such that high sense of humor employees experienced less affective strain (as indicated by relatively high levels of state-level positive affect) with a humorous coworker (versus a non-humorous coworker) whereas low sense of humor employees experienced more affective strain (as indicated by relatively low levels of state-level positive affect) with a humorous coworker (versus a non-humorous coworker). Further, Figure 3 shows that, when paired with a non-humorous coworker, both high sense of humor and low sense of

humor participants experienced similarly moderate levels of affective strain (moderate levels of state-level positive affect). When paired with a humorous coworker, however, high sense of humor participants experienced less affective strain (greater state-level positive affect) than low sense of humor participants.

The second analysis conducted to test Hypothesis 2 examined participants' state-level negative affect as an indicator of their affective strain. In the first block of this analysis, participants' state-level negative affect scores were regressed on participants' trait-level negative affect scores, the coworker humor experimental condition, and participants' scores on the sense of humor measure. In the second block, participants' state-level negative affect scores were regressed on the above variables as well as the multiplicative term representing the interaction between coworker humor and employee sense of humor. As shown in Table 4, after controlling for participants' trait-level negative affect and the main effects of coworker humor and employee sense of humor, the interaction between coworker humor and employee sense of humor accounted for a significant amount of unique variance in participants' state-level negative affect scores ($\beta = -0.46, p < .05$, one-tailed). In order to determine whether the pattern of simple effects supported Hypothesis 2, this interaction was plotted following the procedure suggested by Aiken and West (1991). The minimum and maximum observed values of both coworker humor and employee sense of humor were used to plot the interaction. As can be seen in Figure 4, the pattern of simple effects was consistent with Hypothesis 2, such that high sense of humor employees experienced less affective strain (as indicated by relatively low levels of state-level negative affect) with a humorous coworker (versus a non-humorous coworker) whereas low sense of humor employees experienced more affective strain (as indicated by relatively high levels of state-level negative affect) with a humorous coworker (versus a non-humorous

coworker). Further, Figure 4 shows that, when paired with a non-humorous coworker, high sense of humor participants experienced more affective strain (greater state-level negative affect) than low sense of humor participants. In contrast, when paired with a humorous coworker, high sense of humor participants experienced less affective strain (lesser state-level negative affect) than low sense of humor participants.

Effects on cognitive strain. As stated in Hypothesis 3, it was expected that employee sense of humor would moderate the effect of coworker humor on employees' cognitive strain. Specifically, it was expected that employees with high sense of humor would experience a lesser degree of cognitive strain with a humorous coworker than they would with a non-humorous coworker. In contrast, it was expected that employees with low sense of humor would experience a greater degree of cognitive strain with a humorous coworker than they would with a non-humorous coworker.

Two separate hierarchical multiple regression analyses were conducted to test this hypothesis. The first analysis examined participants' T2 anagram task performance as an indicator of their cognitive strain. In the first block of this analysis, participants' T2 anagram task performance scores were regressed on participants' T1 anagram task performance scores, the coworker humor experimental condition, and participants' scores on the sense of humor measure. In the second block, participants' T2 anagram task performance scores were regressed on the above variables as well as the multiplicative term representing the interaction between coworker humor and employee sense of humor. As shown in Table 5, after controlling for participants' T1 anagram task performance and the main effects of coworker humor and employee sense of humor, the interaction between coworker humor and employee sense of humor accounted for a significant amount of unique variance in participants' T2 anagram task performance scores ($\beta =$

0.41, $p < .05$, one-tailed). In order to determine whether the pattern of simple effects supported Hypothesis 3, this interaction was plotted following the procedure suggested by Aiken and West (1991). The minimum and maximum observed values of both coworker humor and employee sense of humor were used to plot the interaction. As can be seen in Figure 5, the pattern of simple effects was consistent with Hypothesis 3, such that high sense of humor employees experienced less cognitive strain (as indicated by relatively high T2 anagram task performance) with a humorous coworker (versus a non-humorous coworker) whereas low sense of humor employees experienced more cognitive strain (as indicated by relatively low T2 anagram task performance) with a humorous coworker (versus a non-humorous coworker). Further, Figure 5 shows that, when paired with a non-humorous coworker, high sense of humor participants experienced more cognitive strain (lower T2 anagram task performance) than low sense of humor participants. In contrast, when paired with a humorous coworker, high sense of humor participants experienced less cognitive strain (higher T2 anagram task performance) than low sense of humor participants.

The second analysis conducted to test Hypothesis 3 examined participants' perceived task difficulty as an indicator of their cognitive strain. In the first block of this analysis, participants' perceived task difficulty ratings were regressed on participants' subjective mental effort ratings, the coworker humor experimental condition, and participants' scores on the sense of humor measure. In the second block, participants' perceived task difficulty ratings were regressed on the above variables as well as the multiplicative term representing the interaction between coworker humor and employee sense of humor. As shown in Table 6, after controlling for participants' subjective mental effort and the main effects of coworker humor and employee sense of humor, the interaction between coworker humor and employee sense of humor

accounted for a significant amount of unique variance in participants' perceived task difficulty ratings ($\beta = -0.45, p < .05$, one-tailed). In order to determine whether the pattern of simple effects supported Hypothesis 3, this interaction was plotted following the procedure suggested by Aiken and West (1991). The minimum and maximum observed values of both coworker humor and employee sense of humor were used to plot the interaction. As can be seen in Figure 6, the pattern of simple effects was consistent with Hypothesis 3, such that high sense of humor employees experienced less cognitive strain (as indicated by relatively low levels of perceived task difficulty) with a humorous coworker (versus a non-humorous coworker) whereas low sense of humor employees experienced more cognitive strain (as indicated by relatively high levels of perceived task difficulty) with a humorous coworker (versus a non-humorous coworker). Further, Figure 6 shows that, when paired with a non-humorous coworker, high sense of humor participants experienced more cognitive strain (greater perceived task difficulty) than low sense of humor participants. In contrast, when paired with a humorous coworker, high sense of humor participants experienced less cognitive strain (lesser perceived task difficulty) than low sense of humor participants.

Effects on physical strain. As stated in Hypothesis 4, it was expected that employee sense of humor would moderate the effect of coworker humor on employees' physical strain. Specifically, it was expected that employees with high sense of humor would experience a lesser degree of physical strain with a humorous coworker than they would with a non-humorous coworker. In contrast, it was expected that employees with low sense of humor would experience a greater degree of physical strain with a humorous coworker than they would with a non-humorous coworker.

Two separate hierarchical multiple regression analyses were conducted to test this hypothesis. The first analysis examined participants' T2 systolic blood pressure as an indicator of their physical strain. In the first block of this analysis, participants' T2 systolic blood pressure ratings were regressed on participants' T1 systolic blood pressure ratings, the coworker humor experimental condition, and participants' scores on the sense of humor measure. In the second block, participants' T2 systolic blood pressure ratings were regressed on the above variables as well as the multiplicative term representing the interaction between coworker humor and employee sense of humor. As shown in Table 7, after controlling for participants' T1 systolic blood pressure and the main effects of coworker humor and employee sense of humor, the interaction between coworker humor and employee sense of humor accounted for a significant amount of unique variance in participants' T2 systolic blood pressure ratings ($\beta = -0.34, p < .05$, one-tailed). In order to determine whether the pattern of simple effects supported Hypothesis 4, this interaction was plotted following the procedure suggested by Aiken and West (1991). The minimum and maximum observed values of both coworker humor and employee sense of humor were used to plot the interaction. As can be seen in Figure 7, the pattern of simple effects was consistent with Hypothesis 4, such that high sense of humor employees experienced less physical strain (as indicated by relatively low T2 systolic blood pressure) with a humorous coworker (versus a non-humorous coworker) whereas low sense of humor employees experienced more physical strain (as indicated by relatively high T2 systolic blood pressure) with a humorous coworker (versus a non-humorous coworker). Further, Figure 7 shows that, when paired with a non-humorous coworker, high sense of humor participants experienced more physical strain (higher T2 systolic blood pressure) than low sense of humor participants. In contrast, when

paired with a humorous coworker, high sense of humor participants experienced less physical strain (lower T2 systolic blood pressure) than low sense of humor participants.

The second analysis conducted to test Hypothesis 4 examined participants' state-level somatic anxiety as an indicator of their physical strain. In the first block of this analysis, participants' state-level somatic anxiety scores were regressed on participants' trait-level somatic anxiety scores, the coworker humor experimental condition, and participants' scores on the sense of humor measure. In the second block, participants' state-level somatic anxiety scores were regressed on the above variables as well as the multiplicative term representing the interaction between coworker humor and employee sense of humor. As shown in Table 8, after controlling for participants' trait-level somatic anxiety and the main effects of coworker humor and employee sense of humor, the interaction between coworker humor and employee sense of humor accounted for a significant amount of unique variance in participants' state-level somatic anxiety scores ($\beta = -0.48, p < .05$, one-tailed). In order to determine whether the pattern of simple effects supported Hypothesis 4, this interaction was plotted following the procedure suggested by Aiken and West (1991). The minimum and maximum observed values of both coworker humor and employee sense of humor were used to plot the interaction. As can be seen in Figure 8, the pattern of simple effects was consistent with Hypothesis 4, such that high sense of humor employees experienced less physical strain (as indicated by relatively low levels of state-level somatic anxiety) with a humorous coworker (versus a non-humorous coworker) whereas low sense of humor employees experienced more physical strain (as indicated by relatively high levels of state-level somatic anxiety) with a humorous coworker (versus a non-humorous coworker). Further, Figure 8 shows that, when paired with a non-humorous coworker, high sense of humor participants experienced more physical strain (greater state-level somatic

anxiety) than low sense of humor participants. In contrast, when paired with a humorous coworker, high sense of humor participants experienced less physical strain (lesser state-level somatic anxiety) than low sense of humor participants.

Effects of coworker-employee humor interactions on employee performance.

Hypotheses 5-6 stated that the interaction between coworker humor and employee sense of humor would have a significant impact on employees' interpersonal and task performance, respectively. In order to test these hypotheses, 2 separate hierarchical multiple regression analyses were conducted. The effects of the coworker-employee humor interaction on 2 indicators of employee performance were examined. These included 1 indicator of interpersonal performance and 1 indicator of task performance. Results of these multiple regression analyses are presented below and summarized in Tables 9-10 (see Appendix T).

Effects on interpersonal performance. As stated in Hypothesis 5, it was expected that employee sense of humor would moderate the effect of coworker humor on employees' interpersonal performance. Specifically, it was expected that employees with high sense of humor would demonstrate higher interpersonal performance with a humorous coworker than they would with a non-humorous coworker. In contrast, it was expected that employees with low sense of humor would demonstrate lower interpersonal performance with a humorous coworker than they would with a non-humorous coworker.

A single hierarchical multiple regression analysis was conducted to test this hypothesis. In the first block, ratings of participants' interpersonal performance were regressed on the coworker humor experimental condition and participants' scores on the sense of humor measure. In the second block, ratings of participants' interpersonal performance were regressed on the above variables as well as the multiplicative term representing the interaction between coworker

humor and employee sense of humor. Contrary to expectations, as shown in Table 9, the interaction between coworker humor and employee sense of humor did not explain a significant amount of unique variance in participants' interpersonal performance above and beyond that which was explained by the main effects of coworker humor and employee sense of humor ($\beta = 0.09, n.s.$). Instead, coworker humor demonstrated a significant positive main effect on employee interpersonal performance ($\beta = 0.28, p < .01$, two-tailed), such that both high sense of humor and low sense of humor employees demonstrated a higher level of interpersonal performance when paired with a humorous coworker (versus a non-humorous coworker). Although results from this analysis do not provide support for the hypothesis which stated that employee sense of humor would moderate the effect of coworker humor on employees' interpersonal performance, they are consistent with the expectation that high sense of humor employees would demonstrate higher interpersonal performance with a humorous coworker (versus a non-humorous coworker). Thus, these results provide partial support for Hypothesis 5. Contrary to Hypothesis 5, however, low sense of humor employees also demonstrated higher interpersonal performance when paired with a humorous coworker (versus a non-humorous coworker).

Effects on task performance. As stated in Hypothesis 6, it was expected that employee sense of humor would moderate the effect of coworker humor on employees' task performance. Specifically, it was expected that employees with high sense of humor would demonstrate higher task performance with a humorous coworker than they would with a non-humorous coworker. In contrast, it was expected that employees with low sense of humor would demonstrate lower task performance with a humorous coworker than they would with a non-humorous coworker.

A single hierarchical multiple regression analysis was conducted to test this hypothesis. In the first block, ratings of participants' task performance were regressed on the coworker

humor experimental condition and participants' scores on the sense of humor measure. In the second block, ratings of participants' task performance were regressed on the above variables as well as the multiplicative term representing the interaction between coworker humor and employee sense of humor. Contrary to expectations, as shown in Table 10, the interaction between coworker humor and employee sense of humor did not explain a significant amount of unique variance in participants' task performance above and beyond that which was explained by the main effects of coworker humor and employee sense of humor ($\beta = 0.17, n.s.$). Instead, like it did in the analysis of employee interpersonal performance, coworker humor demonstrated a significant positive main effect on employee task performance ($\beta = 0.16, p < .05$, two-tailed). Specifically, both high sense of humor and low sense of humor employees demonstrated a higher level of task performance when paired with a humorous coworker (versus a non-humorous coworker). Although results from this analysis do not provide support for the hypothesis which stated that employee sense of humor would moderate the effect of coworker humor on employees' task performance, they are consistent with the expectation that high sense of humor employees would demonstrate higher task performance with a humorous coworker (versus a non-humorous coworker). Thus, these results provide partial support for Hypothesis 6. Contrary to Hypothesis 6, however, low sense of humor employees also demonstrated higher task performance when paired with a humorous coworker (versus a non-humorous coworker).

Tests for mediated moderation. Hypotheses 7-8 stated that the effects of the interaction between coworker humor and employee sense of humor on employee interpersonal and task performance, respectively, would be partially mediated by employee perceived, affective, cognitive, and physical strain. Because the interaction between coworker humor and employee sense of humor failed to emerge as a significant predictor of either employee interpersonal

performance or employee task performance in tests of Hypotheses 5-6, the preconditions necessary for testing mediated moderation were not met (Baron & Kenny, 1986; Muller, Judd, & Yzerbyt, 2005). As such, statistical tests of Hypothesis 7 and Hypothesis 8 were not conducted.

CHAPTER FIVE: DISCUSSION

The current study was designed to investigate the ways in which employees' well-being and effectiveness are influenced by interactions occurring between employees' own humor and that of their coworkers. This study investigated the impact of coworker-employee humor interactions on several employee strain and performance outcomes. Based on theory and prior research (e.g., Abel, 2002; Bizi et al., 1988; Crandall, 2002; DaRos-Voseles et al., 2008; Ford et al., 2004; Fry, 1995; Jones, 2006; Kristof-Brown, Zimmerman et al., 2005; Kuiper et al., 1995; Moran & Hughes, 2006; Martin, 2001; Nezu et al., 1988; Robert & Wilbanks, 2011; Sidle, 2000; Tett & Burnett, 2003; Tett & Guterman, 2000; Thorson & Powell, 1993; Tschanh et al., 2005), it was expected that positive coworker humor would have a significant impact on employees' strain and performance, but that the nature of its influence on these outcomes would be contingent upon employees' own dispositional humor. Specifically, it was hypothesized that employees paired with humorous coworkers would experience a lesser degree of perceived, affective, cognitive, and physical strain than employees paired with non-humorous coworkers if their own sense of humor was high but would experience a greater degree of perceived, affective, cognitive, and physical strain than employees paired with non-humorous coworkers if their own sense of humor was low (Hypotheses 1-4). In addition, it was expected that employees paired with humorous coworkers would demonstrate a higher level of interpersonal and task performance than employees paired with non-humorous coworkers if their own sense of humor was high but would demonstrate a lower level of interpersonal and task performance than employees paired with non-humorous coworkers if their own sense of humor was low

(Hypotheses 5-6). Finally, it was hypothesized that employees' strain would partially mediate the effects of coworker-employee humor interactions on employee performance (Hypotheses 7-8).

In order to test the above hypotheses, data were collected using a sample of undergraduate-level students who participated in a laboratory-based high-fidelity work simulation in which they played the role of a hospital ER waiting area employee. Coworker humor was experimentally manipulated by pairing each participant with a study confederate who was trained to act as either a non-humorous or a humorous coworker throughout the duration of the work simulation. Results of a pilot study provided empirical evidence supporting the validity of this manipulation; showing that participants' paired with a humorous confederate coworker rated their coworker significantly higher on positive humor, but no different on negative humor, than participants' paired with a non-humorous confederate coworker. In addition to being exposed to the coworker humor manipulation, participants in the current study were also assessed on their own sense of humor, their perceived, affective, cognitive, and physical strain, their interpersonal and task performance, as well as on a number of critical covariates.

Although some unexpected relationships emerged from the resulting data, findings from the current study support a number of the study hypotheses. Below, a summary and interpretation of these findings is presented, along with a discussion of the current study's theoretical contributions, practical implications, and methodological strengths and limitations. In addition, suggestions for future research related to the study of coworker humor are provided based on the findings and limitations of the current study.

Summary and Interpretation of Findings

Findings related to employee strain. Analyses of data resulting from the current study indicate that the nature of the relationship between positive coworker humor and employee strain is contingent upon employees' own sense of humor level. Specifically, in support of Hypotheses 1-4, it was found that high sense of humor employees who worked with a humorous coworker experienced a *lesser* degree of perceived, affective, cognitive, and physical strain than those who worked with a non-humorous coworker. This was evidenced by their lower self-reported perceived strain (an indicator of perceived strain), higher state-level positive affect and lower state-level negative affect (indicators of affective strain), higher anagram task performance and lower perceived task difficulty (indicators of cognitive strain), as well as their lower systolic blood pressure and lower state-level somatic anxiety (indicators of physical strain). In contrast, and also in support of Hypotheses 1-4, low sense of humor employees who worked with a humorous coworker experienced a *greater* degree of perceived, affective, cognitive, and physical strain than those who worked with a non-humorous coworker. This was evidenced by their higher self-reported perceived strain, lower state-level positive affect and higher state-level negative affect, lower anagram task performance and higher perceived task difficulty, as well as their higher systolic blood pressure and higher state-level somatic anxiety. Thus, findings from the current study suggest that high sense of humor employees experience less strain when their coworkers use (versus don't use) positive workplace humor whereas low sense of humor employees experience more strain when their coworkers use (versus don't use) such humor. In other words, for employees with high sense of humor, positive coworker humor is beneficial in that it enhances the well-being of these employees. For employees with low sense of humor,

however, positive coworker humor is detrimental in that it hinders the well-being of these employees.

Results of the current study also reveal that the nature of the relationship between employees' own sense of humor and their strain is significantly influenced by their coworkers' use of positive humor. It was found that, when paired with a humorous coworker, high sense of humor employees experienced *lesser* perceived, affective, cognitive, and physical strain than low sense of humor employees. This held true for all indicators of strain included in the current study. In contrast, when paired with a non-humorous coworker, high sense of humor employees generally experienced *greater* perceived, affective, cognitive, and physical strain than low sense of humor employees. This held true for most indicators of strain included in the current study, with the exception of state-level positive affect. When paired with a non-humorous coworker, both high sense of humor employees and low sense of humor employees experienced similarly moderate levels of state-level positive affect. This pattern of results is likely attributable to the marginally significant positive main effect of employees' own sense of humor on their state-level positive affect ($\beta = 0.14, p = .051$, two-tailed) that was observed prior to including the coworker-employee humor interaction term as a predictor in the regression model (see Table 3). Overall, findings from the current study suggest that employees with a high sense of humor experience less strain than employees with a low sense of humor when their coworkers use positive workplace humor. In contrast, employees with a high sense of humor experience more strain (or similar levels of strain) than employees with a low sense of humor when their coworkers do not use such humor. In other words, for employees with coworkers who use positive workplace humor, employees' sense of humor is beneficial in that it enhances their well-being. For employees with coworkers who do not use such humor, employees' sense of humor is often

detrimental (or is at least not beneficial) in that it hinders (or at least fails to enhance) their well-being.

In sum, findings from the current study suggest that employees' perceived, affective, cognitive, and physical strain are in fact each significantly influenced by interactions that occur between employees' own humor and that of their coworkers. As a result, both positive coworker humor and employees' own sense of humor can either serve to enhance or to hinder employees' well-being because the direction of the effect that each one has on employee strain depends on the level of the other. Specifically, the degree to which employees experience job strain appears to depend on the degree to which there is a match between employee sense of humor and coworker positive humor levels. Results of the current study suggest that similar levels of coworker and employee humor are likely to result in relatively low levels of employee strain whereas dissimilar levels of coworker and employee humor are likely to result in relatively high levels of employee strain.

Findings related to employee performance. Analyses of data resulting from the current study yielded unexpected findings related to relationships between coworker and employee humor and employees' interpersonal and task performance. Contrary to Hypotheses 5-6, coworkers' positive humor and employees' sense of humor did not interact to predict employees' interpersonal or task performance. Instead, results show that positive coworker humor had a significant positive main effect on both forms of employee performance. In other words, the interpersonal performance and task performance of both high sense of humor employees and low sense of humor employees was enhanced by positive coworker humor. Although these findings are consistent with Hypotheses 5-6 in that positive coworker humor was expected to enhance

high sense of humor employees' performance, they run counter to the expectation that positive coworker humor would hinder low sense of humor employees' performance.

Based on theory and prior research (e.g., Bizi et al., 1988; Ford et al., 2004; Kaye & Fortune, 2001; Kuiper, Martin, & Olinger, 1993; Morreall, 1991; Robert & Wilbanks, 2011; Yao, 2005), two additional hypotheses concerning employee performance were formed which could not be tested as a result of Hypotheses 5-6 not being fully supported by the data. Hypotheses 7-8 proposed that employees' perceived, affective, cognitive, and physical strain would partially mediate the interactive effects of coworker and employee humor on employees' interpersonal and task performance. Because the interaction between coworker humor and employee humor was not a significant predictor of either type of employee performance, analyses were not conducted to test these two hypotheses.

In sum, findings from the current study suggest that, unlike employee strain outcomes, positive coworker humor has a positive main effect on employee performance outcomes. Specifically, results indicate that both employee interpersonal performance and employee task performance are likely to be enhanced by positive coworker humor. Thus, in the form of elevated interpersonal and task performance, all employees are likely to benefit from having coworkers who use positive humor in the workplace, regardless of their own level of dispositional humor.

Contributions and Implications

Findings from the current study offer a number of contributions to organizational science and, in addition, hold several implications for practice. Specifically, the results themselves have relevance for and greatly expand the workplace humor, individual differences, PE fit, occupational health, and workgroup/team composition literatures. In addition, results from the

current study are likely to contribute to the literature by propelling future research dedicated to exploring the direct and interactive effects of coworker characteristics, including humor, on employee well-being and effectiveness. Finally, results of this study serve to inform researchers and practitioners in matters relating to several critical human resource functions, including matters of personnel selection, placement, and training as well as of workgroup/team composition.

Theoretical contributions. Results of the current study show that positive coworker humor has a significant impact on employee well-being and effectiveness outcomes, both by having a main effect on employees' performance and by interacting with employees' humor to impact their strain. These findings contribute to the extant literature in multiple ways. Most broadly, they provide evidence in support of prior theory and research which has proposed that employees can be significantly impacted by the characteristics and behaviors of their coworkers (e.g., Avolio et al., 1999; Cash-Baskett, 2011; Francis et al., 1999; Gockel, 2007; Grugulis, 2002; Holmes & Marra, 2006; Hughes, 2009; Huo et al., 2012; Kahn, 1989; Kurtzberg et al., 2009; Locke, 1996; Lynch, 2010; Moran, 1996; Morkes et al., 1999; Ogunlana et al., 2006; Plester & Orams, 2008; Robert & Wilbanks, 2011; Romero & Cruthirds, 2006; Susa, 2002; Thompson, 2009; Vecchio et al., 2009; Walkowiec, 1994; Yao, 2005). More specifically, these results suggest that, when investigating relationships between humor and employee outcomes in the future, it is not only important to consider employees own humor, but it is also important to consider the humor of their coworkers; something that has rarely been done in the past (Mesmer-Magnus et al., 2012). In addition, these findings provide further support for the general idea that environmental sources of humor are critical to determining employee outcomes. Although prior research has shown that employees' outcomes are significantly impacted by their exposure to

various other environmental sources of humor (e.g., leader humor, e.g., humorous videos, humorous commercials, leader humor, computer generated humor; e.g., Avolio et al., 1999; Moran, 1996; Morkes et al., 1999; Ogunlana et al., 2006; Romero & Cruthirds, 2006; Vecchio et al., 2009; Yao, 2005), findings from the current study serve to expand the set of environmental humor sources known to have a significant impact on such outcomes by adding coworkers' humor to the collection.

Beyond just considering the effects of coworker humor on employee outcomes, findings from the current study suggest that it is particularly important to consider interactions that occur between coworkers' humor and that of the employees themselves. Analyses of the data revealed that, when exploring the impact of humor on employee strain outcomes in particular, significant main effects of coworker humor and employee humor were rarely found. In contrast, the interaction between coworkers' and employees' humor consistently emerged as a significant predictor of employee strain with incremental validity beyond the main effects of both coworker and employee humor. This suggests that, particularly when examining employee well-being outcomes, the effects of workplace humor are likely to be missed if only the main effects of others' (e.g., coworkers') humor and/or employees' humor are considered alone, as most scholars have done in the past (e.g., Mesmer-Magnus et al., 2012). Even if main effects of coworker and/or employee humor are found, failure to consider interactions between coworker and employee humor is likely to result in an incomplete, and perhaps an inaccurate understanding of the relationships between workplace humor and employee well-being. These results from the current study are, therefore, consistent with principles and findings related to the interactionist perspective (e.g., Lewin, 1951; Mischel, 1977; Murray, 1951; Pervin, 1989; Schneider, 1983; Terborg, 1981; Weiss & Adler, 1984). Specifically, they provide further

support of the idea that person-situation interactions do in fact occur in the workplace and do explain a significant amount of variance in employee outcomes above and beyond that which can be explained by only considering the main effects of individual characteristics and/or environmental characteristics, alone or combined (e.g., Barrick et al., 2001; Kristof-Brown, Zimmerman et al., 2005).

Most significantly, these findings suggest that exploring the effects of person-group (PG) fit (Kristof-Brown, Zimmerman et al., 2005) with regard to humor is likely to yield important information about the impact of humor in the workplace, particularly when investigating the effects of humor on employee well-being. Specifically, as investigations of many alternative forms of PG fit have found (e.g., extraversion, goals, values, demographics; Adkins et al., 1996; Cunningham, 2009; Kristof-Brown, Barrick et al., 2005; Kristof-Brown & Stevens, 2001; Perry et al., 2010), results of the current study suggest that the degree to which coworker and employee humor levels are compatible is a significant determinant of important employee outcomes (e.g., strain). As a result incorporating principles of PG fit theory into future investigations of workplace humor is likely to be a fruitful endeavor.

One reason in particular that exploring the impact of coworker-employee humor compatibility (i.e., PG humor fit) on employee outcomes is important, is that it has the potential to result in findings which run counter to popular assertions and which help to explain inconsistent empirical findings. This is illustrated by the results of the current study. Most notably, these results demonstrate that, contrary to the popular notion that employee sense of humor is universally beneficial (e.g., Lange & Houran, 2009), employees' sense of humor can be negatively related to their well-being under some circumstances (e.g., when coworkers do not use positive workplace humor). The finding that employees' sense of humor can be either

beneficial or detrimental to their well-being outcomes (e.g., strain) depending on the nature of the work environment (e.g., the level of their coworkers' positive workplace humor) might help to explain why prior workplace humor research has yielded several inconsistent and unexpected findings regarding the value of employee sense of humor (e.g., Bowling et al., 2004; Dorz et al., 2003; McKenzie, 2009; Wallace et al., 2010). Thus, results of the current study highlight the importance of considering how coworker-employee humor interactions, and PG humor fit indices in particular, impact employee outcomes in future investigations of workplace humor.

Although findings from the current study related to the significant impact of coworker-employee humor interactions on employee strain serve to contradict some popular notions regarding workplace humor, they also lend support to a number of ideas found in the extant literature. Namely, these results are consistent with the prior theory and research upon which the current study hypotheses were based. Specifically, this theory and research suggests that when employees' humor disposition is consistent with the humor climate created by their coworkers (i.e., when employees and coworkers have similar humor levels), employees are less likely to engage in emotional labor and/or to deviate from behavioral norms (e.g., Robert & Wilbanks, 2011; Sidle, 2000; Tschanh et al., 2005). Further, prior literature suggests that, under these conditions, high sense of humor employees are also more likely to reap any potential benefits of their coworkers' humor behaviors (e.g., Avolio et al., 1999; Cash-Baskett, 2011; Francis et al., 1999; Gockel, 2007; Grugulis, 2002; Holmes & Marra, 2006; Hughes, 2009; Huo et al., 2012; Kahn, 1989; Kurtzberg et al., 2009; Locke, 1996; Lynch, 2010; Moran, 1996; Morkes et al., 1999; Ogunlana et al., 2006; Plester & Orams, 2008; Robert & Wilbanks, 2011; Romero & Cruthirds, 2006; Susa, 2002; Thompson, 2009; Vecchio et al., 2009; Walkowiec, 1994; Yao, 2005) and to engage in any potentially beneficial humor behaviors associated with their own

disposition (e.g., humor production, laughing, using humor to cope; e.g., Dean & Major, 2008; Else-Quest et al., 2008; Fitzell & Pakenham, 2010; Friel, 2005; Fry, 1995; Kuiper & Nicholl, 2004; Lehman et al., 2001; Locke, 1996; Mesmer, 2000; Moran & Hughes, 2006; Morkes et al., 1999; Sidle, 2000; Stevens, 2010; Williams, 2001) while low sense of humor employees are less likely to be irritated by their coworkers' non-humorous behaviors (Thorson & Powell, 1993). The current finding that employees are likely to experience relatively low levels of job strain when their sense of humor levels are similar to their coworkers' positive humor levels is consistent with and, therefore, lends support to these ideas. Prior theory and research also suggests that when employees' humor disposition conflicts with the humor climate created by their coworkers (i.e., when employees and coworkers have dissimilar humor levels), employees are more likely to engage in emotional labor and/or to deviate from behavioral norms (e.g., Robert & Wilbanks, 2011; Sidle, 2000; Tschanh et al., 2005). Moreover, the extant literature suggests that, under such conditions, high sense of humor employees are also unlikely to reap benefits from their coworkers' non-humorous behaviors (e.g., Avolio et al., 1999; Cash-Baskett, 2011; Francis et al., 1999; Gockel, 2007; Grugulis, 2002; Holmes & Marra, 2006; Hughes, 2009; Huo et al., 2012; Kahn, 1989; Kurtzberg et al., 2009; Locke, 1996; Lynch, 2010; Moran, 1996; Morkes et al., 1999; Ogunlana et al., 2006; Plester & Orams, 2008; Robert & Wilbanks, 2011; Romero & Cruthirds, 2006; Susa, 2002; Thompson, 2009; Vecchio et al., 2009; Walkowiec, 1994; Yao, 2005) and less likely to engage in potentially beneficial humor behaviors associated with their own disposition (e.g., Dean & Major, 2008; Else-Quest et al., 2008; Fitzell & Pakenham, 2010; Friel, 2005; Fry, 1995; Kuiper & Nicholl, 2004; Lehman et al., 2001; Locke, 1996; Mesmer, 2000; Moran & Hughes, 2006; Morkes et al., 1999; Sidle, 2000; Stevens, 2010; Williams, 2001) while low sense of humor employees are more likely to "not get" or to be

irritated by their coworkers' humor behaviors (Thorson & Powell, 1993). The current finding that employees are likely to experience relatively high levels of job strain when their sense of humor levels are dissimilar to their coworkers' positive humor levels is consistent with and, thus, supportive of these ideas.

Findings from the current study which indicate that positive coworker humor has a main effect on employee performance do not lend full support to the notion put forth that coworker-employee humor similarity matters in determining employee performance. These findings do contribute to the extant literature in several important ways, however. First, the current finding that positive coworker humor has a significant positive influence on both employees' interpersonal performance and their task performance is consistent with prior research which has found that employees' performance is enhanced by their exposure to other environmental sources of humor (e.g., humorous commercials, leader humor, computer generated humor; e.g., Avolio et al., 1999; Morkes et al., 1999; Ogunlana et al., 2006; Vecchio et al., 2009; Yao, 2005). Thus, this finding lends additional support to the idea that environmental humor plays a key role in determining employee outcomes. Further, it contributes to the workplace humor literature by expanding the collection of environmental humor sources that are known to enhance employee performance, as the impact of coworker humor on employees' performance had not previously been thoroughly examined.

In addition, because results suggest that the performance of both high sense of humor and low sense of humor employees is enhanced by positive coworker humor, findings from the current study might also make an unanticipated contribution to the occupational health literature. Specifically, the finding that positive coworker humor even enhanced the performance of low sense of humor employees, despite the fact that it was also associated with relatively high levels

of strain among such employees, suggests that humorous coworkers may serve as a special kind of stressor for employees with low dispositional humor. Namely, results of the current study suggest that, for low sense of humor employees, having to work with other individuals who use positive humor in the workplace is likely a form of challenge stressor.

Challenge stressors differ from their more commonly thought of counterparts, hindrance stressors, not only in terms of their definition but also in terms of their effects on employees' strain and performance outcomes. Conceptually, challenge and hindrance stressors are primarily distinguished based on the degree to which they have the potential to facilitate or hinder employees' achievement. More specifically, *challenge stressors* are workplace demands which provide employees with an opportunity for personal growth and accomplishment. Several common workplace demands (e.g., time pressure) are considered to be challenge stressors because they tend to facilitate employee achievement. In contrast, *hindrance stressors* are workplace demands which have the potential to constrain personal growth and accomplishment. Such stressors include workplace demands (e.g., role ambiguity) which have a tendency to hinder employee achievement (Cavanaugh, Boswell, Roehling, & Boudreau, 2000; Lazarus & Folkman, 1984; LePine, et al., 2005; Pearsall, Ellis, & Stein, 2009; Podsakoff et al., 2007). Although exposure to both challenge and hindrance stressors typically results in employees experiencing elevated strain levels (albeit exposure to challenge stressors often results in comparably less strain), only exposure to hindrance stressors results in employees experiencing significant performance decrements. In fact, research suggests that exposure to challenge stressors actually serves to enhance employee performance (LePine et al., 2005; Pearsall et al., 2009). It is thought that this pattern of effects is attributable to how employees differentially view and react to the two types of stressors. In particular, scholars have proposed that, while

employees tend to believe that increased effort will allow them to overcome the demands of challenge stressors, they have a tendency to believe that the demands of hindrance stressors will be insurmountable regardless of the level of effort they put forth. As a result, when faced with challenge stressors, employees are compelled to increase their engagement, motivation, and effort at work (i.e., engage in adaptive problem-solving coping); thereby increasing their performance. In contrast, when faced with hindrance stressors, employees are compelled to decrease their engagement, motivation, and effort (i.e., engage in maladaptive emotion-focused or avoidance coping); thereby decreasing their performance (Lazarus & Folkman, 1984; LePine et al., 2005).

Because results of the current study show that low sense of humor employees demonstrated higher levels of performance even though they also experienced higher levels of strain when paired with a humorous (versus a non-humorous) coworker, findings from this study are consistent with prior research related to the effects of challenge stressors on employee performance. Thus, results suggest that positive coworker humor may be viewed as a challenge stressor by low sense of humor employees. If this is true, results of the current study provide further support for the idea that not all workplace stressors are detrimental to employee performance (Cavanaugh et al., 2000; Lazarus & Folkman, 1984; LePine, et al., 2005; Pearsall, Ellis et al., 2009; Podsakoff et al., 2007). In addition, these results may serve to expand the set of workplace demands known as challenge stressors capable of enhancing employee performance. Specifically, findings suggest that interactions with humorous coworkers, although stressful for them, may provide low sense of humor employees with an opportunity for growth and enhanced performance by stimulating their motivation to put forth effort at work. Consequently, results of the current study indicate that there is likely value in conducting future investigations into

whether various coworker characteristics (including humor) are commonly viewed as challenge or hindrance stressors by employees.

Practical implications. In addition to the many theoretical contributions they offer, results from the current study have several practical implications related to multiple human resource functions. Most broadly, findings suggest that making human resource decisions (e.g., selection, placement, training decisions) based on individuals' humor may have greater value than was previously thought. Although several scholars have encouraged organizations to use individuals' humor as a basis for such decisions in the past (e.g., Gunzelman, 2010; Lange & Houran, 2009), this recommendation has been based primarily on the empirically-supported notion that employees are likely to benefit from their *own* humor in the workplace (e.g., Lange & Houran, 2009). Findings from the current study suggest that each individual's humor has the potential to impact, not only his/her own outcomes, but also the outcomes of others with whom he/she works. As a result, these findings reveal that the importance of each individual's humor in the workplace is amplified by a degree proportionate to how many individuals they interact with at work. Consequently, the potential value of considering individuals' humor in the human resource decision-making process is likely to be exponentially larger than was previously estimated. Therefore, based on these findings, organizations may wish to reconsider the value they place on incorporating information about employee humor (e.g., information obtained from measures of dispositional humor or humor behavior) into their human resource decisions.

In addition to the implications it has for the overall value that organizations might wish to place on employee humor, the current study has implications for several specific human resource functions. First, findings from this study may be used to inform personnel selection and placement procedures, as well as workgroup/team composition. Most clearly, results suggest that

organizations and their employees may benefit from selection and placement policies which aim both to bring individuals who are high in humor into the organization and to place those individuals in workgroups together. The finding that high humor employees paired with high humor coworkers were the only employees to both experience low levels of strain and demonstrate high levels of performance suggests that selecting high humor employees and placing them together in workgroups is likely to result in the most consistent achievement of positive employee outcomes (i.e., high levels of both well-being and effectiveness). In this way, results from the current study support the prior recommendations of scholars who have suggested that organizations can benefit from the general practice of hiring humorous individuals (e.g., Lange & Houran, 2009).

When organizations are not able to hire and/or to compose workgroups of *only* humorous individuals (e.g., due to skill or education requirements), however, results of the current study suggest that the best course of action is less straightforward. Specifically, results suggest that organizations may need to make trade-offs between maximizing employee well-being and maximizing employee performance and, in some cases, they may need to make trade-offs between maximizing one employee's outcomes over another's. In other words, under such circumstances, organizations may need to consider making selection and placement decisions based on which employee outcomes they value most (i.e., well-being or effectiveness) and/or which employees hold the most value in the organization (i.e., which jobs/positions are critical to organizational success) or are most resilient to unfavorable work environments (i.e., which employees are least likely to be negatively impacted by undesirable coworker-employee humor configurations).

For example, an organization that prioritizes employees' well-being above their performance may benefit most from selecting and placing employees based on the degree to which their humor level matches that of their coworkers, rather than doing so based solely on an individual's own humor level. Specifically, to achieve high levels of employee well-being, such organizations might wish to make hiring decisions based on the degree to which candidates' humor levels match the humor levels of the incumbents they will interact with most frequently (i.e., the degree to which they are similarly low or similarly high). In particular, organizations might wish to select only the candidates who possess levels of humor that are most similar to those of the incumbents, rather than selecting only the candidates who possess high levels of humor themselves. Likewise, these organizations might wish to make placement and workgroup/team composition decisions that ensure humor similarity among employees who work together frequently (i.e., so that they are similarly low or similarly high in humor) as opposed to trying to ensure that all workgroups/teams within the organization are staffed with high humor employees. The suggestion that it might be valuable to consider PG fit with regard to humor when making selection, placement, and/or workgroup/team composition decisions is consistent with prior suggestions made by others who have advocated for organizations' use of PG fit information, in general, when making such decisions (Werbel & Johnson, 2001).

An organization that prioritizes employees' effectiveness above their well-being, on the other hand, may benefit from making selection and placement decisions which ensure that employees are exposed to at least some coworkers who use positive workplace humor, rather than trying to ensure that employees who work closely together all possess similar levels of humor. Specifically, because both low and high humor employees tend to demonstrate higher levels of effectiveness when exposed to humorous (versus non-humorous) coworkers,

organizations may be able to achieve high overall levels of employee effectiveness by hiring at least some individuals who are high in humor and by placing all employees in positions that will allow them to frequently interact with those individuals (i.e., by composing workgroups/teams so that they include at least some high humor individuals). The trade-off that organizations must face in order to do this, however, is that, although both low and high humor employees who are exposed to humorous coworkers are likely to demonstrate increased effectiveness, the humorous coworkers who interact with the low humor employees may be likely to demonstrate decrements in both their effectiveness and well-being. The likelihood of this is illustrated by findings from the current study which show that humorous individuals who work with non-humorous (versus humorous) others tend to demonstrate lower levels of performance as well as to experience higher levels of strain. This suggests that humorous individuals who work with non-humorous others are at the greatest risk for consistently experiencing negative well-being and effectiveness outcomes. As such, they may be at great risk for several other undesirable outcomes (e.g., deviance, withdrawal, turnover; e.g., Becker & Cropanzano, 2011; Biron & Boon, 2013; de Croon, Sluiter, Blonk, Broersen, & Frings-Dresen, 2004; Grant, 2013).

When faced with a dilemma such as this, organizations may need to expand their concerns beyond which employee outcomes they wish to prioritize to include consideration of which (or how many) employees they wish to prioritize. Specifically, organizations that prioritize employee effectiveness would need to decide whether or not adding a few humorous individuals to the organization or to a particular workgroup in order to enhance *other* employee's effectiveness would be worth jeopardizing the well-being and effectiveness of those humorous individuals. An organization could choose to make this decision by evaluating whether or not they believe that sacrificing the well-being and effectiveness of a small number of employees is

likely to be outweighed by the significant positive impact that it would have on a greater number of other employees and, ultimately, the organization as a whole. Alternatively, an organization could make this decision by evaluating which employees (i.e., which skills, abilities, other characteristics, or positions) are more/less critical to the success of the organization. For example, if the performance of a particular employee is expected to play an especially important role in determining the overall success of an organization, results of the current study suggest that the organization would be wise to pair that employee with humorous coworkers, regardless of that employee's own level of humor; even if it is likely to result in negative outcomes for their less-critical coworkers. Finally, an organization could make this decision by evaluating which employees are more/less likely to be resilient to experiencing decrements in well-being and/or effectiveness as a result of coworker-employee humor configurations. For example, if an organization believes that a particular employee is likely to be especially resilient to stress or to performance decrements (i.e., due to predisposing traits, ability/skill levels, or prior life events) as a result of his/her coworkers' humor, the organization could use that employee to create the coworker-employee humor configurations that are most beneficial to the organization with minimal risk of harming that employee.

Overall, results of the current study suggest that care should be taken during personnel selection and placement, as well as workgroup/team composition, to form work communities in which the humor level of each employee facilitates his/her own well-being and effectiveness, the well-being and effectiveness of those with whom he/she works, and the organization as a whole. This way, the potential advantages of each employee's humor level could be capitalized upon while the potential disadvantages associated with it could be curtailed. In order to do this, of course, organizations would need to embrace the use of employee humor assessment tools as a

regular part of the human resource decision making process. Further, although results of the current study combined with findings from prior research suggest that information gleaned from such humor assessments is likely to yield valuable information which can greatly enhance human resource decisions, organizations must weigh that information against information gathered via other important assessments (e.g., skill and ability assessments) and determine the degree to which it is appropriate for such decisions to be influenced by it.

As well as having implications for selection, placement, and workgroup/team composition, findings from the current study also have implications for personnel training. Results suggest that overall levels of employee well-being and effectiveness might be able to be enhanced through the development and administration of workplace humor training programs. Specifically, by incorporating into their personnel training curricula instruction on how employees can use positive humor effectively around their coworkers and how employees can adjust their use of humor in response to the humor of others around them, organizations may be able to increase employee performance and decrease employee strain. For example, organizations that wish to stimulate employee performance might benefit from teaching employees how to use positive humor frequently in the workplace, especially in the presence of other employees. Organizations that wish to minimize employee strain, however, might benefit from teaching employees how to adjust their use of humor so that it is similar to the humor levels of others they encounter in the workplace. An organization might make a decision about which of these two types of training it will implement based on which employee outcome it prioritizes (i.e., well-being or effectiveness). Alternatively, an organization might make the decision based on other considerations, such as how many and which employees they can train. For example, to cut costs, an organization may wish to only train all employees who are naturally low in humor.

Under these circumstances, the organization may benefit the most from simply training those employees to use positive workplace humor more often. By doing so, they are likely to create an organization in which all employees are humorous and, consequently, an organization in which *both* employee well-being and employee effectiveness will be maximized.

The suggestion based on current findings that organizations could benefit from instructing employees in the use of workplace humor is in line with prior recommendations made by scholars who have urged organizations to implement employee humor training programs (e.g., Gunzelman, 2010). In support of such recommendations, results of the current study combined with findings from prior research suggest that, in general, employee humor training is not only likely to be highly effective, but it is also likely to be highly efficient and to yield a substantial return on investment for organizations. Specifically, prior research has demonstrated that individuals can be successfully trained to use humor (as indicated by increased humor behavior) under a variety of circumstances (e.g., during interactions with children and with spouses, during the completion of stressful tasks, during the completion of a stress-management program) and that such trained humor does have significant effects on a number of important outcomes (e.g., other's pain, bonds with significant others, emotional well-being, coping ability; Chambers, 2001; Crawford & Caltabiano, 2011; Lehman et al., 2001; Lodico, 1997; Moss, 2006). The current study adds to this literature by providing additional support for the idea that humor behaviors can be trained and that trained humor can have meaningful effects. Specifically, the successful training of study confederates in the use of positive workplace humor and the significant effects of confederate coworkers' trained humor on employee outcomes suggests that employee humor training programs implemented by organizations have the potential to be highly effective. Findings from the current study also suggest that organizations are likely to find that

such training programs yield a substantial return on investment. Results demonstrate that the humor level of one single individual has a significant impact on the strain and performance of others they work with. This suggests that training only a few individuals to use positive humor frequently or to appropriately adjust their use of positive humor in the workplace could potentially serve to enhance the well-being and effectiveness of entire workgroups of untrained individuals.

Strengths

The current study has a number of methodological strengths which distinguish it from prior workplace humor research and which inspire confidence in its findings. One of the primary strengths of this research is that positive coworker humor was experimentally manipulated using trained confederates who interacted with participants in person and in real time. Use of this manipulation allowed for a high degree of control over several extraneous variables (e.g., non-humor coworker characteristics and behaviors, the *type* of coworker humor used, workgroup dynamics) likely to obfuscate relationships between positive coworker humor and employee outcomes while at the same time maintaining a high level of experimental realism. Further, use of this manipulation served to minimize the amount of self-report data used to test the study hypotheses. Using the manipulation in place of having non-confederate coworkers complete a self-report measure of positive humor may have been particularly valuable since such measures are likely to elicit socially desirable responses, potentially decreasing their validity (Gignac, Karatamoglou, Wee, & Palacios, in press). Support for the construct validity of the positive coworker humor manipulation that was used in the current study, however, was obtained through pilot testing. Results of the pilot test demonstrate that use of trained confederate coworkers did in

fact result in the manipulation of positive coworker humor without resulting in the manipulation of relevant extraneous variables (i.e., negative coworker humor). In sum, use of the positive coworker humor manipulation employed in the current study engenders confidence in the assertion that the effects observed can in fact be attributed to variation in positive coworker humor and that similar effects are likely to be observed in real workgroups operating within real organizations.

Similarly, its use of a high-fidelity work simulation also inspires confidence in the internal and external validity of the current study's findings. Much like the positive coworker humor manipulation, use of this high-fidelity laboratory-based work simulation allowed for the control of several extraneous variables (e.g., organizational characteristics, daily work events) that are likely to be encountered in real-world settings and that are likely to obscure relationships between positive coworker humor and employee outcomes. At the same time, however, use of this simulation served to enhance the experimental realism of the study. As a result, the likelihood of its findings being generalizable to non-laboratory settings is substantial. Moreover, because the simulation that was used required participants to play the role of hospital ER employees, participants in the current study were confronted with several consecutive work stressors; simulating employment in a high-risk, high-stress occupation. For this reason, it is expected that results from the current study will generalize to other relatively high-risk, high-stress work situations; situations in which finding ways to prevent employee well-being and effectiveness decrements may be most critical.

Finally, the quantity and quality of the employee strain and performance measures used in the current study may be considered a significant methodological strength. Specifically, multiple measures of various types (both subjective and objective) were used as indicators of

several theoretically related dependent variables. Analyses revealed that the observed relationships between these measures and the independent variables were generally consistent across multiple measures of the same construct (e.g., across multiple measures of physical strain, etc.) and across multiple theoretically related constructs (e.g., across multiple forms of strain, etc.). Consistent findings across multiple measures, both subjective and objective, and across multiple theoretically related constructs supports the construct validity of the measures employed as well as the validity and generalizability of the observed effects.

Limitations

In addition to its strengths, the current study has a number of methodological limitations which place boundaries on the conclusions that can be drawn from its findings but which may help to guide future research efforts. First, the current study possesses many of the same limitations that any laboratory-based organizational research which utilizes a student sample possesses. That is, although experimental realism was relatively high due to the use of a high-fidelity work simulation and confederate coworkers, because participants in this research were not real employees working with real coworkers on real tasks in real jobs in real organizations, the degree to which the relationships observed in the current study are likely to hold outside of the laboratory and outside of a student sample is unknown. Thus, future research is needed to determine whether findings from this study generalize to real-world settings and samples.

Although it was also discussed a methodological strength, an additional limitation of the current study is that coworker humor was manipulated using study confederates who were relatively similar to one another (e.g., all confederates were female) and who were trained to behave similarly across experimental conditions in all ways (e.g., in terms of non-humor

personality traits and interactions with coworkers), with the exception of their positive workplace humor behavior. This is the case for several reasons. First, although there is evidence in support of it, the validity of the positive coworker humor manipulation cannot be fully substantiated. The confederates used in the manipulation were trained to behave consistently across experimental conditions in all ways (with the exception of their positive humor behavior) and results from the pilot study demonstrated that the confederate scripts did effectively manipulate positive coworker humor without manipulating negative coworker humor. Despite these realities, the possibility still remains that the coworker humor manipulation also unintentionally manipulated another coworker characteristic or behavior (e.g., positive affect). Specifically, when following the scripts designed to manipulate positive coworker humor, the behavior of confederate coworkers may have systematically differed across conditions in subtle ways so that coworkers were also perceived by participants as possessing/demonstrating different levels of other non-humor characteristics/behaviors across experimental conditions (in addition to being perceived as using different levels of positive humor). If this occurred, there is a possibility that the relationships observed in the current study are due, not to differences in coworker humor, but to differences in another coworker characteristic/behavior that covaried with it. Although it is not believed that this is the case, additional research is needed in order to be certain.

Even with additional research, it may prove difficult to disentangle the effects of positive coworker humor from the effects of certain other coworker characteristics or behaviors if those characteristics/behaviors have a tendency to naturally covary with positive coworker humor. Prior research suggests that individuals' humor is in fact highly correlated with a number of other characteristics/behaviors (e.g., emotional intelligence, extraversion; Gignac et al., in press; Greengross & Miller, 2009; Ogunlana et al., 2006; Vernon, Martin, Schermer, & Mackie, 2008).

Thus, even when positive coworker humor is allowed to vary naturally (i.e., when it is not experimentally manipulated) in future research, it may be consistently confounded with several other coworker characteristics/behaviors if coworkers who use positive workplace humor do in fact tend to also possess/demonstrate certain other characteristics/behaviors (i.e., if true correlations are high). Therefore, it may be difficult to determine the degree to which employee outcomes are determined by positive coworker humor versus other coworker characteristics/behaviors that are highly correlated with it. Even if/when coworkers who use positive workplace humor do *not* in fact tend to possess/demonstrate other specific characteristics/behaviors, employees may still *assume* that they do due to the implicit personality theories they hold regarding positive humor (Bruner & Tagiuri, 1954; Schneider, 1973). In other words, when employees observe their coworkers engaging in positive workplace humor behaviors they may perceive that those coworkers also possess other specific characteristics and/or engage in other specific behaviors, even when that is not the case, based on theories they developed previously about how characteristics/behaviors covary with positive humor. There is some empirical evidence to suggest that individuals do in fact utilize information about other's humor when making judgments about the degree to which they possess other non-humor characteristics/behaviors. Specifically, in a study conducted by Cann and Calhoun (2001), it was found that individuals have a tendency to believe that humorous others' also possess a number of other positive characteristics, such as low neuroticism and high agreeableness. Because of individuals' natural tendency to develop and to use implicit personality theories (Bruner & Tagiuri, 1954; Schneider, 1973), including those related to humor (Cann & Calhoun, 2001), it may be difficult to determine the degree to which employee outcomes are determined by positive coworker humor versus employees' perceptions (false or not) of the coworker's other characteristics/

behaviors. Because of these challenges, additional research is needed to identify both the true and the perceived covariates of positive coworker humor so that these variables may be controlled for in future investigations of the construct.

An additional limitation of the current study that is associated with the positive coworker humor manipulation is that all confederate coworkers were similar in terms of demographic characteristics (age, gender, race, education). Similarly, several other coworker characteristics/behaviors (e.g., non-humor personality traits) were held constant through intensive training of the study confederates, as was discussed above. Further, because all confederate coworkers were strangers to participants and followed scripts during interactions with participants, the nature and the quality of the relationship employees had with their coworkers (e.g., friendships, familiarity, etc.) was held constant across participants. All of these things were done in an attempt to control for any extraneous variables that might obscure the relationships of interest in the current study. However, this constancy in non-humor coworker characteristics/behaviors and coworker-employee relationship-related variables may be problematic if relationships between positive coworker humor and employee outcomes vary based on these factors (i.e., if these variables moderate the relationships observed in the current study). If this is the case, findings from the current study may not generalize to situations in which coworkers possess/demonstrate different characteristics/behaviors and/or to situations in which employees have different types of relationships with their coworkers. Because variance in non-humor coworker characteristics/behaviors and coworker-employee relationship-related variables was limited in the current study, it was not possible to explore the degree to which these factors generally impact employee outcomes or the degree to which they serve to moderate the relationships observed in the current study. Therefore, future research is needed in order to determine the degree to which the findings

of this study generalize to other types of coworkers and to other types of employee-coworker relationships.

Use of the positive coworker humor manipulation also presents as a limitation of the current study in that it involved the dichotomization of positive coworker humor and, thus, eliminated natural variation in that study variable. By artificially dichotomizing positive coworker humor, information about its effects on employee outcomes was necessarily lost. Specifically, in the current study, the investigation was limited to exploring how employees are affected by only a small portion of the full range of possible positive coworker humor levels. Thus, the dichotomization of positive coworker humor in the current study has placed limits on our understanding of how the variable impacts employee outcomes. Future research is necessary in order to determine how employee outcomes are affected by other levels of positive coworker humor (e.g., higher or more moderate levels) that were not included in this study.

Further, by minimizing variation in positive coworker humor, the use of more sophisticated analyses which may have provided additional information concerning the relationships of interest in the current study was precluded. For example, polynomial regression analyses (Edwards, 2002) could have helped to determine the degree to which coworker-employee humor *fit* explained variance in employee outcomes. Such analyses require interval-level data, however, as opposed to the dichotomous ordinal-level data available in the current study. Interval-level data could only have been obtained by letting positive coworker humor vary naturally, as opposed to manipulating it, as was done in the current research. Because the positive coworker humor manipulation used in this research precluded the use of polynomial regression approaches and, because the use of such approaches is likely to foster a greater understanding of the degree to which coworker-employee humor fit matters in determining

employee outcomes, researchers should consider collecting data that would allow them to use such statistical approaches in future investigations of coworker-employee humor interactions.

Although also discussed previously as a methodological strength, the nature of the work simulation used in the current study could be considered a limitation. While the simulation possessed relatively high levels of fidelity, it also was of relatively brief duration (i.e., 45 minutes), involved a small workgroup (i.e., a work dyad), involved a moderate/low level of workgroup interdependence, and engaged participants in only moderately-stressful tasks specific to one type of job (i.e., a hospital ER waiting area position). As a result, the generalizability of the current study's findings across all time periods and across all types of types of tasks, workgroups, and jobs/occupations is uncertain. For example, it is uncertain whether findings from the current study will generalize to longer-term tasks or longer-term relationships with coworkers. It is possible that the effects of coworker humor change over time as employees get to know their coworkers better or as task familiarity increases. Alternatively, the effects of coworker humor might change as soon as employees come to realize that they will be working with their coworker(s) for an extended period of time (e.g., over the course of years versus minutes). Additionally, it is uncertain whether findings will generalize to employees working within larger workgroups with more complex humor composition. In such workgroups, employees may be influenced by factors other than the mean positive humor levels of their coworkers. For example, employee outcomes may be impacted by the *number* and/or *proportion* of coworkers an employee has who possess particular levels of humor and/or levels of humor that are similar/dissimilar to their own. Further, it is uncertain whether findings will generalize to employees working on tasks requiring higher or lower levels of employee-coworker interdependence. The effects of coworker humor may change depending on the degree to which

employees must interact with their coworkers and/or the degree to which employees must depend on their coworkers in order to complete their job tasks. Finally, it is uncertain whether results of the current study will generalize to employees working in different types of jobs/occupations. It is possible that the effects of coworker humor vary substantially depending on the degree to which the employee is operating in a high-risk, high-stress work environment. When job stressors are more/less extreme and the consequences of well-being and performance decrements are more/less severe (as well as real versus simulated), it is likely that employees will be affected differently by their coworker's humor. For all of these reasons, it is important that future research be dedicated to exploring the degree to which findings from the current study generalize to employees facing tasks of shorter/longer durations, workgroups of larger sizes, other levels of workgroup interdependence, and other levels of job risk/stress.

Directions for Future Research

As illustrated by the discussion above, there are several issues concerning the impact of coworker humor and of coworker-employee humor interactions on employee outcomes that are still in need of exploration. Thus, despite the significant findings of the current study, several avenues for future research have been left open for investigators interested in obtaining a greater understanding of workplace humor and its effects within organizations. Although several directions for future research have already been discussed in association with the limitations of the current study, a number of other potential directions are worthy of mention.

First, aside from their nature, the mere *strength* of the relationships observed in the current study warrant additional investigation into the degree to which relationships between coworker/employee humor and employee outcomes are truly meaningful. Specifically, although

statistically significant relationships were found between coworker humor (and its interaction with employee humor) and employee strain and performance, these relationships do not appear to be particularly strong. Results show that coworker-employee humor interactions generally explained a small percentage of unique variance in employee strain outcomes while coworker humor explained a relatively small percentage of unique variance in employee performance outcomes. The modest effects of coworker-employee humor interactions on employee strain outcomes could be attributable to the fact that coworker-employee humor dissimilarity is likely a challenge (versus a hindrance) stressor for low sense of humor employees, as was suggested above. Prior research has shown that, generally, the strain experienced by individuals following exposure to a challenge stressor is substantially less than the strain experienced by individuals following exposure to a hindrance stressor (e.g., LePine et al., 2005). If coworker-employee humor dissimilarity is indeed a challenge stressor for low sense of humor employees, it would be expected to have relatively modest effects on employee strain outcomes. Thus, findings from the current study are consistent with the idea that low sense of humor employees view a mismatch between their own humor and that of their coworkers as a challenge (versus a hindrance) stressor. Regardless of the reason, because of the strength of the observed effects, the practical significance of this study's findings is still uncertain, despite their statistical significance.

In order to determine the degree to which findings from this current study are in fact meaningful and can in fact be practically employed to enhance the impact of various human resource functions on employee well-being and effectiveness, additional research is needed. Future researchers could start by investigating the degree to which coworker humor and coworker-employee humor interactions explain variance in employee well-being and effectiveness beyond that which can be explained by other variables that are already known as

being important in determining those outcomes. In other words, future research is needed to determine the degree to which our understanding and prediction of employee outcomes can be incrementally enhanced by gathering information regarding coworker and employee humor.

Future researchers could also begin examining the practicality, validity, and utility of administering various employee humor assessments to determine whether incorporating information gleaned from them into personnel selection and placement and workgroup/team composition decisions serves to enhance employee well-being and effectiveness. It might be particularly important to investigate the degree to which employee humor assessments (and personnel selection/placement and workgroup/team composition strategies based on them) demonstrate incremental validity above and beyond other commonly used assessment tools (e.g., cognitive ability tests; and personnel selection/placement and workgroup/team composition strategies based on them). As an example, findings from the current study suggest that future research should be dedicated to answering the question, can composing workgroups/teams based on the degree to which employees score similarly on a humor assessment significantly decrease employee strain? Moreover, can it do so above and beyond team composition interventions based on employees' scores on other assessment tools and for costs (e.g., time, money, effort) that are reasonable? Generally, before it can be known whether selecting/placing employees and composing workgroups/teams based on findings from the current study will result in practically significant effects on employee outcomes in real-world settings, more research is needed.

Further, more research is needed in order to determine whether training employees based on findings from the current study will result in practically significant effects on employee outcomes in the context of real organizations. Researchers could begin by examining the practicality, validity, and utility of administering various employee humor training programs to

determine which ones (if any) serve to enhance the well-being and effectiveness of employees (and which employees). As is true for the human resource strategies discussed above (e.g., personnel selection, placement, workgroup/team composition), investigating the incremental validity of humor training programs over other valid personnel training strategies may be a particularly important endeavor. Thus, future research should be dedicated to answering the question, can training employees to frequently use positive workplace humor and/or to appropriately adjust their positive workplace humor to the preferences of their coworkers significantly decrease employee strain and/or increase employee performance? Moreover, can such training do so above and beyond other personnel training strategies and for costs (e.g., time, money, effort) that are reasonable? In attempting to answer these questions, in addition to investigating *what* is best to train (e.g., frequent use of positive humor and/or skills in adjusting one's humor to match his/her coworkers' humor), it is also important that future researchers investigate *who* is best to train. For example, future research should determine how many and which employees must be trained in order to see maximally positive effects on employee outcomes. Further, investigations should explore which employees (e.g., those low/high in humor, those low/high in self-monitoring, etc.) respond better/worse to humor training, in general, and to certain types of humor training specifically. Related to this, future research should also explore whether humor training could potentially have detrimental effects on some employees. For example, it is possible that certain humor training may cause certain employees' to experience increased emotional labor (i.e., if the trained behaviors conflict with their disposition) that will ultimately be detrimental to their well-being and/or effectiveness. Thus, although research has shown that humor training can serve to effectively enhance various individual outcomes (e.g., emotional well-being; Chambers, 2001; Crawford & Caltabiano,

2011; Lehman et al., 2001; Lodico, 1997; Moss, 2006), additional research is needed to determine whether such training has the potential to harm some employees who complete it in the long run and whether the costs of training those employees outweigh the benefits. If it indeed does and they in fact do, researchers may consider exploring alternative forms of training for these employees that focus less on training humor behaviors and more on training positive humor attitudes (e.g., tolerance of and appreciation for individuals with dissimilar humor levels). Such training may effectively enhance employee well-being and performance by buffering employees against the negative effects of coworker-employee dissimilarity without imposing additional emotional labor demands.

Several additional avenues for future research stem from the fact that the scope of the current study was necessarily restricted in a number of ways; leaving room for a variety of future investigations. First, the current study did not explore the theoretical mediators purported to facilitate the observed relationships between coworker-employee humor interactions and employee strain. Specifically, it is expected that these relationships can be attributed to differences in employees' emotional labor, deviance from humor norms, disposition-consistent humor behaviors, and/or their psychological reaction to their coworker's behavior (e.g., irritation) that were caused by coworker-employee humor interactions. These variables were not assessed in the current study, however. Therefore, their role as mediators could not be examined. Future research is needed to explore the degree to which the relationships between coworker-employee humor interactions and employee strain outcomes are in fact mediated by these variables.

Further, because analyses unexpectedly revealed that coworker humor had a positive main effect on employee performance outcomes, additional research is needed in order to

determine *why* coworker humor enhanced all employees' performance even though it increased strain among some employees (low sense of humor employees). Future researchers might begin by exploring whether coworker-employee humor dissimilarity is perceived by low sense of humor employees as being a challenge or a hindrance stressor. If research reveals that these employees do in fact perceive a mismatch between their own humor and that of their coworkers as being a challenge (versus a hindrance) stressor, then the pattern of relationships observed in the current study would be consistent with extant theory and prior research on job stressors (e.g., LePine et al., 2005). If results of future research do not support this idea, however, then alternative explanations for the current study's findings should be explored.

In addition to investigating potential mediators and the validity of theoretical explanations for the relationships observed in the current study, future researchers might also explore whether moderators to these relationships exist. Several potential methodological (e.g., setting, sample), time, task (e.g., interdependence), workgroup (e.g., size), and job/occupation (e.g., risk/stress) moderators of the relationships observed in the current study were previously identified, along with several non-humor coworker characteristics/behaviors (e.g., personality traits) and coworker-employee similarity with regard to those characteristics/behaviors. In addition, a number of coworker-employee relationship-related variables (e.g., familiarity, friendship) were discussed as being potential moderators. Beyond the many potential moderators that have already been discussed, several non-humor employee characteristics/behaviors (e.g., personality traits such as openness to experiencing, self monitoring, etc.) may also serve to moderate the relationships observed in the current study.

In support of the idea that future research is needed in order to explore potential moderators of the observed relationships, prior research has demonstrated that some of the

variables just named do in fact serve to moderate the effects of workplace humor. Specifically, research suggests that individuals with certain non-humor characteristics may be universally perceived as being more humorous when they attempt to use positive workplace humor (or their use of such humor may elicit stronger responses from others) or they may universally perceive positive workplace humor as more or less humorous (or to respond more strongly to such humor). In particular, a substantial amount of research has shown that individuals of different races, genders, and even tenures tend to perceive humor differently (e.g., Smeltzer & Leap, 1988). For instance, Decker (1987) found that younger (versus older) employees are more likely to consider humor as being an important characteristic for others (e.g., leaders) to hold. In contrast, it has been found that women (versus men) view the humor of others (e.g., leaders) as being less important (e.g., to team effectiveness; Cash-Basket, 2011). Additionally, prior research has revealed that individuals with different cultural backgrounds (e.g., individuals from different regions of the United States or from different countries) are likely to have very different styles of humor (Kalliny, Cruthirds, & Minor, 2006; Romero et al., 2007). This suggests that positive coworker humor may be perceived differently by employees of different cultures. Related research has also revealed gender differences with regard to how individuals are impacted by humor. Specifically, research has shown that the degree to which an individual is impacted by environmental humor (e.g., in terms of his/her affective and physical strain) depends on his/her gender (Abel & Maxwell, 2002; Lefcourt et al., 1997). Other research has shown that the characteristics of the humor producer also matter in determining individuals' perceptions of it and of those who produce it, as well as how individuals are impacted by others' humor. For example, Decker and Rotondo (2001) found that individuals are more likely to report positive perceptions of leaders who use positive humor when those leaders are female. In addition, other

researchers have found that the degree to which employees' performance is impacted by their leader's humor depends on a variety of other leader characteristics (e.g., integrity, age, tenure, extraversion; Ogunlana et al., 2006; Vecchio et al., 2009). Taken together, research such as this suggests that the degree to which coworker humor and coworker-employee humor interactions impact employee outcomes is likely to vary based on a number of factors. As such, future research should be dedicated to investigating the degree to which the nature and/or strength of the relationships observed in the current study are contingent upon these factors. Such research may reveal that coworker humor and coworker-employee humor interactions do not impact employee outcomes in the same way or to the same degree under all circumstances.

Beyond missing explorations of potential mediators and moderators, the scope of the current study was limited in that it only included explorations of the effects of coworker and employee humor levels on employee strain and performance. Prior research suggests that, not only is humor *level* important in determining employee outcomes, but the *type* of humor used/possessed also matters. In fact, it has been demonstrated that positive humor and negative humor often have effects on employees that are opposite from one another (e.g., Doosje et al., 2010; Hawkins, 2008; Malinowski, 2009). For this reason, it is important that future research explores negative forms of humor in addition to the positive forms included in this study when investigating the impact of coworker humor (and its interactions with employee humor) on employee outcomes. By exploring the effects of both humor level and humor type in future investigations, it is likely that a substantial amount of additional variance in employee outcomes could be explained. In addition to exploring alternative types of humor, future researchers might also consider exploring alternative employee outcomes. While this study found significant effects of coworker humor (and its interactions with employee humor) on several forms of

employee strain and performance, additional research is needed to determine whether other important employee outcomes (e.g., deviance, withdrawal, turnover) are similarly affected. It is expected that several meaningful relationships would be revealed through such research. Finally, given that results of the current study provide support for the general idea that coworker characteristics and behaviors have a significant impact on employee outcomes, future researchers might consider exploring the impact of other non-humor coworker characteristics (e.g., neuroticism, conscientiousness) and their interactions with other non-humor employee characteristics on important employee outcomes. Findings from the current study suggest that research dedicated to this purpose is likely to be fruitful.

CHAPTER SIX: CONCLUSION

Based on the well-documented importance of workplace humor, recent workplace developments (e.g., the increased prevalence of team-based work designs), and the implications of prior theory and research, the current study was designed to investigate the impact of positive coworker humor and its interaction with employee humor on employee well-being and effectiveness. Its ultimate purpose was to identify the ways in which various employees are impacted by the positive humor of their coworkers. Progress toward this goal was made using a novel laboratory-based methodology involving the use of a high-fidelity work simulation and the manipulation of positive coworker humor using study confederates. In addition to employee dispositional humor, several indicators of employee strain and employee performance were assessed. To do this, both subjective and objective measures of employees' perceived, affective, cognitive, and physical strain, as well as objective ratings of employees' interpersonal and task performance were used.

Bearing a number of methodological strengths and limitations, the current study yielded several important findings. Specifically, results of the current study reveal that employee strain outcomes are significantly impacted by interactions that occur between employees' own humor and that of their coworkers. In particular, employees are likely to experience relatively low levels of strain when coworker and employee humor levels are similar but are likely to experience relatively high levels of strain when coworker and employee humor levels are dissimilar. In contrast to employee strain outcomes, results of the current study reveal that employee performance outcomes are significantly and positively impacted by coworker humor alone;

suggesting that all employees can benefit (at least in terms of their performance) from exposure to coworkers who use positive workplace humor.

Taken together, results of this study foster a greater understanding of how employees are impacted by the humor of their coworkers and, more generally, illuminate the significance of positive humor in the workplace. Further, not only do these findings add substantially to several bodies of research, but they also serve to inform scholars and practitioners in matters related to numerous human resource functions. Finally, findings from this research should inspire additional investigations dedicated to exploring coworker characteristics (including humor) and their complex relationships with both the characteristics and the outcomes of employees. For the current study's purpose to be fulfilled, it is vital that future research continue along the path that it has set.

APPENDIX A: IRB APPROVAL LETTER



University of Central Florida Institutional Review Board
 Office of Research & Commercialization
 12201 Research Parkway, Suite 501
 Orlando, Florida 32826-3246
 Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Human Research

From: UCF Institutional Review Board #1
 FWA00000351, IRB00001138
 To: Mary Jane Sierra
 Date: October 09, 2012

Dear Researcher:

On 10/9/2012, the IRB approved the following human participant research until 10/8/2013 inclusive:

Type of Review: UCF Initial Review Submission Form
 Project Title: Emergency Room Support Staff Simulation
 Investigator: Mary Jane Sierra
 IRB Number: SBE-12-08716
 Funding Agency: NASA
 Grant Title: Optimizing Crew Performance in Long Duration Space
 Exploration: Best Practices for Team Training and Cohesion
 Measurement

Research ID: 1048683

The Continuing Review Application must be submitted 30 days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form cannot be used to extend the approval period of a study. All forms may be completed and submitted online at <https://iris.research.ucf.edu>.

If continuing review approval is not granted before the expiration date of 10/8/2013, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a copy of the consent form(s).

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewska, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 10/09/2012 09:33:20 AM EDT

IRB Coordinator

APPENDIX B: INFORMED CONSENT FORM



Emergency Room Support Staff Simulation

Informed Consent

Principal Investigator(s): Mary Jane Sierra, M. A.
Sub-Investigator(s): Kimberly A. Smith-Jentsch, Ph. D.
Faculty Supervisor: Kimberly A. Smith-Jentsch, Ph. D.
Sponsor: National Aeronautics and Space Administration
Investigational Site(s): UCF Department of Psychology

Introduction: Researchers at the University of Central Florida (UCF) study many topics. To do this we need the help of people who agree to take part in a research study. You are being invited to take part in a research study which will include about 400 people at UCF. You have been asked to take part in this research study because you are a student in a psychology class. You must be 18 years of age or older to be included in the research study.

The person doing this research is Mary Jane Sierra, M.A. of the UCF Department of Psychology. Because the researcher is a graduate student, she is being guided by Kimberly Smith-Jentsch, Ph.D., a UCF faculty supervisor in the Department of Psychology. UCF students learning about research are helping to do this study as part of the research team. Their names are: David Mihm, Samantha Rodriguez, Caroline Ciaffone, Dorey Chaffee, Chelsea Tarbox, Lorena Gutierrez, Hanna Olsson, Victoria McCulloh, Jennifer Isard, Elizabeth Guzman, Natasha Letang, Daniel Hamm, Katarina Mandiola, and Carmen Mercedes.

What you should know about a research study:

- Someone will explain this research study to you.
- A research study is something you volunteer for.
- Whether or not you take part is up to you.
- You should take part in this study only because you want to.
- You can choose not to take part in the research study.
- You can agree to take part now and later change your mind.
- Whatever you decide it will not be held against you.
- Feel free to ask all the questions you want before you decide.

Purpose of the research study: The purpose of this study is to explore how individuals perform during work simulations. Researchers have sought to understand how individuals working together are able to effectively accomplish simulated work tasks. Through this research, insight will be gained into the ways in which individuals accomplish such tasks and the factors which facilitate effective performance.

What you will be asked to do in the study: You will be asked to complete a number of questionnaires at the beginning, during, and at the end of the study. In addition, you will be asked to complete an interactive work simulation alongside another research participant during which you will perform duties similar to those performed by support staff in a hospital emergency room. In addition to being audio/video recorded, your heart rate and blood pressure will also be measured at various points throughout the study. The audio/video recordings will be used for behavioral coding and will not be published or displayed. They will be destroyed following transcription and will not be attached to your name. All questionnaires and tasks will be completed in the same experimental session and in the same location. You do not have to answer every question or complete every task. You will not lose any benefits if you skip questions or tasks.

Location: UCF Department of Psychology Building, Rooms 203V and 203U

Time required: We expect that you will be in this research study for one 3:00 hour session.

Audio or video taping: You will be audio and video taped during this study. If you do not want to be audio or video taped, you will still be able to be in the study. Discuss this with the researcher or a research team member. If you are audio or video taped, the tape will be kept in a locked, safe place. The audio and video recordings will be used for behavioral coding and will not be published or displayed. They will be destroyed following transcription and will not be attached to your name.

Funding for this study: This research is being paid for by the National Aeronautics and Space Administration.

Risks: There is a small risk that people who take part will develop what is ordinarily referred to as simulator sickness. It occurs once in awhile to people who are exposed to prolonged continuous testing in simulated environments. Symptoms consist of nausea and a feeling of being light-headed. The risk is minimized as a result of the short duration of each session in the simulator. If you experience any of the symptoms mentioned, please tell the researcher and remain seated until the symptoms disappear.

Benefits: We cannot promise any benefits to you or others from your taking part in this research. However, possible benefits include developing skills for working with customers, coworkers, and superiors and learning about the research process.

Compensation or payment: There is no direct compensation for taking part in this study. It is possible, however, that extra credit may be offered for your participation, but this benefit is at the discretion of your instructor. If you choose not to participate, you may notify your instructor and ask for an alternative assignment of equal effort for equal credit. There will be no penalty.

Confidentiality: We will limit your personal data collected in this study to people who have a need to review this information. We cannot promise complete secrecy. Official government agencies may have a need to inspect research records from this study, including yours, in order to fulfill their responsibilities. The confidentiality of the information related to your participation in this research will be ensured by maintaining records only coded by identification numbers. Your name will not be directly associated with any data. The video and audio files will only be viewed by members of the research team.

Study contact for questions about the study or to report a problem: If you have questions, concerns, or complaints, or think the research has hurt you, talk to Mary Jane Sierra, M.A., Graduate Student, Department of Psychology at (407)823-0139 or by email: maryjane@knights.ucf.edu or Dr. Kimberly Smith-Jentsch, Faculty Supervisor, Department of psychology at (407)823-0139 or by email: Kimberly.Jentsch@ucf.edu.

IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901. You may also talk to them for any of the following:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You want to get information or provide input about this research.

Withdrawing from the study: If you decide to leave the study, contact the investigator so that the investigator can terminate the study session and destroy any data that you may have already provided. You will not be penalized for your withdraw.



University of Central Florida IRB
IRB NUMBER: SBE-12-08716
IRB APPROVAL DATE: 10/9/2012
IRB EXPIRATION DATE: 10/8/2013

APPENDIX C: DEMOGRAPHIC QUESTIONNAIRE

Demographics Form

Please answer the questions about yourself and your parents/guardians to the best of your knowledge. If you do not know the answer to the question or the question does not apply to you, please write "N/A" to indicate it is not applicable.

1. How old are you? _____
2. What is your sex? (circle one)
 - a. Male
 - b. Female
3. What is your race or ethnic background? (check "yes" or "no" next to each race or ethnic group; if you choose "Other" as your response, please specify your race or ethnic group)

Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	White (Non-Hispanic)
<input type="checkbox"/>	<input type="checkbox"/>	Black or African American (Non-Hispanic)
<input type="checkbox"/>	<input type="checkbox"/>	Asian
<input type="checkbox"/>	<input type="checkbox"/>	American Indian or Alaska Native
<input type="checkbox"/>	<input type="checkbox"/>	Native Hawaiian or Other Pacific Islander
<input type="checkbox"/>	<input type="checkbox"/>	Hispanic or Latino
<input type="checkbox"/>	<input type="checkbox"/>	Other _____

APPENDIX D: DEBRIEFING FORM



Debriefing Statement

For the study entitled:
"Emergency Room Support Staff Simulation"

Dear Participant;

During this study, you were asked to complete numerous questionnaires, engage in a variety of simulated work tasks, provide readings of your blood pressure and heart rate, and to interact with researchers who were playing the role of other hospital personnel (i.e., coworkers). You were told that the purpose of the study was to explore how individuals perform during work simulations. The actual purpose of the study was to examine how coworker dispositions and behaviors impact individual well-being and performance during work simulations. To achieve this purpose, you were paired with a coworker who you were told was a fellow research participant, but who was actually part of the research team.

We did not tell you everything about the purpose of the study because, in order for the study to be successful, it was essential for you to focus solely on your own performance during the work simulation and not on your coworker's identity or behavior.

You are reminded that your original consent document included the following information: You can choose not to take part in the research study. If you decide to withdraw from the study, notify the investigator so that the investigator can destroy any data that you may have already provided. You will not be penalized for your withdraw. If you have any concerns about your participation or the data you provided in light of this disclosure, please discuss this with us. We will be happy to provide any information we can to help answer questions you have about this study.

Now that you know the true nature of the study, you have the option of having your data removed from the study. Please contact the PI if you do not want your data to be used in this research and it will be withdrawn.

Study contact for questions about the study or to report a problem: If you have questions, concerns, or complaints or think the research has hurt you contact: Mary Jane Sierra, M.A., Graduate Student, Department of Psychology at (407)823-0139 or by email: maryjane@knights.ucf.edu or Dr. Kimberly Smith-Jentsch, Faculty Supervisor, Department of psychology at (407)823-0139 or by email: Kimberly.Jentsch@ucf.edu.

IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

Please again accept our appreciation for your participation in this study.

APPENDIX E: CONFEDERATE COWORKER SCRIPT

Confederate Coworker Script for ER Simulation

HC = Humorous Confederate Coworker
NHC = Non-humorous Confederate Coworker
ALL = All Confederate Coworkers

Confederate coworker response to a simulation voicemail in which a coworker who is running late to work asks the confederate to clock her in so she does not get in trouble:

HC to simulation: Sorry Kelly, I wish I could help you but I don't think I should. I guess I just take my Girl Scout promise *really* seriously (laughter)!

NHC to simulation: Sorry Kelly, I wish I could help you but I don't think I should. I don't want to get in trouble.

Confederate coworker response to a simulation event in which a male coworker makes a sexually inappropriate comment to a female coworker:

HC to participant: That's wrong. HEEELLLOOO lawsuit, (laughter)!

NHC to participant: That was inappropriate!

Confederate coworker response to a simulation event in which a coworker asks the confederate to lie to their supervisor for her.

ALL to simulation: No, Sorry Kelly, I can't do that for you.

Confederate coworker response to a simulation event in which a hostile customer demands that he be seen by a physician immediately, even though that would violate hospital rules:

ALL to simulation: Sorry, I can't help you. Please, have a seat and we'll call you as soon as possible.

HC to participant: They're not making this easy, (laughter)!

NHC to participant: This is kinda hard!

Confederate coworker response to a simulation event in which a relative of a hostile customer pleads with the confederate to let the customer into another part of the hospital, even though that would violate hospital rules:

ALL to simulation: Sorry, there's nothing I can do for you.

Confederate coworker response to a simulation event in which a coworker asks the confederate to make an announcement on the hospital PA system regarding a school bus accident because the parents of the children involved are “dying” for information:

HC to participant: I hope they’re not really “dying for information”... we’re busy enough (laughter). I don’t know what to say.

NHC to participant: I don’t know what to say

ALL to simulation: There are children being brought in from the school bus accident. Please remain in the lobby and listen for further information.

Confederate coworker response to a simulation voicemail in which a supervisor tells the confederate that all hospital ER area employees should take their breaks as early in the day as possible and asks the confederate to let her know when the first person takes a break:

ALL to simulation: Okay, Lynn. I’ll let you know as soon as we take our breaks.

Confederate coworker response to a simulation event in which a coworker pleads with the confederate to let him take his break now, even though another coworker just informed the confederate that the hospital ER room is very busy and they could not afford to have him take a break now:

ALL to simulation: We’re really busy right now, but if you need a break go ahead and take it.

Confederate coworker response to a simulation event in which a hostile customer demands to see a patient, even though it would violate hospital rules:

ALL to simulation: Sorry, please take a seat and we’ll be with you as soon as we can.

Confederate coworker response to a simulation event in which a relative of a hostile customer pleads with the confederate to let them see a patient, even though it would violate hospital rules:

ALL to simulation: No sorry, again, there is nothing I can do.

HC to participant: I just keep saying “no”... I’m starting to sound like a parrot, (laughter)?

NHC to participant: I just keep saying no to everyone.

Confederate coworker response to a simulation event in which a supervisor angrily asks the confederate why all of the hospital ER employees are still in the ER when they were told to take their breaks:

ALL to simulation: Sorry, with the school bus accident we have been really busy and haven't been able to take breaks.

HC to participant: Well that didn't lighten the mood, (laughter)!

NHC to participant: I guess she's mad.

Confederate coworker response to a simulation email in which a coworker asks the confederate to send an e-mail to someone for her since she cannot do it herself:

ALL type in simulation: Hello, ShaRice asked me to let you know that she will be home at 5:30.

Confederate coworker response to a simulation event in which a rude customer asks the confederate to let him see a patient because he is friends with the confederate's supervisor, even though that would violate hospital rules:

ALL to simulation: Sorry, please take a seat and we'll see you when we can.

HC to participant: Unfortunately hospitals don't have VIP sections, (laughter)!

NHC to participant: He'll have to wait his turn

Confederate coworker response to a simulation email in which the confederate is asked to make a hospital PA announcement regarding the recent school bus accident:

ALL to simulation: Will the friends and family members of Michael Rayfield, Katrina Jones, Lydia Donato, John Brown, and Susan Smith please check-in with Kelly immediately? Additional children from the school bus accident will be arriving shortly.

Confederate coworker response to a simulation event in which a relative of a customer pleads with the confederate to lie for her so that the customer can see a physician quickly:

ALL to simulation: Sorry, I just can't do that.

Confederate coworker response to a simulation event in which a supervisor asks the confederate to collect money from other hospital ER employees, and to figure out how much each one of them owes:

HC to participant: Hey now, I didn't sign up for math, (laughter)! Do I need paper?

NHC to participant: Shoot, Math? Do I need paper?

Confederate coworker response to a simulation event in which a supervisor asks how much money she owes:

HC to simulation: It will be \$10... but tips are welcome, (laughter)!

NHC to simulation: It will be \$10

Confederate coworker response to a simulation event in which a coworker asks how much money she owes:

ALL to simulation: Hmm... since Lynn only has four dollars, I need thirteen from you.

Confederate coworker response to a simulation event in which a coworker takes all of the money the confederate collected, even though the confederate was previously told by a supervisor that she should collect it herself:

HC to participant: Wait, why'd she take the money? Should we call security or something, (laughter)?

NHC to participant: Wait, why'd she take the money? Aren't I supposed to collect it?

Confederate coworker response to a simulation email in which the confederate is asked to make a PA announcement regarding the recent school bus accident:

ALL to simulation: Attention please. We will not be receiving any additional victims from the school bus accident. If you are still waiting for your child, call the school principal to find out where they were taken. The phone number is 355-7807.

Confederate coworker response to a simulation event in which a hostile customer demands information about a patient and tells the confederate that she will be sorry if she doesn't provide it:

ALL to simulation: Sorry, I am not allowed to disclose patient information.

HC to participant: I'm not making any friends am I, (laughter)?

NHC to participant: I guess he's mad

Confederate coworker response to a simulation event in which a coworker asks a hostile customer to take a break with him outside:

HC to participant: (sarcastically) Sounds like a relaxing break, (laughter)?

NHC to participant: I doubt he'll calm down.

Confederate coworker response to a simulation event in which a relative of a hostile customer pleads with the confederate to disclose patient information, even though it would violate hospital rules:

ALL to simulation: Like I said, I'm not able to disclose patient information. Sorry.

Confederate coworker response to a simulation event in which the confederate observes a coworker getting berated by a hostile customer:

HC to participant: Rick's not making any friends either, (laughter)?

NHC to participant: He didn't calm down.

Confederate coworker response to a simulation event in which a customer asks to see a patient, claiming that the patient is his wife, even though another customer had previously asked to see the patient, claiming that the patient is his girlfriend:

HC to participant: Wait, 2 guys? Kayla is pretty popular, (laughter)!

NHC to participant: Wait, 2 guys? Hmmm.

ALL to simulation: Please, have a seat and we'll be with you shortly.

Confederate coworker response to a simulation event in which two customers who both claim that a patient is their significant other sit next to each other in the hospital ER waiting area:

HC to participant: Uh oh, they're right next to each other. I hope it doesn't turn into a Jerry Springer episode, (laughter).

NHC to participant: Oh no, they're sitting next to each other.

Confederate coworker response to a simulation email in which a supervisor asks the confederate to sign a statement saying that another supervisor did not engage in any wrongdoing and that a customer lost consciousness, even though the confederate personally observed that supervisor behaving inappropriately and did not observe the customer losing consciousness:

ALL type in simulation: Hi Lewis, I'm sorry but I won't be able to sign a statement like that. Lynn did discuss patient information openly. As for the boyfriend losing consciousness, I can't say for sure that he did or didn't. Sorry I can't help.

Confederate coworker response to a simulation event in which a coworker asks to see the boyfriend of a patient:

HC to simulation: Actually, there are a bunch claiming to be her boyfriend. I guess you'll have to take your pick... maybe you could flip a coin (laughter)!

NHC to simulation: Actually, there are a bunch claiming to be her boyfriend. I don't know which one really is.

Confederate coworker response to a simulation event in which the actual boyfriend of the patient who apparently had multiple significant others is called back to see the patient by a supervisor:

HC to participant: So he's the one. Mystery solved (laughter)!

NHC to participant: So it's that guy.

Confederate coworker response to a simulation event in which a coworker comments to the confederate about a supervisor who had given the confederate a dirty look:

HC to participant: (laughter) Yeah, she loves me, we're BFFs! (sarcastically)

NHC to participant: She doesn't like me.

Confederate coworker response to a simulation email in which a coworker complains about another coworker who made sexually inappropriate comments to her and asks whether the confederate agrees that she handled it the right way:

ALL type in simulation: Hi Kelly, I could definitely see that his comments made you uncomfortable. I'm not sure Rick saw it though. Maybe you needed to be even more obvious.

Confederate coworker response to a simulation event in which a coworker complains about another coworker who is unhappy with the sexually inappropriate comments he made to her and asks whether the confederate found the comments to be offensive:

ALL to simulation: Actually, I thought it was pretty offensive.

Confederate coworker response to a simulation event in which a coworker shares a sexually inappropriate comment that he made to another coworker:

HC to participant: Wow, that's soooo wrong, (laughter)!

NHC to participant: Wow, rude.

Confederate coworker response to a simulation event in which a supervisor comments that the coworker who was offended by sexually inappropriate comments made by another coworker is a whiner and asks whether the confederate agrees:

ALL to simulation: No, I don't agree. His comments were pretty inappropriate.

Confederate coworker response to a simulation voicemail in which a coworker asks the confederate to serve as a witness so that she can file a complaint about another coworker who made sexually inappropriate comments to her, even though the confederate did not witness everything in the complaint:

ALL to simulation: I'll tell them what I saw but that's all I can do.

Confederate coworker response to a simulation voicemail in which a coworker asks the confederate to convey to his supervisor that a coworker who is claiming that he made sexually inappropriate comments is incorrect:

ALL to simulation: Rick, like I said, I thought it was pretty offensive so I won't be able to help you.

Confederate coworker response to a simulation event in which a coworker asks the confederate to lie for him so that he will not get in trouble, and asks if they are "cool":

ALL to simulation: Actually, we're not cool. I really can't back you up on this one.

Confederate coworker response to a simulation email in which a supervisor tells the confederate that she has filed a disciplinary action against the confederate for leaving the desk while on duty, even though the confederate never left the desk:

HC to participant: Seriously, they're writing me up for leaving my desk?!... I wish!.. I've had to go to the bathroom this whole time, (laughter)!

NHC to participant: Seriously, they are writing me up for leaving my desk?! I didn't go anywhere!

ALL type in simulation: Hi Lynn, I am not sure why I did not receive the phone calls you are talking about. I didn't leave my desk for a second. I think there may be something wrong with the phone because Kelly told me that she has had similar issues in the past. Because of this, I really don't think I should have to sign formal disciplinary form.

Confederate coworker response to a simulation voicemail in which a supervisor suggests that the confederate sign a disciplinary action that was filed against them for leaving the desk while on duty, even though the confederate did not leave the desk, and suggests that the confederate should just “eat this one”:

ALL to simulation: No, I didn't leave my desk. I don't know why they said I did. I am not going to EAT this one!

HC to participant: I'm not hungry anyways, (laughter)!

NHC to participant: I'm not gonna do that.

Confederate coworker response to a simulation email in which a supervisor asks the confederate to report what happened between two coworkers involved in a sexual harassment complaint:

All type in simulation: Hi Lewis, Kelly did seem uncomfortable after Rick's comment, but she didn't exactly tell Rick that and I'm not sure he noticed. He may have made additional comments after she became uncomfortable.

Confederate coworker response to a simulation event in which a supervisor suggests that the confederate should not fight a disciplinary action filed against the confederate for leaving the desk while on duty, even though the confederate did not leave the desk, and suggests that the confederate would only be put on probation after a couple of disciplinary actions:

HC to simulation: I don't want to go on probation for this.... Unless that means I get to go home early (laughter)!

NHC to simulation: I don't want to go on probation for this. I didn't do anything wrong!

APPENDIX F: COWORKER HUMOR SCALE

PCHS

Instructions: Please indicate the extent to which you agree with the following statements using the scale provided (1 = Strongly Disagree, 5 = Strongly Agree). Please think of the *Customer Service Representative* that you worked with today when responding to the statements.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. My coworker has a good sense of humor.	1	2	3	4	5
2. My coworker communicates with humor.	1	2	3	4	5
3. My coworker enjoys jokes.	1	2	3	4	5
4. My coworker tells jokes.	1	2	3	4	5
5. My coworker uses non-offensive humor.	1	2	3	4	5
6. My coworker uses humor to put others down.	1	2	3	4	5
7. My coworker uses humor to put themselves down.	1	2	3	4	5

APPENDIX G: MULTIDIMENSIONAL SENSE OF HUMOR SCALE

MSHS

Instructions: Please indicate the extent to which you agree with the following statements using the scale provided (1 = Strongly Disagree, 5 = Strongly Agree).

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I'm regarded as something of a wit by my friends.	1	2	3	4	5
2. I can say things in such a way as to make people laugh.	1	2	3	4	5
3. My clever sayings amuse others.	1	2	3	4	5
4. People look to me to say amusing things.	1	2	3	4	5
5. I use humor to entertain my friends.	1	2	3	4	5
6. I'm confident that I can make other people laugh.	1	2	3	4	5
7. Other people tell me that I say funny things.	1	2	3	4	5
8. Sometimes I think up jokes or funny stories.	1	2	3	4	5
9. I can often crack people up with the things I say.	1	2	3	4	5
10. I can ease a tense situation by saying something funny.	1	2	3	4	5
11. I can actually have some control over a group by my uses of humor.	1	2	3	4	5
12. Humor helps me cope.	1	2	3	4	5
13. Uses of wit or humor help me master difficult situations.	1	2	3	4	5
14. Coping by using humor is an elegant way of adapting.	1	2	3	4	5
15. Trying to master situations through use of humor is really dumb.	1	2	3	4	5
16. Humor is a lousy coping mechanism.	1	2	3	4	5
17. Uses of humor help to put me at ease.	1	2	3	4	5
18. I can use wit to help adapt to many situations.	1	2	3	4	5
19. I appreciate those who generate humor.	1	2	3	4	5
20. I like a good joke.	1	2	3	4	5
21. Calling somebody a "comedian" is a real insult.	1	2	3	4	5
22. I dislike comics.	1	2	3	4	5
23. People who tell jokes are a pain in the neck.	1	2	3	4	5
24. I'm uncomfortable when everyone is cracking jokes.	1	2	3	4	5

APPENDIX H: PERCEIVED STRAIN SCALE

FEELINGS DURING TASK

Instructions: Below are a number of feelings that that a person can have during a task. Please indicate the amount to which *any part of the task you just completed* (e.g., the work, coworkers, supervisors, clients) made you feel that way. Base your answers on the scale provided (e.g., 1 = Not at All, 7 = Extremely).

	Not at All				Extremely		
1. Generally Stressed	1	2	3	4	5	6	7
2. Physically Uncomfortable	1	2	3	4	5	6	7
3. Emotionally Distressed	1	2	3	4	5	6	7
4. Mentally Overloaded	1	2	3	4	5	6	7

APPENDIX I: STATE AFFECT SCALE

PANAS-S

Instructions: This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale to record your answers.

1	2	3	4	5
Not at All	A Little	Moderately	Quite a Bit	Extremely
	<input type="checkbox"/> interested		<input type="checkbox"/> irritable	
	<input type="checkbox"/> distressed		<input type="checkbox"/> alert	
	<input type="checkbox"/> excited		<input type="checkbox"/> ashamed	
	<input type="checkbox"/> upset		<input type="checkbox"/> inspired	
	<input type="checkbox"/> strong		<input type="checkbox"/> nervous	
	<input type="checkbox"/> guilty		<input type="checkbox"/> determined	
	<input type="checkbox"/> scared		<input type="checkbox"/> attentive	
	<input type="checkbox"/> hostile		<input type="checkbox"/> jittery	
	<input type="checkbox"/> enthusiastic		<input type="checkbox"/> active	
	<input type="checkbox"/> proud		<input type="checkbox"/> afraid	

APPENDIX J: ANAGRAM TASKS

Anagram Assessment 1

Instructions: Below you will find ten sets of letters containing five letters each. For each five-letter set, please rearrange the letters to create one five-letter word that is found in the English language. Clearly write your answers in the spaces to the right of each word set. You will have two minutes to work on this task.

1. AGOYN _____
2. OUTHY _____
3. HBENC _____
4. NCHLU _____
5. RTFLI _____
6. BDLEA _____
7. INXVE _____
8. DURGA _____
9. RPCOH _____
10. RNYET _____

Anagram Assessment 2

Instructions: Below you will find ten sets of letters containing five letters each. For each five-letter set, please rearrange the letters to create one five-letter word that is found in the English language. Clearly write your answers in the spaces to the right of each word set. You will have two minutes to work on this task.

1. ANKEL _____
2. HEATW _____
3. NCLOW _____
4. NCHRA _____
5. BTDOU _____
6. CGOHU _____
7. IASVT _____
8. TALFU _____
9. BOIRT _____
10. WRLBA _____

APPENDIX K: PERCEIVED TASK DIFFICULTY AND EFFORT ITEMS

REACTIONS TO THE TASK

Instructions: Please answer the questions below regarding the task you just completed. Base your answers on the scale provided (e.g., 1 = Not at all, 11 = Extremely Difficult/Hard).

	Not at All										Extremely Difficult
1. How difficult did you find the task you just completed?	1	2	3	4	5	6	7	8	9	10	11

	Not at All										Extremely Hard
2. How hard were you trying during the task you just completed?	1	2	3	4	5	6	7	8	9	10	11

APPENDIX L: SYSTOLIC BLOOD PRESSURE RATING FORM

Systolic Blood Pressure Records

Instructions: Record the Systolic Blood Pressure of the subject at two times throughout the study session. At each time (e.g., Time 1, Time 2), take two separate readings/measurements to ensure accuracy.

		Reading 1	Reading 2
<u>Time 1:</u> after consent	Systolic BP:	_____	_____
<u>Time 2:</u> after simulation	Systolic BP:	_____	_____

APPENDIX M: STATE SOMATIC ANXIETY SCALE

STICSA-S

Instructions: Below is a list of statements which can be used to describe how people feel. Beside each statement are four numbers which indicate the degree with which each statement is self-descriptive of mood at this moment (e.g., 1 = Not at all, 4 = Very much so). Please read each statement carefully and circle the number which best indicates how you feel right now, at this very moment, even if this is not how you usually feel.

	Not at all	A little	Moderately	Very much so
1. My heart beats fast.	1	2	3	4
2. My muscles are tense.	1	2	3	4
3. I feel dizzy.	1	2	3	4
4. My muscles feel weak.	1	2	3	4
5. I feel trembled and shaky .	1	2	3	4
6. My face feels hot.	1	2	3	4
7. My arms and legs feel stiff.	1	2	3	4
8. My throat feels dry.	1	2	3	4
9. My breathing is fast and shallow	1	2	3	4
10. I have butterflies in my stomach.	1	2	3	4
11. My palms feel clammy.	1	2	3	4

APPENDIX N: INTERPERSONAL PERFORMANCE RATING FORM

Rater ID _____

Interpersonal Performance Coding Sheet

Participant ID _____

Instructions: Each time one of the following behaviors occurs, record the time at which it occurred in the appropriate section. Record the total number of times each type of behavior occurred below each section.

Definitions:

Supporting Behavior

Providing a suggestion or direction to a coworker regarding how to complete his/her tasks, offering/providing a coworker with help to complete his/her tasks or with assistance if they encounter a problem at work, or noting and/or correcting errors committed by a coworker. For example, making a suggestion about what a coworker should say during a simulation event, offering to help complete a coworker's task, offering to back a coworker up when he/she gets in trouble with a supervisor/coworker, noting/correcting a coworker's verbal or written error, etc.

Cooperative Behavior

Passing/sharing information related to a workgroup task or asking for information related to a workgroup task. For example, sharing the contents of a message they received from other sources, providing or asking for information about events occurring during the simulation, providing or asking for information about a simulation character, etc.

Interpersonal Performance	
Supporting Behavior	Cooperative Behavior
Total:	Total:

Interpersonal Performance Score (TOTAL # of Interpersonal Behaviors): _____

APPENDIX O: TASK PERFORMANCE SPREADSHEETS

SUMMIT HOSPITAL

Customer Log Form

Name of customer (if known)	Manny or Gabriel/ Heavyset Hispanic male, blue shirt
Gender	Male
Approximate Age	20s or 30s
Was anyone with the patient? (explain)	His sister
Reason for visit	Injured arm
Name of customer (if known)	John Rayfield/Susan Rayfield/Physical description of parents
Gender	Male or Female
Approximate Age	30s-40's
Was anyone with the patient? (explain)	Either parent
Reason for visit	

	Michael was in the school bus accident
Name of customer (if known)	Cristina/Christine (Girl with Drug Addiction)/ Thin pale blonde female, tank top
Gender	Female
Approximate Age	20's
Was anyone with the patient? (explain)	Her boyfriend
Reason for visit	Her boyfriend is sick/ suffering from drug withdrawal.
Name of customer (if known)	Carl Johnson/ White male greyish hair, suit
Gender	Male
Approximate Age	40's - 50's
Was anyone with the patient? (explain)	No
Reason for visit	

	His child fell out of a tree/ is injured
Name of customer (if known)	Carmine Johnson/ Young Black male, maroon shirt
Gender	Male
Approximate Age	20's
Was anyone with the patient? (explain)	His sister
Reason for visit	His wife is having issues while pregnant
Name of customer (if known)	Carlos Mendes, Hispanic male wearing blue long sleeved shirt
Gender	Male
Approximate Age	20's-30's
Was anyone with the patient? (explain)	No
Reason for visit	

	His wife/girlfriend is having issues while pregnant
Name of customer (if known)	
Gender	
Approximate Age	
Was anyone with the patient? (explain)	
Reason for visit	
Name of customer (if known)	
Gender	
Approximate Age	
Was anyone with the patient? (explain)	
Reason for visit	

SUMMIT HOSPITAL

Insurance Claim Form

Name of Patient	Jesse Parish
Birthplace	Atlanta, GA
Birthdate	February 22nd, 1983
Occupation	Consultant
Name of Insured	Jesse Parish
Insurance Company	Well Care
Insurance Policy Number	QU021=T
Reason for Visit	Patient was experiencing severe nausea after consuming a large amount of sushi from a local restaurant
Additional Comments	Patient will be tested for food poisoning and will likely be able to return home on the same day
Name of Patient	Manny Vasquez
Birthplace	San Juan, Puerto Rico
Birthdate	January 14th, 1979
Occupation	Unknown
Name of Insured	Manny Vasquez
Insurance Company	Uninsured
Insurance Policy Number	Not Applicable

Reason for Visit

Wounded right arm

Additional Comments

Customer seemed angry/upset. left when he wasn't seen immediately. He was accompanied by his sister

Name of Patient

Vanessa Rodriguez

Birthplace

Memphis, TN

Birthdate

February 19th, 1984

Occupation

Childcare specialist

Name of Insured

Vanessa Rodriguez

Insurance Company

Blue Cross

Insurance Policy Number

7294-FCT

Reason for Visit

Possible infected wound on leg

Additional Comments

No additional comments

Name of Patient

Danny Millerstein

Birthplace

Albuquerque, New Mexico

Birthdate	September 26th, 1980
Occupation	Construction Worker
Name of Insured	Danny Millerstein
Insurance Company	Aetna
Insurance Policy Number	AEW-5389
Reason for Visit	Heat stroke
Additional Comments	Patient arrived with mild heat stroke after working a double shift on job. Patient was seen swiftly after arrival and released. Patient has history of anger problems and behaved aggressively towards hospital staff

Name of Patient	Justin Johnson
Birthplace	Orlando, FL
Birthdate	June 13th, 2002
Occupation	None (minor)
Name of Insured	Carl Johnson
Insurance Company	Anthem
Insurance Policy Number	698-TR-1920
Reason for Visit	Possible broken bones from fall from tree

Additional Comments

Carl Johnson is a local pastor in the community who engages in extensive yearly fundraising activities for Summit Hospital

Name of Patient

Michael Rayfield

Birthplace

Tampa, FL

Birthdate

April 25th, 2001

Occupation

None (minor)

Name of Insured

John & Susan Rayfield

Insurance Company

Healthy Families

Insurance Policy Number

20230-FTH

Reason for Visit

Bus accident

Additional Comments

Patient was involved in a local school bus accident but sustained minor injuries and was released promptly on the same day. Parents are both educators in the local school district.

Name of Patient

Kayla Johnson (Jane Doe)

Birthplace

Miami, FL

Birthdate

January 23rd, 1978

Occupation

Sales representative

Name of Insured

Carlos Mendez

Insurance Company

Tricare

Insurance Policy Number

37582TOK

Reason for Visit

Kayla (alias Jane Doe) is experiencing pregnancy complications and needs a battery of tests

Additional Comments

Important note: Ex-husband (name: Carmine Johnson) is NOT allowed to see or gain information about Kayla (as per restraining order)

Name of Patient

Jessica Smith

Birthplace

Sacramento, CA

Birthdate

February 4th, 1975

Occupation

Homemaker

Name of Insured

Jessica Smith

Insurance Company

Blue Cross

Insurance Policy Number

7809-BOX

Reason for Visit

Patient was experiencing chest pains and vertigo

Additional Comments

Patient has no previous history of heart disease, nor does heart disease run in her family

Name of Patient

Kyle Brott

Birthplace

Boston, MA

Birthdate	March 3rd, 1979
Occupation	Accountant
Name of Insured	Kyle Brott
Insurance Company	Tricare
Insurance Policy Number	78774DER

Reason for Visit

Patient was complaining of several different pains throughout the body but could not describe his symptoms any more specifically

Additional Comments

Patient has a history of hypochondria, though he will nonetheless be examined, his symptoms are likely somatic in nature

Name of Patient	Beth Franklin
Birthplace	Houston, TX
Birthdate	March, 5th 1982
Occupation	HR Specialist
Name of Insured	Beth Franklin
Insurance Company	Aetna
Insurance Policy Number	ATY-5743

Reason for Visit

Sore kneecap--potential surgery needed

Additional Comments

Patient received an MRI to check for fluid build-up

SUMMIT HOSPITAL

Employee Tracking Form

Hospital Clerical Assitant on Duty	
	Participant's name
Name of Employee	Kelly
Date of Arrival	Current Date
Name of Employee	Rick
Date of Arrival	Current Date
Name of Employee	Lynn
Date of Arrival	Current Date
Name of Employee	Lewis
Date of Arrival	Current Date
Name of Employee	Tanya
Date of Arrival	Current Date
Name of Employee	
Date of Arrival	
Name of Employee	
Date of Arrival	
Name of Employee	
Date of Arrival	

SUMMIT HOSPITAL

Complaint Form

Date	Current Date
Individual Making the Complaint	Christine/Cristina/Girl with Drug Addiction
Individual the Complaint is Directed Towards	Lynn
Any Witnesses to Event	Participant's Name
Description of Event	Lynn revealed private information about her boyfriend in a lobby full of other customers.
Date	Current Date
Individual Making the Complaint	Kelly
Individual the Complaint is Directed Towards	Rick
Any Witnesses to Event	Participant's Name
Description of Event	Rick made sexually inappropriate comments towards Kelly
Date	Current Date
Individual Making the Complaint	Lynn

**Individual the Complaint is Directed Towards
Any Witnesses to Event**

Participant's Name
No
Lynn believes the participant left their desk, missing several important phone calls

Description of Event

**Date
Individual Making the Complaint
Individual the Complaint is Directed Towards
Any Witnesses to Event**

Description of Event

**Date
Individual Making the Complaint
Individual the Complaint is Directed Towards
Any Witnesses to Event**

Description of Event

APPENDIX P: TASK PERFORMANCE RATING FORM

Rater ID _____

Task Performance Coding Sheet

Participant ID _____

Instructions: For each of the following spreadsheet documents, record the number of independent pieces of information that were correctly entered by the participant. Incorrectly entered information (i.e., information entered in the wrong place or inaccurate information) and extra information (i.e., information that participants were not requested to enter) must not be included in this number.

Descriptions of Spreadsheet Documents

Customer Log Form

A correctly completed form will include the following pieces of information: name, gender, and age of any simulated customers the participant encountered during the ER Simulation, the identity of any other individuals who accompanied the customer to the ER, and the reason for their visit to the ER.

Insurance Claim Form

A correctly completed form will include the following pieces of information: customers' birthdates, birthplaces, occupations, insurance companies, and insurance policy numbers, as well as the reason for the customer's visit to the ER and any additional comments relevant to processing customer insurance claims.

Employee Tracking Form

A correctly completed form will include the following pieces of information: names of all simulated employees who were working in the ER during the participant's shift and the date on which they arrived.

Complaint Form

A correctly completed form will include the following pieces of information: the date on which any complaints were lodged against the ER or individuals working within it, the name of the individual who made the complaint, the name of the individual towards whom the complaint was directed, a description of the event associated with the complaint, and the names of any witnesses to the event.

Task Performance			
Customer Log Form	Insurance Claim Form	Employee Tracking Form	Complaint Form
Total:	Total:	Total:	Total:

Task Performance Score (TOTAL # of correct pieces of information): _____

APPENDIX Q: TRAIT AFFECT SCALE

PANAS-T

Instructions: This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you generally feel this way, that is, how you feel on the average. Use the following scale to record your answers.

1	2	3	4	5
Not at All	A Little	Moderately	Quite a Bit	Extremely

<input type="checkbox"/>	interested	<input type="checkbox"/>	irritable
<input type="checkbox"/>	distressed	<input type="checkbox"/>	alert
<input type="checkbox"/>	excited	<input type="checkbox"/>	ashamed
<input type="checkbox"/>	upset	<input type="checkbox"/>	inspired
<input type="checkbox"/>	strong	<input type="checkbox"/>	nervous
<input type="checkbox"/>	guilty	<input type="checkbox"/>	determined
<input type="checkbox"/>	scared	<input type="checkbox"/>	attentive
<input type="checkbox"/>	hostile	<input type="checkbox"/>	jittery
<input type="checkbox"/>	enthusiastic	<input type="checkbox"/>	active
<input type="checkbox"/>	proud	<input type="checkbox"/>	afraid

APPENDIX R: TRAIT SOMATIC ANXIETY SCALE

STICSA-T

Instructions: Below is a list of statements which can be used to describe how people feel. Beside each statement are four numbers which indicate how often each statement is true of you (e.g., 1 = Almost Never, 4 = Almost Always). Please read each statement carefully and circle the number which best indicates how often, in general, the statement is true of you. Circle the number which best indicates how you generally feel, that is, how you feel most of the time.

	Almost Never	Occasionally	Often	Almost Always
1. My heart beats fast.	1	2	3	4
2. My muscles are tense.	1	2	3	4
3. I feel dizzy.	1	2	3	4
4. My muscles feel weak.	1	2	3	4
5. I feel trembled and shaky .	1	2	3	4
6. My face feels hot.	1	2	3	4
7. My arms and legs feel stiff.	1	2	3	4
8. My throat feels dry.	1	2	3	4
9. My breathing is fast and shallow	1	2	3	4
10. I have butterflies in my stomach.	1	2	3	4
11. My palms feel clammy.	1	2	3	4

APPENDIX S: FIGURES

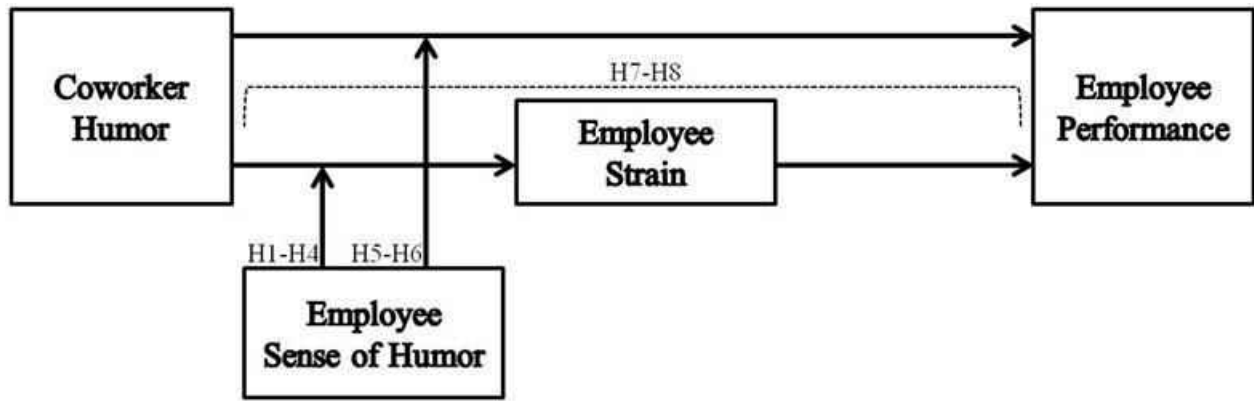


Figure 1. Hypothesized Relationships between Study Variables

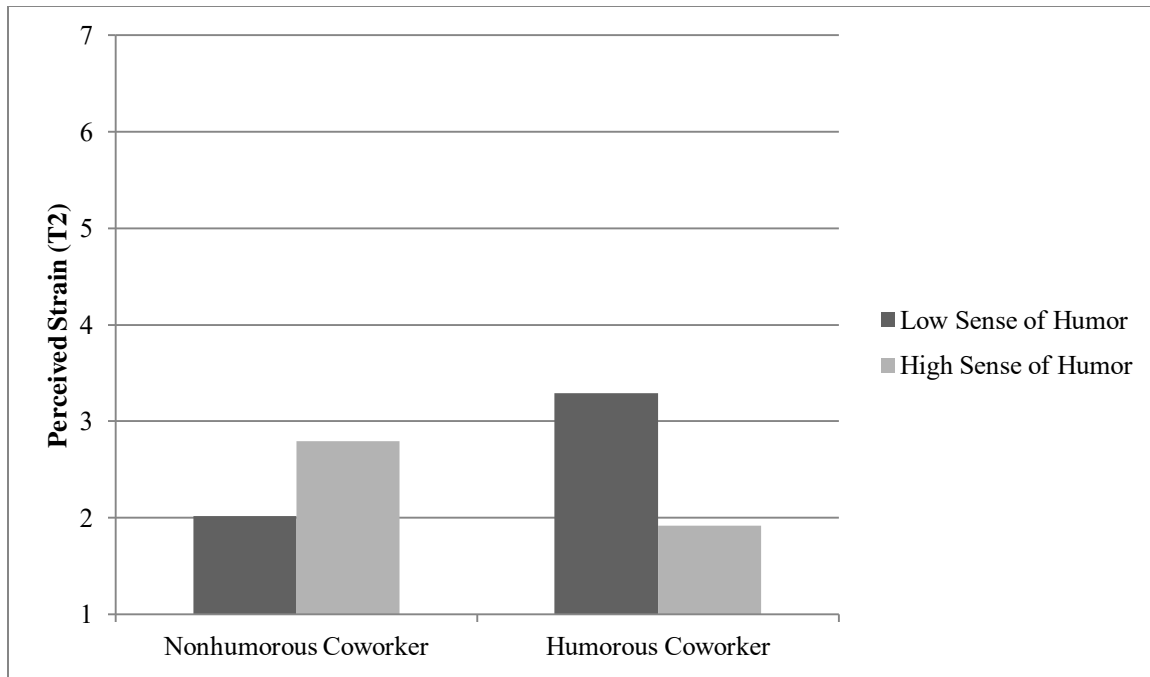


Figure 2. Interaction between Coworker Humor and Employee Sense of Humor Predicting Employee Perceived Strain (T2)

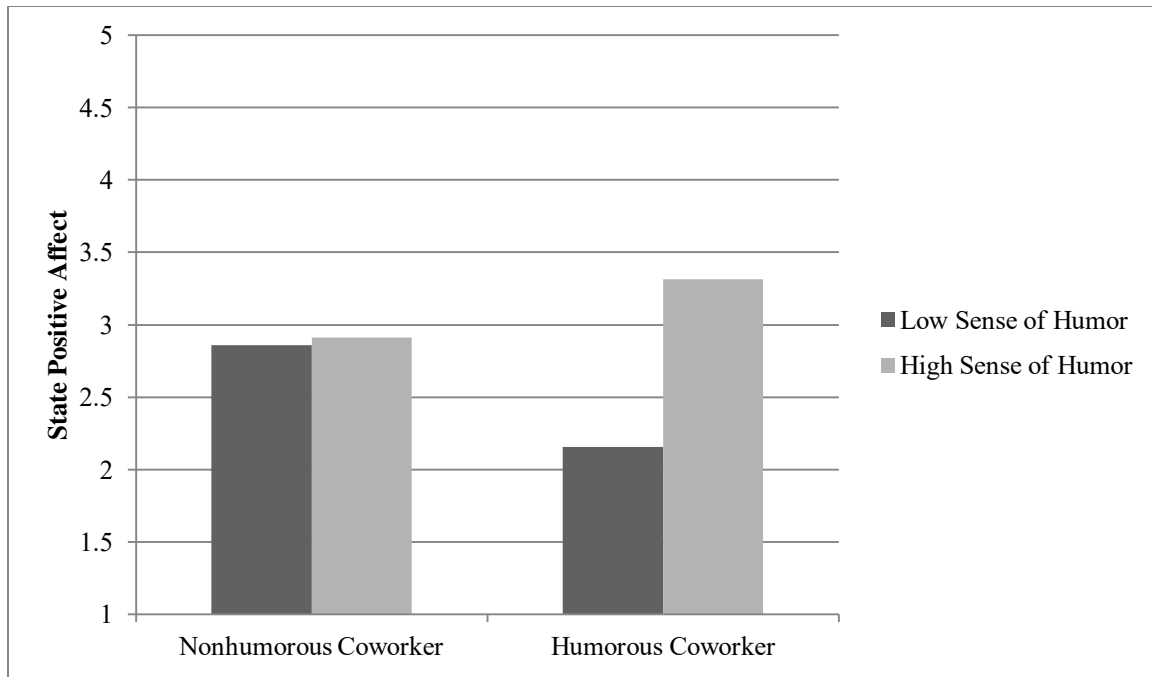


Figure 3. Interaction between Coworker Humor and Employee Sense of Humor Predicting Employee State Positive Affect

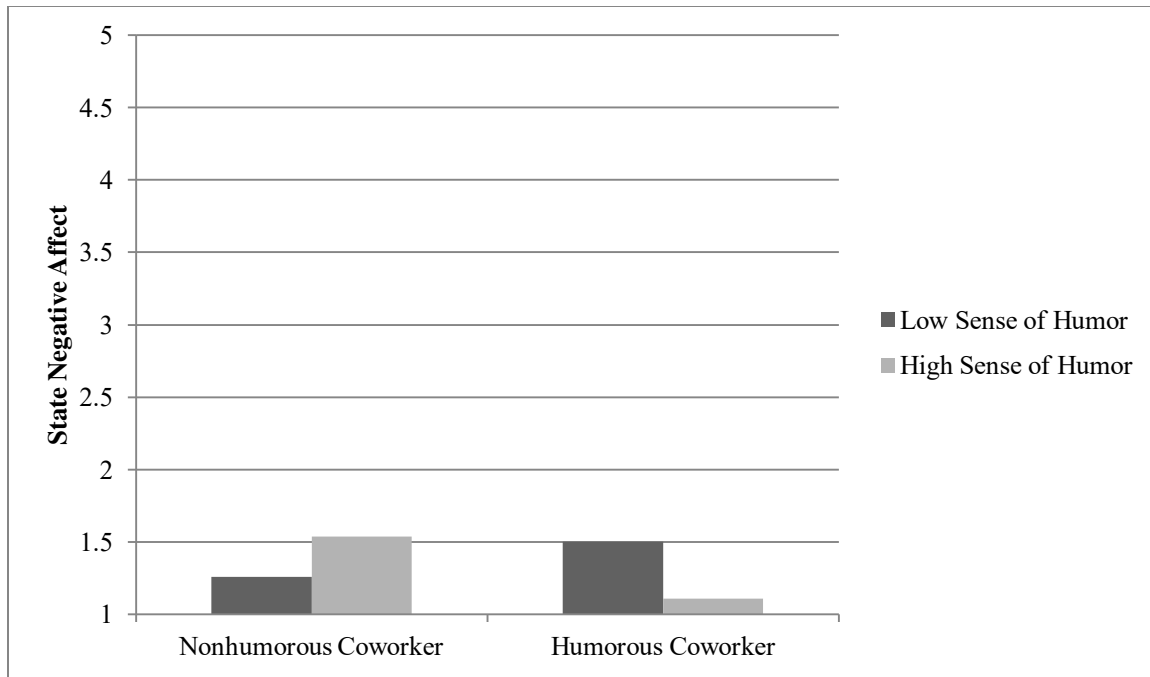


Figure 4. Interaction between Coworker Humor and Employee Sense of Humor Predicting Employee State Negative Affect

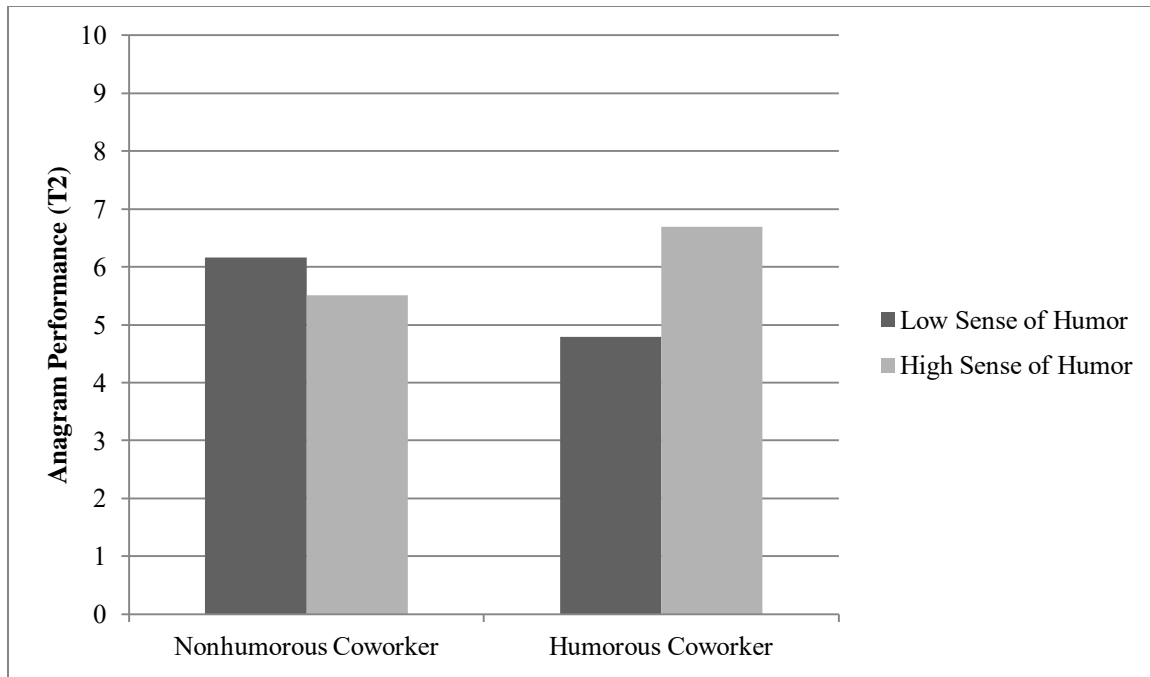


Figure 5. Interaction between Coworker Humor and Employee Sense of Humor Predicting Employee Anagram Performance (T2)

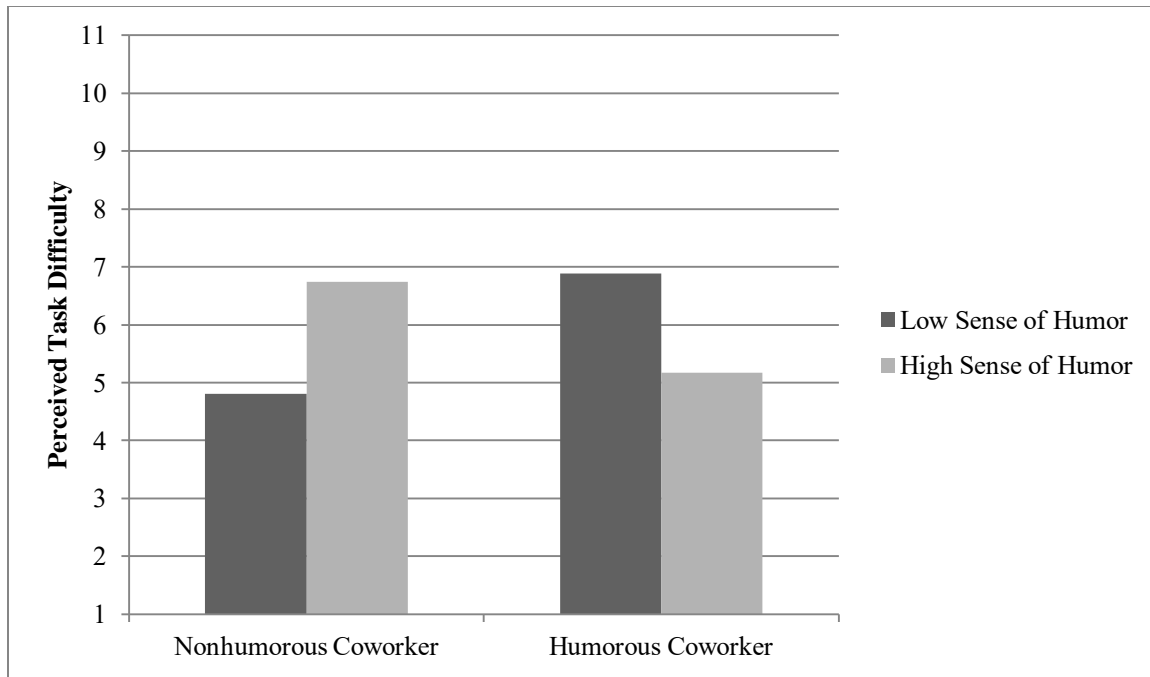


Figure 6. Interaction between Coworker Humor and Employee Sense of Humor Predicting Employee Perceived Task Difficulty

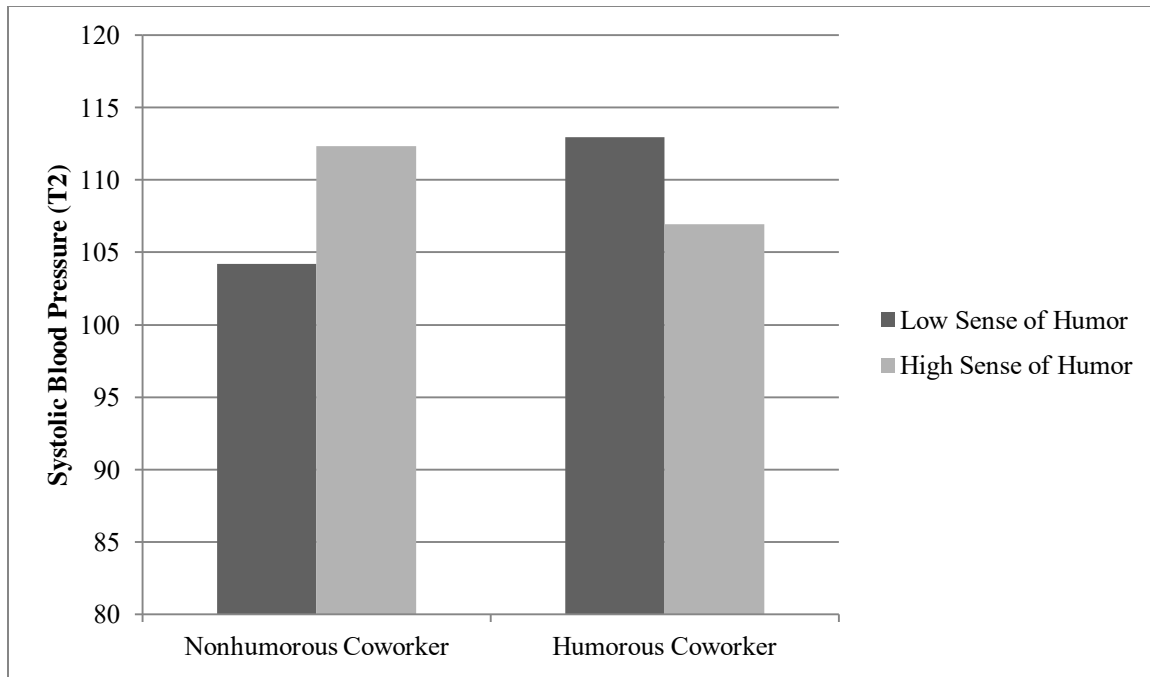


Figure 7. Interaction between Coworker Humor and Employee Sense of Humor Predicting Employee Systolic Blood Pressure (T2)

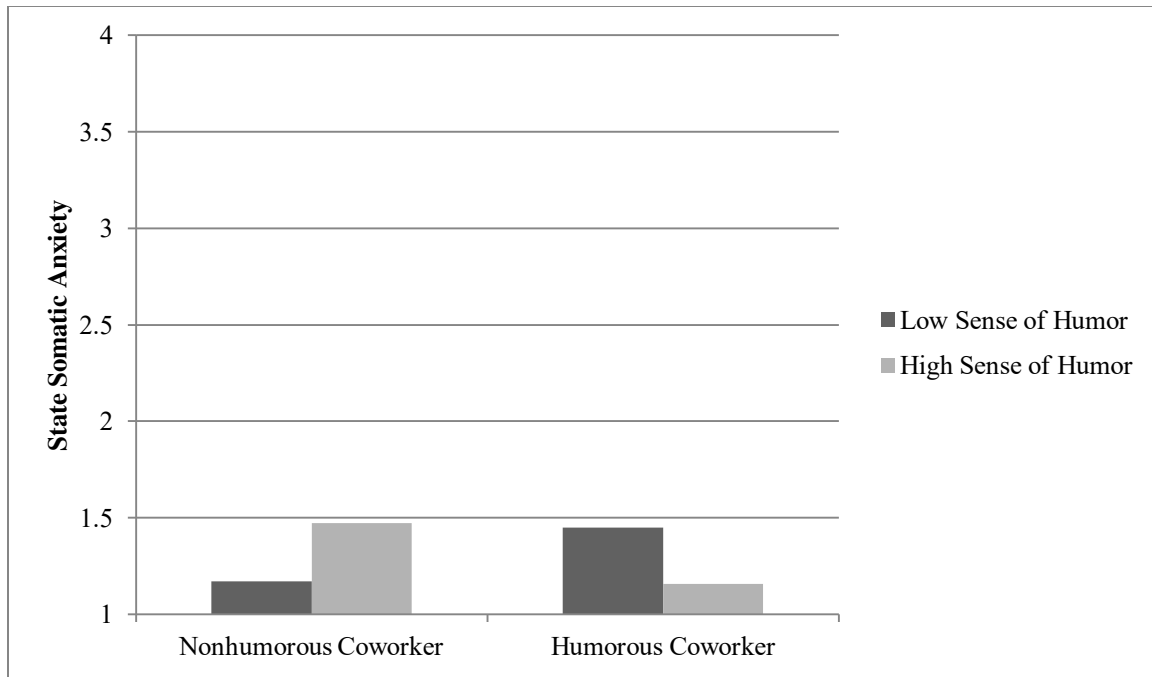


Figure 8. Interaction between Coworker Humor and Employee Sense of Humor Predicting Employee State Somatic Anxiety

APPENDIX T: TABLES

Table 1

Means, Standard Deviations, Reliability Estimates, and Intercorrelations among Study Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Perceived Strain (T1)	1.96	1.14	.88 ^a																	
2. Trait Positive Affect	3.13	0.86	.07	.92 ^a																
3. Trait Negative Affect	1.48	0.50	.39 ^{**}	.29 ^{**}	.84 ^a															
4. Anagram Performance (T1)	4.40	2.22	-.26 ^{**}	-.06	.04	-														
5. Subjective Mental Effort	7.63	2.00	.17 [*]	.14	-.00	-.17 [*]	-													
6. Systolic Blood Pressure (T1)	109.83	11.09	.02	.12	-.04	.07	-.11	.91 ^b												
7. Trait Somatic Anxiety	1.38	0.31	.52 ^{**}	.06	.52 ^{**}	-.03	.08	.01	.79 ^a											
8. Coworker Humor	1.53	0.50	-.10	-.09	-.14	.18 [*]	-.16 [*]	-.05	-.06	-										
9. Employee Sense of Humor	3.98	0.43	.07	.30 ^{**}	.15	.01	.09	.08	.06	-.10	.92 ^a									
10. Perceived Strain (T2)	2.50	1.20	.43 ^{**}	.08	.34 ^{**}	-.02	.30 ^{**}	-.15	.40 ^{**}	-.04	-.03	.85 ^a								
11. State Positive Affect	2.86	0.86	.13	.58 ^{**}	.12	-.04	.19 [*]	.19 [*]	.07	-.09	.31 ^{**}	-.14	.92 ^a							
12. State Negative Affect	1.35	0.42	.33 ^{**}	.05	.40 ^{**}	-.01	.23 ^{**}	-.06	.33 ^{**}	-.22 ^{**}	.03	.62 ^{**}	.08	.82 ^a						
13. Anagram Performance (T2)	5.83	1.80	-.20 [*]	.01	.03	.52 ^{**}	.05	.05	-.03	.13	.08	-.12	.08	-.08	-					
14. Perceived Task Difficulty	5.94	2.36	.17 [*]	.02	.08	-.07	.48 ^{**}	-.17 [*]	.12	-.10	.04	.58 ^{**}	-.15	.35 ^{**}	.08	-				
15. Systolic Blood Pressure (T2)	109.26	11.98	-.04	.07	-.04	-.09	-.05	.67 ^{**}	.00	-.02	.05	-.04	.06	-.06	-.07	-.06	.82 ^b			
16. State Somatic Anxiety	1.31	0.36	.43 ^{**}	.06	.32 ^{**}	-.05	.20 [*]	-.03	.49 ^{**}	-.13	.02	.64 ^{**}	-.02	.66 ^{**}	-.12	.37 ^{**}	.01	.79 ^a		
17. Interpersonal Performance	15.59	8.21	-.02	.14	.06	.04	.07	.04	.02	.28 ^{**}	-.00	-.05	.13	-.09	.18 [*]	-.06	-.07	-.11	.98 ^c	
18. Task Performance	50.03	12.25	-.16	.05	-.10	.12	.07	.02	-.09	.15	.11	-.22 ^{**}	-.01	-.24 ^{**}	.19 [*]	-.09	.01	-.20 [*]	.33 ^{**}	.96 ^c

Note. For Coworker Humor, 1 = Non-Humorous Coworker, 2 = Humorous Coworker. ^aInternal consistency. ^bTest-retest reliability. ^cInterrater reliability. Due to missing data N = 151 for Trait Positive Affect, Trait Negative Affect, and Trait Somatic Anxiety, N = 152 for all remaining variables.

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

Table 2

Regression Analysis Summary for Variables Predicting Perceived Strain (T2)

Variable	Model 1					Model 2				
	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>
Constant	2.51	0.29	-	8.74	.000	2.48	0.29	-	8.69	.000
Perceived Strain (T1)	0.46	0.08	0.43	5.83	.000	0.48	0.08	0.45	6.10	.000
Coworker Humor	-0.01	0.18	-0.01	-0.06	.949	-0.00	0.18	0.00	0.00	.999
Sense of Humor	-0.18	0.21	-0.06	-0.85	.395	1.21	0.69	0.43	1.75	.082
Coworker Humor × Sense of Humor	-	-	-	-	-	-0.89	0.42	-0.52	-2.11	.019 ^a
			R^2							
			ΔR^2							

Note. For Coworker Humor, 1 = Non-Humorous Coworker, 2 = Humorous Coworker. ^aOne-tailed. R^2 values represent adjusted R^2 . $N = 152$.

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

Table 3

Regression Analysis Summary for Variables Predicting State Positive Affect

Variable	Model 1					Model 2				
	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>
Constant	2.92	0.18	-	15.90	.000	2.94	0.18	-	16.06	.000
Trait Positive Affect	0.53	0.07	0.54	7.68	.000	0.52	0.07	0.53	7.57	.000
Coworker Humor	-0.04	0.11	-0.03	-0.39	.701	-0.05	0.11	-0.03	-0.42	.677
Sense of Humor	0.28	0.14	0.14	1.97	.051	-0.43	0.44	-0.22	-0.98	.328
Coworker Humor × Sense of Humor	-	-	-	-	-	0.46	0.27	0.37	1.69	.047 ^a
	<i>R</i> ²		0.34**			<i>R</i> ²		0.35**		
	ΔR^2		-			ΔR^2		0.01		

Note. For Coworker Humor, 1 = Non-Humorous Coworker, 2 = Humorous Coworker. ^aOne-tailed. *R*² values represent adjusted *R*². *N* = 151.

***p* < .01

Table 4

Regression Analysis Summary for Variables Predicting State Negative Affect

Variable	Model 1					Model 2				
	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>
Constant	1.59	0.10	-	15.51	.000	1.58	0.10	-	15.56	.000
Trait Negative Affect	0.33	0.06	0.38	5.08	.000	0.32	0.06	0.38	5.05	.000
Coworker Humor	-0.16	0.06	-0.18	-2.45	.016	-0.16	0.06	-0.18	-2.45	.015
Sense of Humor	-0.05	0.08	-0.05	-0.60	.551	0.39	0.24	0.39	1.60	.111
Coworker Humor \times Sense of Humor	-	-	-	-	-	-0.28	0.15	-0.46	-1.87	.032 ^a
	R^2		0.18**			R^2		0.19**		
	ΔR^2		-			ΔR^2		0.02		

Note. For Coworker Humor, 1 = Non-Humorous Coworker, 2 = Humorous Coworker. ^aOne-tailed. R^2 values represent adjusted R^2 . $N = 151$.

** $p < .01$

Table 5

Regression Analysis Summary for Variables Predicting Anagram Performance (T2)

Variable	Model 1					Model 2				
	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>
Constant	5.58	0.41	-	13.54	.000	5.64	0.41	-	13.73	.000
Anagram Performance (T1)	0.41	0.06	0.51	7.10	.000	0.43	0.06	0.53	7.33	.000
Coworker Humor	0.16	0.26	0.05	0.63	.531	0.14	0.26	0.04	0.55	.587
Sense of Humor	0.33	0.30	0.08	1.11	.268	-1.32	0.99	-0.32	-1.34	.183
Coworker Humor × Sense of Humor	-	-	-	-	-	1.05	0.60	0.41	1.75	.041 ^a
	R^2		0.26**			R^2		0.27**		
	ΔR^2		-			ΔR^2		0.02		

Note. For Coworker Humor, 1 = Non-Humorous Coworker, 2 = Humorous Coworker. ^aOne-tailed. R^2 values represent adjusted R^2 . $N = 152$.

** $p < .01$

Table 6

Regression Analysis Summary for Variables Predicting Perceived Task Difficulty

Variable	Model 1					Model 2				
	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>
Constant	6.09	0.56	-	10.97	.000	6.03	0.55	-	10.97	.000
Subjective Mental Effort	0.56	0.09	0.47	6.43	.000	0.57	0.09	0.49	6.64	.000
Coworker Humor	-0.10	0.35	-0.02	-0.29	.774	-0.08	0.34	-0.02	-0.22	.823
Sense of Humor	-0.05	0.40	-0.01	-0.12	.903	2.30	1.32	0.42	1.74	.085
Coworker Humor × Sense of Humor	-	-	-	-	-	-1.50	0.81	-0.45	-1.86	.033 ^a
	<i>R</i> ²		0.21**			<i>R</i> ²		0.23**		
	ΔR^2		-			ΔR^2		0.02		

Note. For Coworker Humor, 1 = Non-Humorous Coworker, 2 = Humorous Coworker. ^aOne-tailed. *R*² values represent adjusted *R*². *N* = 152.

***p* < .01

Table 7

Regression Analysis Summary for Variables Predicting Systolic Blood Pressure (T2)

Variable	Model 1					Model 2				
	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>
Constant	108.76	2.35	-	46.30	.000	108.57	2.34	-	46.43	.000
Systolic Blood Pressure (T1)	0.73	0.07	0.67	11.01	.000	0.73	0.07	0.68	11.16	.000
Coworker Humor	0.32	1.46	0.01	0.22	.830	0.37	1.46	0.02	0.25	.800
Sense of Humor	0.06	1.72	0.00	0.03	.973	9.14	5.65	0.33	1.62	.108
Coworker Humor \times Sense of Humor	-	-	-	-	-	-5.81	3.44	-0.34	-1.69	.047 ^a
	R^2		0.45**					0.46**		
	ΔR^2		-					0.01		

Note. For Coworker Humor, 1 = Non-Humorous Coworker, 2 = Humorous Coworker. ^aOne-tailed. R^2 values represent adjusted R^2 . $N = 152$.

** $p < .01$

Table 8

Regression Analysis Summary for Variables Predicting State Somatic Anxiety

Variable	Model 1					Model 2				
	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>
Constant	1.43	0.08	-	17.23	.000	1.42	0.08	-	17.31	.000
Trait Somatic Anxiety	0.56	0.08	0.49	6.83	.000	0.55	0.08	0.48	6.85	.000
Coworker Humor	-0.07	0.05	-0.10	-1.42	.159	-0.07	0.05	-0.10	-1.41	.161
Sense of Humor	-0.02	0.06	-0.02	-0.27	.789	0.37	0.20	0.44	1.86	.065
Coworker Humor \times Sense of Humor	-	-	-	-	-	-0.25	0.12	-0.48	-2.03	.022 ^a
	R^2		0.24**					0.25**		
	ΔR^2		-					0.02*		

Note. For Coworker Humor, 1 = Non-Humorous Coworker, 2 = Humorous Coworker. ^aOne-tailed. R^2 values represent adjusted R^2 . $N = 151$.

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

Table 9

Regression Analysis Summary for Variables Predicting Interpersonal Performance

Variable	Model 1					Model 2				
	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>
Constant	8.54	2.08	-	4.11	.000	8.58	2.09	-	4.11	.000
Coworker Humor	4.62	1.30	0.28	3.56	.000	4.61	1.30	0.28	3.54	.001
Sense of Humor	0.52	1.52	0.03	0.34	.731	-1.07	5.05	-0.06	-0.21	.833
Coworker Humor × Sense of Humor	-	-	-	-	-	1.01	3.07	0.09	0.33	.371 ^a
			R^2							
			0.07**					0.06**		
			ΔR^2					0.00		
			-							

Note. For Coworker Humor, 1 = Non-Humorous Coworker, 2 = Humorous Coworker. ^aOne-tailed. R^2 values represent adjusted R^2 . $N = 152$.

** $p < .01$

Table 10

Regression Analysis Summary for Variables Predicting Task Performance

Variable	Model 1					Model 2				
	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>	<i>B</i>	<i>SEB</i>	β	<i>t</i>	<i>p</i>
Constant	44.01	3.17	-	13.88	.000	44.11	3.18	-	13.87	.000
Coworker Humor	3.95	1.98	0.16	2.00	.048	3.92	1.98	0.16	1.98	.049
Sense of Humor	3.66	2.31	0.13	1.58	.116	-1.00	7.69	-0.04	-0.13	.896
Coworker Humor × Sense of Humor	-	-	-	-	-	2.97	4.68	0.17	0.64	.263 ^a
	<i>R</i> ²		0.03		0.02					
	ΔR^2		-		0.00					

Note. For Coworker Humor, 1 = Non-Humorous Coworker, 2 = Humorous Coworker. ^aOne-tailed. *R*² values represent adjusted *R*². *N* = 152.

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