WEIGHT, DISCRIMINATION, AND PERFORMANCE: USING SELF-DETERMINATION THEORY TO EXPLAIN WORKPLACE OUTCOMES RELATED TO WEIGHT

Alexandra Anne Smrcina Henderson

A Dissertation

Submitted to the Graduate College of Bowling Green State University in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2017

Committee:

Russell A. Matthews, Advisor

James H. Albert
Graduate Faculty Representative

Scott E. Highhouse

Abby L. Braden
ABSTRACT

Russell A. Matthews, Advisor

Using self-determination theory as a guiding framework, I examined the cascading negative effects of weight on weight discrimination (as captured by reduced leader-member exchange), psychological need satisfaction, intrinsic motivation, and performance. Since performance is a multidimensional construct, three common dimensions of performance (task performance, organizational citizenship behavior, and counterproductive work behavior) were modeled to assess any differential effects of weight on the different dimensions of performance. Contrary to expectations, the results of the structural equation modeling indicated that the sample of dental hygienists did not experience weight discrimination (i.e., weight was not related to LMX) and that weight was neither directly nor indirectly related to performance. Results of the structural equation modeling also indicated that LMX was incrementally related to psychological need satisfaction (competence, relatedness, and autonomy), but that only autonomy was incrementally related to intrinsic motivation. Surprisingly, intrinsic motivation was not incrementally related to any performance measure. Furthermore, post-hoc analyses revealed that the sample of dental hygienists did not experience other, more overt, forms of weight discrimination (incivility), providing further support that this sample does not experience as much weight discrimination as samples in previous research. Additionally, post-hoc analyses revealed that the specific form of weight measurement (self-report BMI or self-report images) influenced effect sizes, such that BMI was significantly
related to key variables (e.g., competence need satisfaction, task performance, CWB),
while figural images were not. Implications, future directions, and limitations are also
discussed.
ACKNOWLEDGEMENTS

I would like to offer my sincerest thanks to my dissertation committee for their valuable feedback and support throughout the entire dissertation process. I would also like to thank my advisor, Russell Matthews, as well as the other faculty and graduate students in the Industrial/Organizational Psychology program at Bowling Green State University for their guidance and support throughout my graduate career. Finally, I would like to thank my husband (Craig), my parents (Kurt and Anne), and sister (Erica) for their continued encouragement.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>The Current Study</td>
<td>2</td>
</tr>
<tr>
<td>Weight Discrimination</td>
<td>3</td>
</tr>
<tr>
<td>Weight attitudes</td>
<td>3</td>
</tr>
<tr>
<td>Weight discrimination</td>
<td>5</td>
</tr>
<tr>
<td>Leader-Member Exchange</td>
<td>6</td>
</tr>
<tr>
<td>Implications of Weight Discrimination</td>
<td>7</td>
</tr>
<tr>
<td>Self-Determination Theory</td>
<td>8</td>
</tr>
<tr>
<td>Psychological Needs Satisfaction</td>
<td>9</td>
</tr>
<tr>
<td>Competence need satisfaction</td>
<td>9</td>
</tr>
<tr>
<td>Relatedness need satisfaction</td>
<td>10</td>
</tr>
<tr>
<td>Autonomy need satisfaction</td>
<td>10</td>
</tr>
<tr>
<td>Intrinsic Motivation</td>
<td>11</td>
</tr>
<tr>
<td>Performance</td>
<td>12</td>
</tr>
<tr>
<td>Indirect effects</td>
<td>14</td>
</tr>
<tr>
<td>METHODS</td>
<td>16</td>
</tr>
<tr>
<td>Participants and Procedure</td>
<td>16</td>
</tr>
<tr>
<td>Sample 1 (SME sample)</td>
<td>16</td>
</tr>
<tr>
<td>Sample 2 (preliminary dental hygienist sample)</td>
<td>17</td>
</tr>
<tr>
<td>Sample 3 (primary dental hygienist sample)</td>
<td>17</td>
</tr>
<tr>
<td>Measures</td>
<td>18</td>
</tr>
</tbody>
</table>
Weight................................................................. 18
Leader-member exchange........................................... 19
Psychological needs satisfaction.................................... 19
Intrinsic motivation...................................................... 19
Task performance....................................................... 20
Organizational citizenship behavior (OCB)......................... 21
Counterproductive work behavior (CWB)........................... 21

RESULTS ........................................................................ 23

Performance Measure Validation .................................. 23
Hypothesis Testing......................................................... 23
Final Model................................................................... 26
Post-Hoc Analyses......................................................... 26
Predictors of LMX.......................................................... 26
Weight measurement..................................................... 27
Weight discrimination measurement............................... 28

DISCUSSION.................................................................. 29

Weight Discrimination................................................... 29
LMX, Psychological Needs, Motivation, and Performance ........ 31
Reciprocal effects.......................................................... 35
Weight and Performance............................................... 36
Weight Measurement..................................................... 37
Limitations.................................................................... 39
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONCLUSION</td>
<td>42</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>44</td>
</tr>
<tr>
<td>APPENDIX A: FIGURES AND TABLES</td>
<td>55</td>
</tr>
<tr>
<td>APPENDIX B: MEASURES</td>
<td>69</td>
</tr>
<tr>
<td>APPENDIX C: INTERVIEW MATERIALS</td>
<td>77</td>
</tr>
<tr>
<td>APPENDIX D: PERFORMANCE MEASURE DEVELOPMENT MATERIALS</td>
<td>81</td>
</tr>
<tr>
<td>APPENDIX E: SURVEY MATERIALS</td>
<td>82</td>
</tr>
</tbody>
</table>
INTRODUCTION

Overweight workers have become increasingly recognized as a marginalized group deserving of more attention from organizational scholars (Ruggs et al., 2013). Indeed, a study examining the prevalence of discriminatory behaviors found that weight discrimination was as prevalent as race and age discrimination among women (Puhl, Andreyeva, & Brownell, 2008), while another study found that the rates of weight discrimination have been steadily increasing (Andreyeva, Puhl, & Brownell, 2008). Compounding this issue, prevalence studies indicate that obesity rates are continuing to increase (National Institute of Diabetes and Digestive and Kidney Diseases, 2017a). As such, weight discrimination is, and will continue to be, a major issue for a significant portion of the workforce.

However, despite the prevalence of weight discrimination and its potential to impact a significant portion of the workforce, weight discrimination has received little attention from organizational scholars (Ruggs et al., 2013). Indeed, only eight known studies were conducted on weight discrimination in focal Industrial/Organizational Psychology journals from 1990 to 2013 (Ruggs et al., 2013). Understanding the relationships between weight, discrimination, and workplace outcomes is essential for developing effective interventions to improve organizational effectiveness. For example, previous research has indicated that weight is related to lower performance (e.g., Gates, Succop, Brehm, Gillespie, & Sommers, 2008; Pronk et al., 2004). However, this research has inferred an inherent or health-related relationship between weight and performance, when perhaps the work environment (i.e., weight discrimination) may be partly responsible for this relationship. Indeed, the results of previous studies may encourage
WEIGHT, DISCRIMINATION, AND PERFORMANCE

practitioners and other stakeholders to utilize selection and weight-loss intervention techniques in attempts to improve organizational effectiveness. As such, organizations may be missing out on additional techniques to improve employee performance.

The Current Study

Using self-determination theory (SDT, Deci & Ryan, 1985; Ryan & Deci, 2000) as a guiding framework, I examined the cascading effects of weight on weight discrimination (as captured by reduced leader-member exchange), psychological need fulfillment, motivation, and performance. Since performance is a multidimensional construct, three common dimensions of performance (task performance, organizational citizenship behavior, and counterproductive work behavior) were modeled to assess any differential effects of weight on the different dimensions of performance.

The results of this study will have important theoretical and practical implications. First, this study will contribute to our understanding of the influence of weight on work performance. Indeed, if the hypothesized results are supported, then weight will be identified as an important individual factor that should be included in future models of performance. Furthermore, weight discrimination and motivation will be identified as key explanations (mediators) for this relationship. As such, these results would encourage organizational scholars, practitioners, and stakeholders to identify methods of reducing weight discrimination, as opposed to or in conjunction with the implementation of weight-based selection procedures or employee weight loss programs, in order to help increase overweight worker motivation and performance, and in turn organizational effectiveness.
**Weight Discrimination**

Within the weight bias literature, there are three categories of weight bias: stereotypes, prejudices, and discrimination. Weight bias can be defined as the altered thoughts, feelings, or behaviors towards people due to their weight, with bias in thoughts referred to as stereotypes, bias in feelings referred to as prejudices, and bias in behavior referred to as discrimination (Teachman & Mallet, 2005). For example, a stereotype could be a thought that someone is incompetent, a prejudice could be a feeling of disgust, and a behavior could be an act of verbal or physical aggression. According to psychological theories (e.g., theory of planned behavior, Ajzen, 1991), and empirical research (e.g., Rosen & Jerdee, 1976), stereotypes and prejudices (i.e., attitudes) are important antecedents of discrimination.

**Weight attitudes.** Across a variety of academic disciplines, numerous studies have highlighted the prevalence and scope of weight attitudes, which include stereotypes and prejudices. For example, weight attitudes include stereotypes that the overweight are lazy, incompetent, worthless, unattractive, lack self-discipline, and have emotional and psychological deficits (Puhl, Moss-Racusin, Schwartz, & Brownell, 2007) and prejudices rooted in anger, dislike, and disgust (Weiner, Perry, & Magnusson, 1988; Levine & Schweitzer, 2015). Many of these stereotypes and prejudices stem from the common belief that overweight people are responsible for their condition (Puhl et al., 2015). In other words, people believe that the overweight lack the competence and determination to maintain self-control (i.e., diet and exercise), and that this incompetence and laziness is applicable to all aspects of their life. Additionally, researchers have found that many of these negative stereotypes and prejudices are more severe towards the overweight than
towards other stigmatized groups (Latner, O’Brien, Durso, Brinkman, & McDonald, 2008). Specifically, Latner et al. (2008) developed a weight bias scale that could be adapted for different stigmatized groups. The authors then compared the bias towards three highly stigmatized groups and found that bias towards the overweight was significantly larger than bias towards Muslims and gays.

Furthermore, researchers have found that many weight stereotypes and prejudices are frequently internalized by the overweight (Carels et al., 2013; Schwartz, Vartanian, Nosek, & Brownell, 2006, 2006; Wang, Brownell, & Wadden, 2004). This internalization process results in the overweight demonstrating negative weight attitudes towards themselves and other overweight individuals. Weight bias internalization is unique since many other stigmatized groups do not show this effect (Brewer, 1979). It is believed that the internalization of weight biases occurs because group membership is perceived as less stable (Crandall, 1994; Puhl et al., 2015). Specifically, it is difficult, if not impossible, for other stigmatized groups (e.g., gender, race, age) to actively change their group membership. Therefore, these groups attempt to protect their self-esteem by identifying with their in-group and creating positive in-group beliefs. Overweight people, however, do not perceive their group membership as stable, since, again, it is ubiquitously believed that weight is controllable through diet and exercise (Puhl et al., 2015). Thus, the lack of group membership stability reduces the likelihood that an overweight person will identify with the in-group and create positive in-group beliefs. The result is that weight stereotypes are likely held by a much larger proportion of the population compared to other stereotypes, as both the stigmatized (overweight) and nonstigmatized (normal weight) hold similar negative weight stereotypes.
**Weight discrimination.** As with weight attitudes, numerous studies have highlighted the prevalence and scope of weight discrimination, the behavioral component of weight bias. For example, Puhl et al. (2008) found that approximately 10% of women and 5% of men in their sample had experienced some form of weight discrimination, which, for women, was comparable to both race and age discrimination. These high weight discrimination rates are likely due to the fact that weight stereotypes and prejudices are internalized by both the stigmatized and the nonstigmatized. Furthermore, Andreyeva et al. (2008) found that weight discrimination rates in their sample increased nearly two-fold (from 7 to 12%) in just a ten-year period. If these trends have continued, then the current weight discrimination rate could be even higher.

Researchers have also found that weight discrimination is manifested in many types of behaviors. Within the workplace, weight discrimination has been found across the employment lifecycle, from hiring, to performance appraisal, to termination and discipline (Rudolph, Wells, Weller, & Baltes, 2009; Vanhove & Gordon, 2014). Furthermore, the overweight have been found to experience greater interpersonal discrimination, especially overt interpersonal discrimination, compared to other stigmatized groups (e.g., racial minorities; Puhl et al., 2008). This finding in the discrimination literature is likely due to the fact that weight is considered controllable, unlike other stigmatized characteristics, and that discrimination of any form towards someone with a controllable stigma is considered deserved and acceptable (Puhl & Brownell, 2001).
Leader-Member Exchange

In this study, I operationalize weight discrimination as decreased leader-member exchange (LMX) due to weight. LMX is a social exchange relationship that develops between supervisors and subordinates, wherein each party provides resources deemed valuable by the other party and the exchange is perceived as reasonably fair (Graen & Cashman, 1975; Graen & Scandura, 1987). As such, LMX can be conceived as an employee’s perception of whether or not their voluntary actions will be reciprocated by their supervisor (Bernerth, Armenakis, Feild, Giles, & Walker, 2007). The resources reciprocated by supervisors can include anything deemed valuable by the employee, including social support, feedback, autonomy, materials, or money. Over time, this exchange of resources is thought to build trust and a sense of mutual obligation (Cropanzano & Mitchell, 2005).

LMX is an excellent indicator of weight discrimination, as it should be negatively affected by both formal (e.g., performance appraisals and promotion decisions) and informal (e.g., incivility and reduced support) weight discrimination. Specifically, these forms of weight discrimination can be conceptualized as the withholding or taking of resources, which will make the employee perceive a weak exchange relationship (LMX). Indeed, Peng Ngo, Shi, and Wong (2009) found that women, another stigmatized group of workers, typically experience greater discrimination and have lower LMX than men. As such, weight discrimination might be responsible for preventing relationships based on reciprocity and trust (LMX) to ever build.

Hypothesis 1: Weight is negatively related to leader-member exchange.
Implications of Weight Discrimination

Despite the extensive research on the existence of weight discrimination, there has been relatively little research on the implications of weight discrimination on employee performance. Of these studies, Randle (2012) found that employees who perceive weight discrimination do not appear to have lower OCB. However, Randle (2012) only used a one-item measure of weight discrimination that may have only captured more explicit instances of weight discrimination. Additionally, another group of researchers discovered that weight was related to greater experienced incivility, which was in turn related to greater withdrawal behavior (Sliter, Sliter, Withrow, & Jex, 2012). However, incivility is a rather narrow conceptualization of weight discrimination, while withdrawal is a very specific form of counterproductive work behavior, which limits the generalizability of these results to other forms of discrimination or performance. As such, organizational scholars currently have a limited understanding of whether weight discrimination is linked to some of the core dimensions of performance.

Furthermore, the authors of these studies did not examine process variables linking weight discrimination to these performance outcomes. For example, Sliter et al. (2012) did not examine why incivility led to withdrawal behaviors, while Randall (2012) did not examine why weight discrimination might have led to reduced OCB. As such, there is not only a significant gap in the literature in regards to whether or not weight discrimination influences performance, but also in regards to how weight discrimination influences performance. Using SDT as a guiding framework, I attempt to fill these gaps in the weight discrimination and organizational literatures.
Self-Determination Theory

According to SDT (Deci & Ryan, 1985; Ryan & Deci, 2000), motivation ranges along a continuum from amotivation to extrinsic motivation to intrinsic motivation. Amotivation is defined as the lack of a desire to engage in an activity, extrinsic motivation is defined as the desire to engage in an activity for external rewards, and intrinsic motivation is defined as the desire to engage in an activity because one enjoys, or is interested in, the activity (Sheldon, Turban, Brown, Barrick, & Judge, 2003). Additionally, scholars have proposed four distinct subcategories of extrinsic motivation that vary in the extent to which external regulation is internalized (Ryan & Deci, 2000). As such, as one moves along the motivation continuum towards intrinsic motivation, one’s motivation becomes more and more internalized, or self-motivated. Intrinsic motivation is believed to be the pinnacle of the motivation spectrum, as it is linked to a variety of positive outcomes, such as greater performance and well-being (Baard, Deci, & Ryan, 2004). As such, higher levels of internalized motivation are typically desired.

SDT also posits that the satisfaction of psychological needs fosters greater internalized motivation. The core psychological needs in SDT include competence (the need to be effective in what one does or to master new skills in the process), relatedness (the need to feel connected and in sympathy with others), and autonomy (the need to feel that behavior is self-chosen and endorsed; Sheldon et al., 2003). According to SDT, social-contextual factors are capable of enhancing psychological need satisfaction, thus helping to internalize motivation (Deci & Ryan, 1985). In this study, I argue that weight discrimination (reduced LMX due to weight) is a critical social-contextual factor that
leads to reduced levels of all three psychological needs, and in turn reduced levels of internalized motivation, and in turn performance.

**Psychological Needs Satisfaction**

There are a variety of potential weight biases that could directly influence the fulfillment of the core psychological needs (competence, relatedness, and autonomy). Again, for the purposes of this paper, I have operationalized weight discrimination as reduced LMX, as perceptions of LMX quality will be negatively affected by a variety of discriminatory behaviors. Specifically, discriminatory behaviors should reduce the amount of resources (e.g., cognitive, economic, emotional, etc.) provided to the employee, which should make the employee perceive a weaker exchange relationship (as described in the following sections). This operationalization of weight discrimination was selected as a means to demonstrate how weight discrimination affects psychological need fulfillment, as opposed to simply identifying the constellation of discriminatory behaviors that can affect psychological need fulfillment. Each of the specific psychological needs is discussed in turn.

**Competence need satisfaction.** First, LMX should be positively related to competence need satisfaction. Specifically, weak LMX relationships, resulting from weight, should be exemplified by supervisors providing fewer competence-reinforcing resources to overweight employees. Indeed, Peng et al. (2009) demonstrated that females (a group that had significantly weaker LMX relationships than their nonstigmatized counterparts) received less challenging assignments than males. Additionally, Sparr and Sonnentag (2008) found that LMX was related to greater positive supervisor feedback. Indeed, the weak LMX relationships that develop due to negative weight attitudes should
include the provision of fewer competence-reinforcing resources. Since competence need satisfaction refers to the need to be effective in what one does or to master new skills in the process, the lack of competence-reinforcing resources associated with low LMX should make an employee feel that they are not satisfying an innate desire to feel competent.

_Hypothesis 2: LMX is positively related to competence need satisfaction._

**Relatedness need satisfaction.** Second, LMX should be positively related to relatedness need satisfaction. Specifically, weak LMX relationships, resulting from weight, should be exemplified by supervisors providing fewer relatedness-reinforcing resources to overweight employees. For example, numerous studies have linked LMX to a variety of relatedness-reinforcing resources, such as work-family support (Major, Fletcher, Davis, & Germano, 2008; Major & Morganson, 2011) and perceptions of interpersonal fairness (Sparr & Sonnentag, 2008). Since relatedness need satisfaction refers to the need to feel connected and in sympathy with others, the lack of relatedness-reinforcing resources associated with low LMX should make an employee feel that they are not satisfying an innate desire to feel connected with others.

_Hypothesis 3: LMX is positively related to relatedness need satisfaction._

**Autonomy need satisfaction.** Finally, LMX should be positively related to autonomy need satisfaction. Specifically, weak LMX relationships, resulting from weight, should be exemplified by supervisors providing fewer autonomy-reinforcing resources to overweight employees. Indeed, perceptions that an overweight employee is incompetent or lazy may lead supervisors to have less trust in the overweight employee’s abilities to perform autonomously (i.e., without direction or supervision). As a result of
this lack of trust, supervisors and coworkers might be inclined to choose the overweight employee’s work and/or how and when the employee works on it (i.e., low autonomy), even when the overweight employee has provided resources worthy of reciprocation. For example, researchers have consistently found that LMX and job autonomy are positively correlated, such that employees with weaker LMX relationships tend to have less job autonomy (Sparr & Sonnentag, 2008; Volmer, Spurk, & Niessen, 2012). Since autonomy need satisfaction refers to the need to feel that behavior is self-chosen and endorsed, the lack of autonomy-reinforcing resources associated with low LMX should make an overweight employee feel that they are not satisfying an innate desire to feel in control of their behavior.

_Hypothesis 4: LMX is positively related to autonomy need satisfaction._

**Intrinsic Motivation**

As noted previously, one of the core tenets of SDT is that psychological needs satisfaction predicts greater internalized motivation. Specifically, by satisfying one’s psychological needs, it is believed that one will have full access to his or her cognitive and motivational resources (Sheldon et al., 2003). Since intrinsic motivation is considered the pinnacle of the motivation spectrum, psychological need satisfaction should provide the context to reach this optimal level of motivation.

Indeed, previous research on SDT has demonstrated that higher psychological needs satisfaction is related to greater internalized motivation. Most of the research linking psychological needs satisfaction and the internalization of motivation has been conducted in the education domain. For example, Ryan, Stiller, and Lynch (1994) found that children who felt securely connected to and cared for by their parents and teachers
Williams and Deci (1996) demonstrated that medical students with autonomy-supportive instructors (i.e., high autonomy need satisfaction) had greater internalization of biopsychosocial values and practices. Within the work context, this same process is also believed to occur; however, most research within the work context has measured motivation with behavioral manifestations of motivation, such as well-being and performance (e.g., Baard et al., 2004; Deci et al., 2001). Therefore, based on the extensive research on SDT, psychological needs satisfaction should be related to greater internalized motivation in the work context.

**Hypothesis 5:** a) Competence b) relatedness, and c) autonomy need satisfaction are positively related to intrinsic motivation.

**Performance**

Performance is defined as the total expected value to the organization of the discrete behavioral episodes carried out by an individual over a period of time (Motowidlo & Kell, 2013). Researchers have developed a variety of performance models to better define this multidimensional construct; however, one of the most widely utilized models posits that performance is comprised of three dimensions of behaviors: task performance, organizational citizenship behavior (OCB), and counterproductive work behavior (CWB; Rotundo & Sackett, 2002). Typically, task performance is defined as the duties and behaviors that are formally required to perform one’s job, OCBs are defined as the behaviors that go beyond formal role expectations and are generally contextual or interpersonal in nature, and CWBs are defined as the behaviors that are responses to
dissatisfaction and that generally go against organizational interests or norms (Rotundo & Sackett, 2002).

When conducting performance research, it is important to assess each dimension separately, as each dimension is influenced by a unique set of predictors. For example, Lee and Allen (2002) found that positive affect was a key predictor of OCB, while negative affect was a key predictor of CWB. Additionally, meta-analytic results have shown that LMX, trust, job satisfaction, and commitment have differential effects on the different dimensions of performance (Martin et al., 2016). Martin et al. (2016) also assessed the effects of motivation on performance, although the specific type of motivation was not described. As such, it appears that intrinsic motivation could also have differential effects on task performance, OCB, and CWB. For example, OCB and CWB may be more motivationally driven, since there is less formal pressure (e.g., rewards and punishments) from the organization to engage in those types of performance. As such, we would expect intrinsic motivation to be positively related to all three dimensions of performance, but perhaps to a different extent.

To date, researchers have linked internalized motivation to all three performance measures, including task performance (Grant, 2008; Zapata-Phelan, Colquitt, Scott, & Livingston, 2009), OCB (Kuvaas & Dysvik, 2009), and CWB (Skowronski, 2012). Furthermore, Martin et al. (2016) found that motivation had a stronger relationship with both task performance and OCB compared to CWB, and that motivation served as an important mediating mechanism between LMX and both task performance and OCB. As such, it appears that internalized motivation should be linked to all three dimensions of performance.
Hypothesis 6: Motivation is positively related to a) task performance and b) OCB, and negatively related to c) CWB.

Indirect effects. The cascading direct effects from weight to performance suggest that weight may be indirectly related to employee performance, through LMX, psychological need satisfaction, and motivation (see Figure 1). Empirically demonstrating this indirect effect would be a substantial addition to the literature, as previous research has only examined the direct effect of weight discrimination. Furthermore, the measures of weight discrimination (general and incivility) used in previous research (e.g., incivility, Sliter et al., 2012; general weight discrimination, Randle, 2012) might not have captured more subtle (e.g., reduced support) forms of discrimination.

Furthermore, knowledge of an indirect effect of weight on performance would provide an explanation for overweight employees’ lower performance and provide directions for future interventions. Specifically, the hypothesized results of this study would demonstrate that the relationship between weight and performance is mediated by weight discrimination and motivation. As such, the results of this study would encourage organizational scholars, practitioners, and stakeholders to identify methods of reducing weight discrimination, as opposed to or in conjunction with the implementation of weight-based selection procedures or employee weight loss programs, in order to help increase overweight worker motivation and performance, and in turn organizational effectiveness. As such, building off the previous hypotheses, there should be an indirect effect of weight on performance, through LMX, psychological need satisfaction, and motivation (see Figure 1).
Hypothesis 7: Weight is indirectly, negatively related to a) task performance and b) OCB, and indirectly, positively related to c) CWB.
METHODS

Participants and Procedure

Dental hygienists were selected to be the focus of this study due to the fact that they work directly with their supervisors (dentists) and are therefore likely to have a supervisor exchange relationship. Additionally, there appears to be a large gap in the literature in regards to workplace mistreatment, despite the fact that numerous social factors have been linked to work stress within the occupation (Gorter, 2005). Furthermore, dental hygienists are typically classified as blue collar/service employees; a group that tends to have higher correlations between self and supervisor ratings of performance (Harris & Schaubroack, 1988). As such, this job type is more likely to have lower bias in self-ratings of performance, which are the method of performance measurement in this study. Three samples were utilized in this study: one sample consisted of subject matter experts (SMEs) and two samples consisted of dental hygienists. The SMEs and a preliminary sample of dental hygienists were used to develop the performance measures, while the primary sample of dental hygienists was used to test the study hypotheses.

Sample 1 (SME sample). Sample 1 consisted of three SMEs, who were recruited for interviews to develop the performance measures. One interview was conducted with a dentist and two interviews were conducted with dental hygienists. SMEs were recruited via email and word of mouth. On average, the SMEs had 23.67 years of experience in dental practice, all worked in private practice, and all worked in different settings (rural, suburban, urban). SMEs were given preliminary performance scales obtained from O*NET (task performance) and pre-existing scales (OCB and CWB). They were then
asked to identify job irrelevant items from these preliminary scales (indicating if these items should either be edited or deleted) and to create additional job specific items to supplement the preliminary scales. A semi-structured interview script was utilized (see Appendix C).

**Sample 2 (preliminary dental hygienist sample).** Sample 2 was recruited to help finalize the performance measures. Email lists of board certified dental hygienists were obtained online or requested directly from State dental boards (New Jersey, West Virginia, Oregon, and North Carolina). A recruitment email was sent to a preliminary sample of 200 dental hygienists requesting participation in a performance measurement development survey. Participants were asked to rate each of the items retained from the SME interviews on importance, from 1 (not at all important) to 5 (very important), and typical frequency, from 1 (never) to 5 (daily). Of the 200 dental hygienists contacted, 23 responded to the survey (11.5% response rate). Only the 10 most important items that occurred at least somewhat frequently ($M = 3.0$) were retained for the final task performance scale. Since OCB and CWB typically demonstrate skewed distributions (e.g., Organ & Ryan, 1995; Penney & Spector, 2005), only the 10 least frequent OCB items and the 10 most frequent CWB items were retained for the study in attempts to reduce the potential skewed nature of the distributions. Participants in this preliminary sample of dental hygienists received an entry into a lottery for one of five ($5$) $20 Amazon gift cards.

**Sample 3 (primary dental hygienist sample).** Sample 3 was the largest sample and was recruited to test the study hypotheses. A recruitment email was sent to the remaining email addresses requesting participation in the primary study. Participants
were asked to complete the survey at four times, with a one-month time lag between each survey. However, only the initial survey was utilized for this study. Participants received an entry into a lottery for one of twenty-five (25) $20 Amazon gift cards for each survey they completed. In total, 10,590 dental hygienists were contacted. Of the dental hygienists contacted, 5,234 opened the initial recruitment email (49.4%), 655 began the initial survey (6.2%), and 504 completed the initial survey (4.8% response rate). Of the 504 who completed the initial survey, 25 were removed for working part time (i.e., less than 24 hours per week or 3 eight-hour work days), leaving a final sample size of 479. The participants in the primary sample were primarily female (99.4%) and Caucasian (92.2%), had an average age of 44.06 (SD = 12.85), and worked approximately 32.51 hours per week (SD = 6.92). Based on the participants’ self-reported BMI, approximately 1.1% were underweight, 45.8% were normal weight, 29.7% were overweight, and 23.4% were obese. In general, the sample was smaller in size than the general population, which is estimated to be 32.5% overweight and 37.7% obese (National Institute of Diabetes and Digestive and Kidney Diseases, 2017b).

Measures

**Weight.** Weight was measured with a 9-item figural BMI scale (Bulik et al., 2001). The figural BMI scale provides nine images of individuals with varying body sizes and asks respondents to indicate the image that best matches their own body shape. Image 1 is considered the thinnest while Image 9 is considered the heaviest. The scale has been validated (Bulik et al., 2001) and used successfully in previous weight bias research (e.g., Levine & Schweitzer, 2015).
**LMX.** LMX was measured with an abbreviated 6-item scale by Bernerth et al. (2007). Consistent with Matthews and Toumbeva (2015), two items were removed to reduce redundancy. Sample items include “My supervisor and I have a two-way exchange relationship” and “If I do something for my supervisor, he or she will eventually repay me.” Participants were instructed to respond on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) with instructions to think about the past month. The scale has shown strong internal consistency in previous research ($\alpha = .94-.95$; Matthews & Toumbeva, 2015).

**Psychological need satisfaction.** Psychological need satisfaction was measured with the 12 psychological need satisfaction items from the Basic Psychological Need Satisfaction and Frustration Scale – Work Domain (Schultz, Ryan, Niemiec, Legate, & Williams, 2015), which is an adapted form of the Basic Psychological Needs Scale – Revised (Chen et al., 2013). Sample items include “I feel confident that I can do things well on my job” (competence), “At work, I feel close and connected with other people who are important to me” (relatedness), and “At work, I feel a sense of choice and freedom in the things I undertake” (autonomy). Participants were instructed to respond on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) with instructions to think about the past month. The psychological need satisfaction sub-scale has shown strong internal consistency in previous research ($\alpha = .88$; Schultz et al., 2015).

**Intrinsic motivation.** Intrinsic motivation was assessed with a 3-item intrinsic motivation scale from the Work Extrinsic and Intrinsic Scale by Tremblay, Blanchard, Taylor, Pelletier, & Villeneuve (2009). This scale asks respondents to “please indicate to what extent each of the following items corresponds to the reasons why you are presently
involved in your work.” Sample items include “Because I derive much pleasure from learning new things” and “For the satisfaction I experience from taking on interesting challenges.” Participants were instructed to respond on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) with instructions to think about the past month. The intrinsic motivation sub-scale has shown strong internal consistency in previous research ($\alpha = .77-.87$; Tremblay et al., 2009).

**Task performance.** Task performance was measured with 10 items obtained from O*NET data and SME interviews. As noted earlier, SMEs (Sample 1) were asked to identify the job irrelevant items from O*NET (and to indicate if the items should either be edited or deleted) and to create additional job specific items. Initially, 14 task performance items were obtained from O*NET. During the SME interviews, four items were identified as irrelevant or redundant and were subsequently deleted from the scale. Additionally, five items were edited to better reflect the task behaviors of dental hygienists, while two items were added to the scale. The resulting 12 items from the interviews were then rated by the preliminary sample of dental hygienists (Sample 2). Based on these ratings, two items were identified as having the lowest frequency and importance and were subsequently deleted to create the 10-item task performance measure (see Table 1 and Table 2). Participants were instructed to indicate how their supervisor would rate their performance on the following activities on a 5-point Likert scale from 1 (needs much improvement) to 5 (excellent) with instructions to think about the past month. Participants were asked to answer from the perspective of their supervisor, to try to reduce the leniency bias typically found in self-report measures of performance (Holzbach, 1978).
Organizational citizenship behavior (OCB). OCB was measured with 10 items obtained from the Williams and Anderson (1991) scale and SME interviews. As noted earlier, SMEs (Sample 1) were asked to identify job irrelevant items from the Williams and Anderson (1991) scale (and to indicate if these items should either be edited or deleted) and to create additional job specific items. Initially, 14 OCB items were obtained from the Williams and Anderson (1991) scale. However, before the SME interviews, the three negatively worded items from the scale were deleted due to concerns over construct contamination (Yun, Takeuchi, & Liu, 2007). During the SME interviews, one item was identified as irrelevant and was subsequently deleted from the scale. Additionally, two items were edited to better reflect the OCB of dental hygienists, while one item was added to the scale. The resulting 11 items from the interviews were then rated by the preliminary sample of dental hygienists (Sample 2). Based on these ratings, the item identified as having the highest frequency was subsequently deleted to create the 10-item OCB measure (see Table 3 and Table 4). Sample items include “I helped others who have heavy workloads” and “I conserved and protected organizational property.” Participants were instructed to respond on a 5-point Likert scale ranging from 1 (not at all) to 5 (every day) with instructions to think about the past month.

Counterproductive work behavior (CWB). CWB was measured with 10 items obtained from the Bennett and Robinson (2000) scale and SME interviews. As noted earlier, SMEs (Sample 1) were asked to identify job irrelevant items from the Bennett and Robinson (2000) scale (and to indicate if these items should either be edited or deleted) and to create additional job specific items. Initially, 19 CWB items were obtained from the Bennett and Robinson (2000) scale. During the SME interviews, no
items were identified as irrelevant or redundant; thus, all of the items were retained. However, two items were edited to better reflect the CWB of dental hygienists, while four items were added to the scale. The resulting 23 items from the interviews were then rated by the preliminary sample of dental hygienists (Sample 2). Based on these ratings, the 13 items identified as having the lowest frequency were subsequently deleted to create the 10-item CWB measure (see Table 5 and Table 6). Sample items include “Taken an additional or longer break than is acceptable at your workplace” and “Rushed through a patient’s appointment.” Participants were instructed to respond on a 5-point Likert scale ranging from 1 (not all) to 5 (every day) with instructions to think about the past month. All measures are reported in Appendix C.
RESULTS

Performance Measure Validation

Since the performance measures were developed for the purposes of this study, an exploratory factor analysis (EFA) was performed with the responses from Sample 3 to assess performance measure discrimination. The EFA was performed using principle axis factoring extraction with direct oblimin rotation. Based on the Kaiser criterion (Tabachnick & Fidell, 2007), the EFA resulted in an eight-factor solution explaining 39.23% of the variance. However, based on other standards, such as Catell’s scree test (Tabachnick & Fidell, 2007), the EFA resulted in a four-factor solution. Items for the first three factors appeared to represent task performance, OCB, and CWB, respectively. As such, items for these three factors were retained. Items were retained if they had factor loadings greater than .30 on their respective factors, and did not cross load onto any other factors. As a result of the EFA, the task performance measure was reduced to nine items, the OCB measure was reduced to three items, and the CWB measure was reduced to four items (see Table 7).

Hypothesis Testing

Means, standard deviations, reliabilities, and correlations for each measure are reported in Table 8. Structural equation modeling in Mplus 7 (Muthén & Muthén, 1998-2010) was utilized to test the study hypotheses. Model fit was assessed using chi-square, comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). A non-significant chi-square, a CFI value of .95 or higher, a RMSEA value of .06 or lower, and a SRMR value of .08 or lower will indicate a good model fit (Hu & Bentler, 1999). Additionally, because these
values should not be interpreted as strict cutoffs (Marsh, Hau, & Wen, 2004), model acceptability was also determined by comparing fit indexes across nested models (e.g., $\chi^2$ difference test; Marsh et al., 2004). For the $\chi^2$ difference test, the Hypothesized (full mediation) Model was compared to four competing models. The competing models were partial mediation models, in which weight (Competing Model 1), LMX (Competing Model 2), and psychological needs (Competing Model 3) were set to have direct effects on performance, and weight was set to have a direct effect on psychological needs (Competing Model 4). The three psychological needs were set to correlate with one another in all models, while the three performance measures were also set to correlate with one another in all models. A bootstrapping technique with 5000 iterations was utilized to test indirect effects.

The Measurement Model showed good fit and all item loadings for all latent variables were significant at the $p < .05$ level with item loadings ranging from .55 to .89. Based on the $\chi^2$ difference test, the Hypothesized Model had a better fit than all but one of the competing models (see Table 9). Competing Model 3, which included direct paths from psychological needs to performance, did show better fit than the Hypothesized Model. As such, direct paths from psychological needs to performance were added to the Hypothesized Model.

Hypothesis 1 was not supported; weight was not significantly related to LMX ($\beta = -.01, p > .05$). Hypothesis 2, 3, and 4 were supported; LMX was significantly related to the psychological need satisfaction of competence ($\beta = .34, p < .001$), relatedness ($\beta = .46, p < .001$), and autonomy ($\beta = .59, p < .001$). Hypothesis 5c was supported; autonomy was significantly related to intrinsic motivation ($\beta = .58, p < .001$). However, Hypotheses
5a and 5b were not supported; competence ($\beta = -.04, p > .05$) and relatedness ($\beta = .05, p > .05$) were not related to intrinsic motivation. Hypotheses 6a, 6b, and 6c were not supported; intrinsic motivation was not significantly related to task performance ($\beta = .15, p > .05$), OCB ($\beta = .02, p > .05$), or CWB ($\beta = -.12, p > .05$). Competing Model 3 also added direct effects from competence to task performance ($\beta = .66, p < .01$), OCB ($\beta = -.01, p > .05$), and CWB ($\beta = .02, p > .05$); from relatedness to task performance ($\beta = -.11, p > .05$), OCB ($\beta = .34, p < .001$), and CWB ($\beta = .20, p < .05$); and from autonomy to task performance ($\beta = -.09, p > .05$), OCB ($\beta = -.07, p > .05$), and CWB ($\beta = -.37, p < .01$); however, only some of these direct effects were significant. All psychological needs were significantly correlated with one another [competence-relatedness ($\beta = .46, p < .001$); competence-autonomy ($\beta = .61, p < .001$); relatedness-autonomy ($\beta = .53, p < .001$)] and all forms of performance were significantly correlated with one another [task performance-CWB ($\beta = -.40, p < .01$); OCB-CWB ($\beta = .23, p < .01$)], with the exception of the relationship between task performance and OCB ($\beta = .07, p > .05$).

Finally, Hypothesis 7 was not supported; the indirect effects from weight to task performance [$\beta = .00, 95\% CI (-.01 to .01)$], OCB [$\beta = .001, 95\% CI (.00 to .00)$], and CWB [$\beta = .00, 95\% CI (.00 to .01)$] were not significant. Additionally, despite the significant direct effects, there do not appear to be any indirect effects from LMX to performance through psychological need satisfaction and intrinsic motivation. However, there are significant indirect effects from LMX to performance through only psychological need satisfaction. Specifically, there was a significant indirect effect from LMX to task performance through competence [$\beta = .22, 95\% CI (.11 to .34)$], from LMX to OCB through relatedness [$\beta = .16, 95\% CI (.07 to .24)$], and from LMX to CWB
through relatedness [$\beta = .09$, 95% CI (.02 to .17)] and autonomy [$\beta = -.22$, 95% CI (-.39 to -.05)]. As such, leader-member relationships do indeed drive employee performance; however, this appears to be due to increased psychological well-being, as opposed to increased motivation.

**Final Model**

Since Competing Model 3 contained many non-significant paths, a Final Empirical Model was tested in which all non-significant paths from Competing Model 3 were removed. Based on the $\chi^2$ difference test, the Final Empirical Model showed a better fit than Competing Model 3 (see Table 9). All direct effects for the Final Empirical Model are reported in Figure 2. Again, there was a significant indirect effect from LMX to task performance through competence [$\beta = .19$, 95% CI (.12 to .27)], from LMX to OCB through relatedness [$\beta = .13$, 95% CI (.08 to .19)], and from LMX to CWB through relatedness [$\beta = .08$, 95% CI (.01 to .17)] and autonomy [$\beta = -.25$, 95% CI (-.37 to -.13)].

**Post-Hoc Analyses**

**Predictors of LMX.** Researchers have identified numerous follower characteristics related to LMX, including personality traits, locus of control, competence, and positive and negative affect (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012). Therefore, the Big Five personality traits were measured and used as controls to examine whether weight is a unique and incremental predictor of LMX, above and beyond other follower characteristics known to influence LMX. Personality was measured with the Mini-IPIP (Donnellan, Oswald, Baird, & Lucas, 2006). The Mini-IPIP consists of 20 items, wherein four items are used to measure each of the Big Five personality factors. Only conscientiousness, extraversion, and agreeableness were utilized as controls, as
openness to experience and emotional stability have not been consistently linked to LMX (Dulebohn et al., 2012). Sample items include “Get chores done right away” (conscientiousness), “Am the life of the party” (extraversion), and “Sympathize with others’ feelings” (agreeableness). Participants were instructed to respond on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The five sub-scales have demonstrated strong internal consistency in previous research (e.g., .68-.81; Cooper, Smillie, & Corr, 2010).

To explore the incremental effects of each of these predictors, a linear regression was performed in which personality and weight were entered as predictors of LMX. The linear regression was significant, $F(4,464) = 7.01, p < .001$. The results indicated that extraversion ($\beta = .17, p < .01$) and agreeableness ($\beta = .12, p < .05$) were significant predictors of LMX in this sample, while conscientiousness ($\beta = .02, p > .05$) and weight ($\beta = .00, p > .05$) were not significant predictors. These results provide further support that weight is unrelated to LMX (weight discrimination) within this sample.

**Weight measurement.** In addition to self-report images, self-report BMI was measured as another, more objective indicator of weight. BMI was calculated using the standard formula \( \text{BMI} = \frac{\text{weight in pounds} \times 703}{\text{height in inches, squared}} \). The relationship between BMI and the study variables (LMX, psychological needs, intrinsic motivation, performance) were compared to the relationship between figural images and study variables. Surprisingly, BMI was significantly related to some variables (competence, $r = -.11, p < .05$; task performance, $r = -.11, p < .01$; CWB, $r = .13, p < .01$), while figural images were not significantly related to any variables (see Table 8). As such, it appears that the measure of weight can significantly influence study results and interpretations.
Weight discrimination measurement. In addition to LMX, incivility was measured as another, more overt, indicator of weight discrimination. The incivility measure was a 4-item measure by Matthews and Ritter (2015). Participants were instructed to respond on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) with instructions to think about the past month. The scale has shown strong internal consistency in previous research ($\alpha = .79$; Matthews & Ritter, 2015). The relationship between weight and incivility (BMI $r = .04$, $p > .05$; images $r = .00$, $p > .05$) was compared to the relationship between weight and LMX ((BMI $r = -.09$, $p > .05$; images $r = -.02$, $p > .05$). Surprisingly, weight (BMI and images) was not related to either form of interpersonal treatment (see Table 8). Thus, it appears that there is no observable weight discrimination within this sample of dental hygienists.
To date, researchers have repeatedly demonstrated the prevalence of weight discrimination across the employment cycle, from hiring, to performance appraisal, to termination and discipline (Rudolph et al., 2009; Vanhove & Gordon, 2014). However, researchers have yet to examine the potential effects of weight discrimination on important employee outcomes, such as motivation and performance. The purpose of this study was to integrate the weight discrimination, motivation, and performance literatures in order to examine the potential systematic effects of weight discrimination on employee motivation and performance.

**Weight Discrimination**

Researchers have found that a key predictor to LMX is subordinate competence (Dulebohn et al., 2012), and others have found that weight is oftentimes perceived as an indicator of lower competence (Levine & Schweitzer, 2015). As such, it was hypothesized that supervisors (dentists) would be less likely to provide resources to, or engage in higher quality LMX with, overweight subordinates (dental hygienists). Surprisingly, among the sample of dental hygienists, there was little evidence of this form of weight discrimination. This finding was surprising given the high prevalence of weight discrimination reported in previous research. For example, Puhl et al. (2008) found that approximately 10% of women and 5% of men experienced weight discrimination, which was as prevalent as race and age discrimination among women. There was also no evidence of a relationship between weight and incivility (a more overt indicator of weight discrimination), which stands in sharp contrast to the relatively large relationship found in previous research (Sliter et al., 2012).
One potential explanation for the lack of weight discrimination may be the occupation utilized in the study (dental hygienists). Oftentimes, dental offices are small, intimate workplace settings. For example, the average number of non-dentist employees (including dental hygienists, receptionists, etc.) per dentist was only 4.9 in 2012 (American Dental Association, 2017). As such, the intimate work environment might provide dentists with more opportunities to get to know their dental hygienists and their abilities. In turn, this knowledge about dental hygienists might make dentists less likely to rely on weight stereotypes and engage in weight discrimination. Indeed, researchers have alluded to the idea that increased exposure to stigmatized individuals (e.g., female leaders, overweight people) weakens stereotypes and reduces discriminatory behaviors (Beaman, Chattopadhyay, Duflo, Pande, & Topalova, 2009; Rudolph et al., 2009; Vanhove & Gordon, 2014). If the occupation is indeed the explanation for the lack of weight discrimination, then the relationship between weight and LMX may be more prominent in larger office settings. In these settings, supervisors may have fewer opportunities to get to know all of their employees, and may therefore rely more heavily on stereotypes and engage in greater discrimination.

The lack of weight discrimination (i.e., the lack of a relationship between weight and LMX/incivility) among dental hygienists is encouraging, as it demonstrates that weight discrimination might be close to nonexistent in more intimate work environments. As such, researchers are encouraged to replicate and further investigate these occupational differences in weight discrimination. Additionally, researchers are encouraged to investigate the effects on increased exposure to competent overweight employees as a potential means of reducing weight discrimination in less intimate
organizational settings. In general, the current methods for reducing weight discrimination (e.g., education of the uncontrollability of weight and inducing empathy) have been relatively unsuccessful (Danielsdóttir, O’Brien, & Ciao, 2010). Thus, the results from this study support a different direction for weight discrimination interventions.

An additional avenue for future research on weight discrimination involves the fluctuation of weight across the employment cycle. For example, it is important to understand whether or not weight discrimination (e.g., reduced LMX or increased incivility) changes over time in response to changes in weight. For example, researchers could investigate how fluctuating versus stable weight is related to weight discrimination. Preliminary research suggests that weight loss reduces weight discrimination (e.g., Hayden, Dixon, Dixon, Playfair, & O’Brien, 2010; Rand & Macgregor, 1990); however, researchers have yet to examine how fluctuating weight or how weight gain influences employee treatment. For example, if an employee is of normal weight when they are hired, but then gains weight over time, this employee may be treated differently than an employee who has always remained overweight since being hired. Similarly, if an employee oscillates between being overweight and normal weight, they may be treated differently than either consistently overweight or consistently normal weight employees. As such, researchers are encouraged to examine the longitudinal dynamics of weight and weight discrimination.

**LMX, Psychological Needs, Motivation, and Performance**

Despite the null findings in regards to weight discrimination, the results of this study do provide interesting insight into the relationships between LMX, psychological
needs, motivation, and performance. As expected, the results indicate that LMX does indeed lead to the psychological need satisfaction of competence, relatedness, and autonomy. Thus, it appears that supervisor behavior is integrally linked to employee psychological well-being.

However, contrary to the tenets of SDT, only the psychological need satisfaction of autonomy was related to intrinsic motivation. This finding is extremely informative, as there appears to be a lack of research on the connection between psychological need satisfaction and intrinsic motivation within organizational settings. Specifically, most of the literature on this topic has focused on students in educational settings (e.g., Ryan et al., 1994; Williams & Deci, 1996), which may not translate to employees in organizational settings.

Indeed, students may need to feel competent in their studies, connected to their fellow students, and in control of their life in order to truly be motivated to participate in their education; however, motivation in organizational settings may be more complicated. For example, if an employee feels overly competent at his job (e.g., the task is perceived as too simple), he may feel overly qualified and thus lose interest and motivation to perform the job. Thus, researchers examining SDT in organizational settings may need to take task complexity into account when assessing the link between competence need satisfaction and motivation. Additionally, if an employee feels extremely close to her coworkers and supervisor, she may enjoy the social atmosphere but not the actual tasks of the job. Thus, researchers examining SDT in organizational contexts may need to examine task interdependence when assessing the link between relatedness need satisfaction and motivation. Alternatively, students and employees may be motivated by
different psychological needs based on their age or life situation. For example, students may have a greater need to feel connected to others, as younger individuals tend to be more dependent on the social support of others (Segrin, 2003).

Thus, based on these findings, researchers are encouraged to further investigate the generalizability of this component of SDT across contexts and individual differences. Additionally, based on these findings, organizational practitioners and stakeholders should encourage supervisors to focus on providing greater autonomy to their employees as a means of increasing employee motivation, as this appears to be the driving psychological need for intrinsic motivation. For example, they could encourage supervisors to promote greater job crafting by employees, such as allowing employees to focus on the tasks that they enjoy more.

Also contrary to expectations was the finding that intrinsic motivation was not related to performance. Previous research has generally suggested that intrinsic motivation is fundamental for many behaviors, especially performance (Grant, 2008; Kuvaas & Dysvik, 2009; Skowronski, 2012; Zapata-Phelan et al., 2009). However, the results of this study indicate that intrinsic motivation may not be an important factor for performance among dental hygienists. As such, researchers are encouraged to investigate why intrinsic motivation affects performance in some samples, but not others. One potential explanation for this aberrant finding is that the consistent monitoring by dentists, coworkers, and patients may reduce the importance of motivation for dental hygienist behavior.

Finally, the results of this study indicate that there were no direct effects from LMX to performance, but rather mediation effects through psychological need
satisfaction. This finding highlights the importance of these three psychological factors for explaining key relationships within the organizational literature (i.e., the link between LMX and performance). Other research (e.g., Dulebohn et al., 2012) has yet to examine and identify psychological need satisfaction as the core link between LMX and performance. Specifically, the results of this study indicate that 1) competence links LMX to greater task performance, 2) relatedness links LMX to greater OCB and greater CWB, and 3) autonomy links LMX to lower CWB.

First, feelings of competence may increase one’s perceived and actual ability to perform one’s work (task performance). Indeed, perceived competence and self-efficacy are similar concepts, and self-efficacy has been repeatedly linked to performance (Stajkovic & Luthans, 1998). Second, feelings of relatedness may encourage one to reciprocate others’ kindness and inclusion with helpful behaviors (OCB) within the workplace (Greenberg, 1980), while perhaps simultaneously making one feel more comfortable performing inappropriate behaviors (CWB) in the workplace. Finally, autonomy may prevent the negative cognitive and affective reactions that are associated with being controlled and which have been linked to CWB (Fox, Spector, & Miles, 2001).

As such, the results of this study highlight the potential utility of having supervisors target specific psychological needs to improve specific employee behaviors. Researchers are therefore encouraged to examine the causal relationships between these variables to ascertain whether or not targeting these psychological needs is a fruitful avenue for performance interventions.
Reciprocal effects. In the future, the mediating relationships found in this study should be examined longitudinally to identify potential reciprocal relationships. According to social exchange theory (SET), a social exchange relationship, such as LMX, is developed through a series of interactions that generate obligations for both parties (Emerson, 1976). These interactions can therefore be considered interdependent and contingent on the actions of another person (Blau, 1964). Thus, based on the tenets of SET, it is possible that the (indirect) relationship between LMX and performance identified in this study may be reciprocal, such that an employee’s increased performance may serve to increase a supervisor’s trust in and obligation to reciprocate with the employee, thus strengthening future LMX quality. To date, the potential reciprocal relationship between LMX and performance has received mixed support. For example, in a thorough longitudinal analysis of the relationship between LMX and performance, Nahrgang, Morgeson, and Ilies (2009) found that employee task performance significantly predicts future LMX quality. However, a meta-analysis examining the relationship between LMX and performance provides conflicting results (Martin et al., 2016). The authors found that there was no lagged effect from task performance to LMX, thus debunking the reciprocal hypothesis. However, these meta-analytic results were only based on a limited number of studies and had relatively low variance explained. These conflicting findings suggest that there may be moderating effects within the LMX-performance relationship, such that some individuals or situations may support a reciprocal relationship, while others do not. Indeed, Martin et al. (2016) suggest that the stage of development of the LMX relationship may play a crucial role, such that performance may help strengthen LMX at the beginning of the relationship, but once
initial impressions are formed, subsequent changes in performance may have less influence on LMX development. As such, researchers are encouraged to investigate the potential reciprocal nature of LMX and performance, particularly among dental hygienists.

**Weight and Performance**

Researchers have suggested that people discriminate against the overweight because they perceive the overweight to be less competent (Levine & Schweitzer, 2015), and thus less likely to have high performance. However, researchers have demonstrated that weight is not significantly linked to any competence-related traits, such as personality (Roehling, Roehling, & Odland, 2008) or intelligence (Sørensen & Sonne-Holm, 1985). The results of these studies indicate that weight biases regarding competence are inaccurate and that weight discrimination may unfairly punish overweight employees. Indeed, the results of this study provide further, more direct evidence that weight is not an accurate predictor of performance (as demonstrated by the poor model fit in Competing Model 1). In light of these findings, researchers and practitioners are encouraged to incorporate this information into weight bias training programs to help reduce workplace weight discrimination. Furthermore, these results indicate that weight should not be included as a predictor in future models of performance.

However, it is important to note that these results may be occupation specific, as weight may have an effect on performance in occupations that require more physical activity or endurance. Indeed, weight has been linked to accelerated fatigue in high-stress work environments (Mehta, 2015), and thus may be an accurate predictor of performance.
in these situations. As such, researchers are encouraged to continue research examining the link between weight and performance across occupations.

**Weight Measurement**

In this study, two forms of weight measurement were utilized – self-report BMI and self-report images. Surprisingly, the results varied depending on the measure utilized. For example, when figural images were used, weight was not significantly related to any of the variables in the study. As such, one might interpret these findings as weight being a poor predictor of relationship quality, well-being, motivation, and performance.

However, when BMI was used, weight was significantly related to competence need satisfaction, task performance, and CWB. Although the relationships with competence need satisfaction and task performance are considered small ($r = -0.14$ to $-0.11$), they are similar to some previously reported weight bias effect sizes (e.g., Rudolph et al., 2009) and they are meaningfully larger than the near zero correlations found for figural images ($r = -0.03$ to $-0.01$). The relationship between weight and competence need satisfaction might indicate the existence of internalized weight bias, such that overweight individuals believe that they are less competent because of their weight. Indeed, previous research has generally supported the concept of weight bias internalization (e.g., Carels et al., 2013; Schwartz et al., 2006). Additionally, the relationship between weight and task performance might indicate that being overweight can impair dental hygienist task performance, perhaps through increased fatigue (Mehta, 2015). The relationship between weight and CWB, however, did not demonstrate as meaningful a difference between the two forms of weight measurement ($r = 0.13$ for BMI versus $r = 0.07$ for images).
Specifically, despite only one correlation being significant, both are considered small effects.

The conflicting findings indicate the importance of weight measurement within weight discrimination research, as one weight measurement may lead to completely different conclusions compared to another weight measurement. This is an extremely important issue for researchers to address, especially since the current weight discrimination literature includes a multitude of measures, including self-report and objective BMI (Roehling et al., 2008), waist circumference (King et al., 2016), and figural images (Levine & Schweitzer, 2015). As such, researchers may not be able to accurately compare results across the current body of weight discrimination literature, thus limiting our understanding of this important phenomenon.

One potential explanation for the differences in effect sizes could be that BMI may be slightly more objective and thus more reflective of a person’s true weight. Images, on the other hand, may be more susceptible to distortion for self-enhancing purposes. In other words, an overweight person may be more reluctant to acknowledge that they look like one of the overweight images than to admit their weight and height. In light of these potential self-enhancing biases, images might be less useful for research where participants are asked about their own weight, as opposed to others’ perceived weight. Taken together, researchers are cautioned to consider measurement in their future research and are encouraged to conduct further research to examine the effects of weight measurement.
Limitations

As with any research, there are certain limitations of this study worth noting. First, the data collected for this study was cross-sectional in nature. Cross-sectional data can provide excellent preliminary evidence of relationships between constructs; however, it cannot provide evidence of causality between constructs. As such, researchers are encouraged to employ experimental designs to test the proposed directionality of relationships within the current model.

Second, the sample utilized within this study may have led to sample-specific results that might not generalize to other samples. For example, this dental hygienist sample may experience less weight discrimination compared to other samples. Indeed, as noted earlier, dental hygienists often work in small, intimate settings, which may reduce or eliminate weight discrimination. Additionally, only 53.1% of the sample was either overweight or obese, while approximately 70.2% of US adults are either overweight or obese (National Institute of Diabetes and Digestive and Kidney Diseases, 2017). Thus, this sample may experience less weight discrimination simply due to their weight status, while other, more overweight samples, may experience greater weight discrimination. Indeed, previous research has generally found a high proportion of weight discrimination (Puhl et al., 2008) occurring in a variety of forms across the employment cycle (Rudolph et al., 2009; Vanhove & Gordon, 2014). Additionally, compared to other samples, this dental hygienist sample demonstrated high means and low standard deviations for a variety of measures, including intrinsic motivation (Tremblay et al., 2009), which may have made it difficult to detect true effects. Thus, the current model should be tested in
additional samples to determine if results may vary across occupations, weight status, or other sample characteristics.

Third, the extremely high levels of psychological need satisfaction, motivation, and performance reported within the sample may have masked the presence of true relationships between constructs. Thus, the potential explanations for these null relationships may simply be statistical, not theoretical or practical. As such, the current model should be re-tested with another sample to determine the appropriate explanations for the null effects observed in this study.

Finally, the measurement of some of the key variables in the model may have affected the results. For example, all variables were assessed via self-report at the same period in time, which may have led to common method variance. Additionally, the performance measures utilized in this study were not ideal. The process that was used to identify the items to retain for the survey and analyses was focused entirely on the psychometric properties of the items, as opposed to content validity. Indeed, although the performance measures demonstrated strong psychometric properties, as evidenced by the high factor loadings in the measurement model, the measures were not entirely representative of their intended constructs. Specifically, the OCB measure was primarily interpersonal in nature, while the CWB measure was primarily organizational in nature. These constructs have been conceptualized as having multiple dimensions, including interpersonal and organizational dimensions (e.g., Bennett & Robinson, 2000; Williams & Anderson, 1991). Thus, the measures in this study may have limited generalizability to other forms of OCBs and CWBs. This situation highlights the difficulty of creating occupation specific performance measures for OCB and CWB, particularly the difficulty
in finding a balance between psychometric properties and content validity. As such, it is recommended that the model be tested further, but with more content valid performance measures.
CONCLUSION

Using self-determination theory as a guiding framework, I examined the cascading negative effects of weight on weight discrimination (as captured by reduced leader-member exchange), psychological need satisfaction, intrinsic motivation, and performance. Since performance is a multidimensional construct, three common dimensions of performance (task performance, organizational citizenship behavior, and counterproductive work behavior) were modeled to assess any differential effects of weight on the different dimensions of performance. Contrary to expectations, the results of the structural equation modeling indicated that the sample of dental hygienists did not experience weight discrimination (i.e., weight was not related to LMX) and that weight was neither directly nor indirectly related to performance. These findings provide support for future research on occupation differences in weight discrimination and highlight the fallacy of the stereotype that the overweight are less competent (i.e., capable of performing).

The results of this study also provide interesting insight into the relationships between LMX, psychological needs, motivation, and performance among dental hygienists. Specifically, the results of the structural equation modeling indicated that LMX was incrementally related to psychological need satisfaction (competence, relatedness, and autonomy), but that only autonomy was incrementally related to intrinsic motivation. Surprisingly, intrinsic motivation was not significantly related to any performance measure.

Furthermore, post-hoc analyses revealed that the sample of dental hygienists did not experience other, more overt, forms of weight discrimination (incivility), providing
further support that this sample does not experience as much weight discrimination as samples in previous research. Additionally, post-hoc analyses revealed that the specific form of weight measurement (self-report BMI or self-report images) influenced effect sizes, such that BMI was significantly related to key variables (e.g., competence need satisfaction, task performance, CWB), while figural images were not.

In general, the results of this study provide excellent insight into the psychological effects (or lack thereof) of weight on workplace outcomes among dental hygienists. They also provide insight into, and identify areas for future research on, weight measurement, occupational differences in weight discrimination, and the complex relationship between LMX, psychological needs, motivation, and performance.
REFERENCES


Integrating the past with an eye toward the future. *Journal of Management, 38*, 1715-1759.


Figure 1. Hypothesized model. LMX = leader-member exchange; OCB = organizational citizenship behavior; CWB = counterproductive work behavior.
Figure 2. Direct effects for the Final Empirical Model. Dashed lines indicate paths that were set to zero. ** $p < .001$. * $p < .01$. + $p < .05$. 

Weight $\rightarrow$ LMX $\rightarrow$ Relatedness $\rightarrow$ Competence $\rightarrow$ Task Performance

Intrinsic Motivation $\rightarrow$ Autonomy $\rightarrow$ OCB $\rightarrow$ CWB
## Table 1
*Development of the Task Performance Scale*

<table>
<thead>
<tr>
<th>Item</th>
<th>Original Items</th>
<th>Post-Interview Items</th>
<th>Post-Survey Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cleaned calcareous deposits, accretions, and stains from teeth and beneath margins of gums, using dental instruments.</td>
<td>Removed tarter, calculus, and strains from teeth and beneath the gum lines using dental instruments.</td>
<td>Removed tarter, calculus, and strains from teeth and beneath the gum lines using dental instruments.</td>
</tr>
<tr>
<td>2</td>
<td>Recorded and reviewed patient medical histories.</td>
<td>Recorded and reviewed patient medical histories.</td>
<td>Recorded and reviewed patient medical histories.</td>
</tr>
<tr>
<td>3</td>
<td>Examined gums, using probes, to locate periodontal recessed gums and signs of gum disease.</td>
<td>Examined gums using periodontal probes and recognized periodontal pockets, recessed gum lines, and signs of periodontal disease.</td>
<td>Examined gums using periodontal probes and recognized periodontal pockets, recessed gum lines, and signs of periodontal disease.</td>
</tr>
<tr>
<td>4</td>
<td>Feel and visually examine gums for sores and signs of disease.</td>
<td>Took and prepared x-rays.</td>
<td>Took and prepared x-rays.</td>
</tr>
<tr>
<td>5</td>
<td>Exposed and developed x-ray film.</td>
<td>Charted conditions of decay and disease for diagnosis and treatment by dentist.</td>
<td>Charted conditions of decay and disease for diagnosis and treatment by dentist.</td>
</tr>
<tr>
<td>6</td>
<td>Charted conditions of decay and disease for diagnosis and treatment by dentist.</td>
<td>Maintained dental equipment and sharpened and sterilized dental instruments.</td>
<td>Maintained dental equipment and sharpened and sterilized dental instruments.</td>
</tr>
<tr>
<td>7</td>
<td>Feel lymph nodes under patient's chin to detect swelling or tenderness that could indicate presence of oral cancer.</td>
<td>Provided oral health education to maintain the health of patients.</td>
<td>Provided oral health education to maintain the health of patients.</td>
</tr>
<tr>
<td>8</td>
<td>Maintained patient recall</td>
<td>Provided oral health education to maintain the health of patients.</td>
<td>Provided oral health education to maintain the health of patients.</td>
</tr>
<tr>
<td>9</td>
<td>Applied fluorides or other cavity preventing agents to arrest dental decay.</td>
<td>Applied fluorides or other cavity preventing agents to arrest dental decay.</td>
<td>Applied fluorides or other cavity preventing agents to arrest dental decay.</td>
</tr>
<tr>
<td>10</td>
<td>Provided clinical services or health education to improve and maintain the oral health of patients or the general public.</td>
<td>Provided oral health education to maintain the health of patients.</td>
<td>Provided oral health education to maintain the health of patients.</td>
</tr>
<tr>
<td>11</td>
<td>Maintained patient recall</td>
<td>Scheduled patients for</td>
<td>Scheduled patients for</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Administered local anesthetic agents.</td>
<td>future treatment.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Removed excess cement from coronal surfaces of teeth.</td>
<td>Removed excess cement from coronal surfaces of teeth.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Conducted dental health clinics for community groups to augment services of dentist.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Provided oral cancer screening.</td>
<td>Provided oral cancer screening.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Ensured positive client experiences by being friendly, informative, and gentle.</td>
<td>Ensured positive client experiences by being friendly, informative, and gentle.</td>
<td></td>
</tr>
</tbody>
</table>

Original Items = items obtained from O*NET; Post-Interview Items = items retained, edited, or created during SME interviews; Post-Survey Items = items retained based on SME survey ratings
Table 2

*SME Survey Ratings for Task Performance Items*

<table>
<thead>
<tr>
<th>Items</th>
<th>Frequency Rating</th>
<th>Importance Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removed tarter, calculus, and strains from teeth and beneath the gum lines using dental instruments.*</td>
<td>4.96</td>
<td>4.96</td>
</tr>
<tr>
<td>Recorded and reviewed patient medical histories.*</td>
<td>4.87</td>
<td>4.96</td>
</tr>
<tr>
<td>Examined gums using periodontal probes and recognized periodontal pockets, recessed gum lines, and signs of periodontal disease.*</td>
<td>4.87</td>
<td>4.96</td>
</tr>
<tr>
<td>Took and prepared x-rays.*</td>
<td>4.91</td>
<td>4.87</td>
</tr>
<tr>
<td>Charted conditions of decay and disease for diagnosis and treatment by dentist.*</td>
<td>4.70</td>
<td>4.78</td>
</tr>
<tr>
<td>Maintained dental equipment and sharpened and sterilized dental instruments.*</td>
<td>4.74</td>
<td>4.78</td>
</tr>
<tr>
<td>Provided oral health education to maintain the health of patients.*</td>
<td>4.87</td>
<td>4.96</td>
</tr>
<tr>
<td>Applied fluorides or other cavity preventing agents to arrest dental decay.*</td>
<td>4.87</td>
<td>4.91</td>
</tr>
<tr>
<td>Scheduled patients for future treatment.</td>
<td>3.74</td>
<td>3.87</td>
</tr>
<tr>
<td>Removed excess cement from coronal surfaces of teeth.</td>
<td>3.52</td>
<td>4.30</td>
</tr>
<tr>
<td>Provided oral cancer screening.*</td>
<td>4.57</td>
<td>4.91</td>
</tr>
<tr>
<td>Ensured positive client experiences by being friendly, informative, and gentle.*</td>
<td>5.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>

* 10 items with the highest frequency and importance that were retained for the survey.
<table>
<thead>
<tr>
<th>Item</th>
<th>Original Items</th>
<th>Post-Interview Items</th>
<th>Post-Survey Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Helped others who have been absent.</td>
<td>Helped dentists, other dental hygienists, or office staff who have heavy workloads.</td>
<td>Helped dentists, other dental hygienists, or office staff who have heavy workloads.</td>
</tr>
<tr>
<td>2</td>
<td>Helped others who have heavy workloads.</td>
<td>Helped orient new people even though it is not required.</td>
<td>Helped orient new people even though it is not required.</td>
</tr>
<tr>
<td>3</td>
<td>Helped orient new people even though it is not required.</td>
<td>Assisted dentists, other dental hygienists, or office staff with their work (when not asked).</td>
<td>Assisted dentists, other dental hygienists, or office staff with their work (when not asked).</td>
</tr>
<tr>
<td>4</td>
<td>Assisted my supervisor with his/her work (when not asked).</td>
<td>Took time to listen to co-workers' problems and worries.</td>
<td>Took time to listen to co-workers' problems and worries.</td>
</tr>
<tr>
<td>5</td>
<td>Took a personal interest in other employees.</td>
<td>Took a personal interest in other employees.</td>
<td>Took a personal interest in other employees.</td>
</tr>
<tr>
<td>6</td>
<td>Passed along information to co-workers.</td>
<td>Passed along information to co-workers.</td>
<td>Passed along information to co-workers.</td>
</tr>
<tr>
<td>7</td>
<td>Had attendance at work that was above the norm.</td>
<td>Had attendance at work that was above the norm.</td>
<td>Had attendance at work that was above the norm.</td>
</tr>
<tr>
<td>8</td>
<td>Gave advance notice when I was unable to come to work.</td>
<td>Gave advance notice when I was unable to come to work.</td>
<td>Gave advance notice when I was unable to come to work.</td>
</tr>
<tr>
<td>10</td>
<td>Adhered to informal rules devised to maintain order.</td>
<td>Adhered to informal rules devised to maintain order.</td>
<td>Adhered to informal rules devised to maintain order.</td>
</tr>
<tr>
<td>11</td>
<td>Came to work earlier than required to setup and prepare for patients.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Original Items = items obtained from Williams & Anderson (1991), only positively worded items were used; Post-Interview Items = items retained, edited, or created during SME interviews; Post-Survey Items = items retained based on SME survey ratings
Table 4

*SME Survey Ratings for OCB Items*

<table>
<thead>
<tr>
<th>Items</th>
<th>Frequency Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helped dentists, other dental hygienists, or office staff who have heavy workloads.*</td>
<td>3.95</td>
</tr>
<tr>
<td>Helped orient new people even though it is not required.*</td>
<td>4.14</td>
</tr>
<tr>
<td>Assisted dentists, other dental hygienists, or office staff with their work (when not asked).*</td>
<td>4.14</td>
</tr>
<tr>
<td>Took time to listen to co-workers’ problems and worries.*</td>
<td>3.95</td>
</tr>
<tr>
<td>Took a personal interest in other employees.*</td>
<td>3.86</td>
</tr>
<tr>
<td>Passed along information to co-workers.*</td>
<td>4.14</td>
</tr>
<tr>
<td>Had attendance at work that was above the norm.*</td>
<td>4.55</td>
</tr>
<tr>
<td>Gave advance notice when I was unable to come to work.*</td>
<td>4.82</td>
</tr>
<tr>
<td>Conserved and protected organizational property.*</td>
<td>4.68</td>
</tr>
<tr>
<td>Adhered to informal rules devised to maintain order.*</td>
<td>4.55</td>
</tr>
<tr>
<td>Came to work earlier than required to setup and prepare for patients.</td>
<td>4.91</td>
</tr>
</tbody>
</table>

* 10 items with the lowest frequency that were retained for the survey.
Table 5

*Development of the CWB Scale*

<table>
<thead>
<tr>
<th>Item</th>
<th>Original Items</th>
<th>Post-Interview Items</th>
<th>Post-Survey Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Made fun of someone at work.</td>
<td>Made fun of someone at work.</td>
<td>Made fun of someone at work.</td>
</tr>
<tr>
<td>2</td>
<td>Said something hurtful to someone at work.</td>
<td>Said something hurtful to someone at work.</td>
<td>Said something hurtful to someone at work.</td>
</tr>
<tr>
<td>3</td>
<td>Made an ethnic, religious, or racial remark at work.</td>
<td>Made an ethnic, religious, or racial remark at work.</td>
<td>Made an ethnic, religious, or racial remark at work.</td>
</tr>
<tr>
<td>4</td>
<td>Cursed at someone at work.</td>
<td>Cursed at someone at work.</td>
<td>Cursed at someone at work.</td>
</tr>
<tr>
<td>5</td>
<td>Played a mean prank on someone at work.</td>
<td>Played a mean prank on someone at work.</td>
<td>Played a mean prank on someone at work.</td>
</tr>
<tr>
<td>6</td>
<td>Acted rudely toward someone at work.</td>
<td>Acted rudely toward someone at work.</td>
<td>Acted rudely toward someone at work.</td>
</tr>
<tr>
<td>7</td>
<td>Publicly embarrassed someone at work.</td>
<td>Publicly embarrassed someone at work.</td>
<td>Publicly embarrassed someone at work.</td>
</tr>
<tr>
<td>8</td>
<td>Taken property from work without permission.</td>
<td>Taken property from work without permission.</td>
<td>Taken property from work without permission.</td>
</tr>
<tr>
<td>9</td>
<td>Spent too much time fantasizing or daydreaming instead of working.</td>
<td>Spent too much time fantasizing or daydreaming instead of working.</td>
<td>Spent too much time fantasizing or daydreaming instead of working.</td>
</tr>
<tr>
<td>10</td>
<td>Falsified a receipt to get reimbursed for more money than you spent on business expenses.</td>
<td>Falsified a receipt to get reimbursed for more money than you spent on business expenses.</td>
<td>Falsified a receipt to get reimbursed for more money than you spent on business expenses.</td>
</tr>
<tr>
<td>11</td>
<td>Taken an additional or longer break than is acceptable at your workplace.</td>
<td>Taken an additional or longer break than is acceptable at your workplace.</td>
<td>Taken an additional or longer break than is acceptable at your workplace.</td>
</tr>
<tr>
<td>12</td>
<td>Come in late to work without permission.</td>
<td>Come in late to work or leave work early without permission.</td>
<td>Come in late to work or leave work early without permission.</td>
</tr>
<tr>
<td>13</td>
<td>Littered your work environment.</td>
<td>Littered your work environment.</td>
<td>Littered your work environment.</td>
</tr>
<tr>
<td>14</td>
<td>Neglected to follow your boss's instructions.</td>
<td>Neglected to follow your boss's instructions.</td>
<td>Neglected to follow your boss's instructions.</td>
</tr>
<tr>
<td>15</td>
<td>Intentionally worked slower than you could have worked.</td>
<td>Intentionally worked slower than you could have worked.</td>
<td>Intentionally worked slower than you could have worked.</td>
</tr>
<tr>
<td>16</td>
<td>Discussed confidential company information with an unauthorized person.</td>
<td>Discussed confidential patient information with an unauthorized person.</td>
<td>Discussed confidential patient information with an unauthorized person.</td>
</tr>
<tr>
<td>Number</td>
<td>Original Item</td>
<td>Revised Item</td>
<td>Revised Item</td>
</tr>
<tr>
<td>--------</td>
<td>---------------</td>
<td>--------------</td>
<td>--------------</td>
</tr>
<tr>
<td>17</td>
<td>Used an illegal drug or alcohol on the job.</td>
<td>Used an illegal drug or consumed alcohol on the job.</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Put little effort into your work.</td>
<td>Put little effort into your work.</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Dragged out work in order to get overtime.</td>
<td>Dragged out work in order to get overtime.</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Used a cell phone/computer for non-work purposes during work hours.</td>
<td>Used a cell phone/computer for non-work purposes during work hours.</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Blamed another staff member for something you have done.</td>
<td>Blamed another staff member for something you have done.</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Gossiped about someone at work.</td>
<td>Gossiped about someone at work.</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Rushed through a patient’s appointment.</td>
<td>Rushed through a patient’s appointment.</td>
<td></td>
</tr>
</tbody>
</table>

Original Items = items obtained from Williams & Anderson (1991), only positively worded items were used; Post-Interview Items = items retained, edited, or created during SME interviews; Post-Survey Items = items retained based on SME survey ratings
Table 6
SME Survey Ratings for CWB Items

<table>
<thead>
<tr>
<th>Items</th>
<th>Frequency Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Made fun of someone at work.*</td>
<td>1.41</td>
</tr>
<tr>
<td>Said something hurtful to someone at work.*</td>
<td>1.27</td>
</tr>
<tr>
<td>Made an ethnic, religious, or racial remark at work.</td>
<td>1.14</td>
</tr>
<tr>
<td>Cursed at someone at work.*</td>
<td>1.23</td>
</tr>
<tr>
<td>Played a mean prank on someone at work.</td>
<td>1.14</td>
</tr>
<tr>
<td>Acted rudely toward someone at work.*</td>
<td>1.27</td>
</tr>
<tr>
<td>Publicly embarrassed someone at work.</td>
<td>1.14</td>
</tr>
<tr>
<td>Taken property from work without permission.</td>
<td>1.09</td>
</tr>
<tr>
<td>Spent too much time fantasizing or daydreaming instead of working.*</td>
<td>1.27</td>
</tr>
<tr>
<td>Falsified a receipt to get reimbursed for more money than you spent on business expenses.</td>
<td>1.00</td>
</tr>
<tr>
<td>Taken an additional or longer break than is acceptable at your workplace.*</td>
<td>1.23</td>
</tr>
<tr>
<td>Come in late to work or leave work early without permission.</td>
<td>1.09</td>
</tr>
<tr>
<td>Littered your work environment.</td>
<td>1.05</td>
</tr>
<tr>
<td>Neglected to follow your boss's instructions.*</td>
<td>1.23</td>
</tr>
<tr>
<td>Intentionally worked slower than you could have worked.</td>
<td>1.18</td>
</tr>
<tr>
<td>Discussed confidential patient information with an unauthorized person.</td>
<td>1.14</td>
</tr>
<tr>
<td>Used an illegal drug or consumed alcohol on the job.</td>
<td>1.00</td>
</tr>
<tr>
<td>Put little effort into your work.</td>
<td>1.09</td>
</tr>
<tr>
<td>Dragged out work in order to get overtime.</td>
<td>1.05</td>
</tr>
<tr>
<td>Used a cell phone/computer for non-work purposes during work hours.*</td>
<td>2.05</td>
</tr>
<tr>
<td>Blamed another staff member for something you have done.</td>
<td>1.14</td>
</tr>
<tr>
<td>Gossiped about someone at work.*</td>
<td>1.41</td>
</tr>
<tr>
<td>Rushed through a patient’s appointment.*</td>
<td>1.27</td>
</tr>
</tbody>
</table>

* 10 items with the highest frequency that were retained for the survey.
<table>
<thead>
<tr>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removed tartar, calculus, and stains from teeth and beneath the gum lines using dental instruments.</td>
<td></td>
<td>.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examined gums using periodontal probes and recognized periodontal pockets, recessed gum lines, and signs of periodontal disease.</td>
<td></td>
<td>.57</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charted conditions of decay and disease for diagnosis and treatment by dentist.</td>
<td></td>
<td>.56</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Took and prepared x-rays.</td>
<td></td>
<td>.56</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recorded and reviewed patient medical histories.</td>
<td></td>
<td>.56</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provided oral health education to maintain the health of patients.</td>
<td></td>
<td>.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintained dental equipment and sharpened and sterilized dental instruments.</td>
<td></td>
<td>.52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provided oral cancer screening.</td>
<td></td>
<td>.51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensured positive client experiences by being friendly, informative, and gentle.</td>
<td></td>
<td>.51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.35</td>
</tr>
<tr>
<td>Applied fluorides or other cavity preventing agents to arrest dental decay.</td>
<td></td>
<td>.51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Took a personal interest in other employees.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.69</td>
</tr>
<tr>
<td>Took time to listen to co-workers’ problems and worries.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.62</td>
<td></td>
</tr>
<tr>
<td>Passed along information to co-workers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.50</td>
<td></td>
</tr>
<tr>
<td>Used a cell phone/computer for non-work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.61</td>
</tr>
</tbody>
</table>
purposes during work hours.
Gossiped about someone at work. .56
Spent too much time fantasizing or .54
daydreaming instead of working.
Rushed through a patient’s appointment. .51
Made fun of someone at work. .44
Took an additional or longer break than -.32
is acceptable at your workplace.
Said something hurtful to someone at .76
work.
Acted rudely toward someone at work. .52
Neglected to follow your boss’ .79
instructions.
Cursed at someone at work.
Gave advance notice when unable to .31
come to work.
Had attendance at work that was above
the norm.
Helped dentists, other dental hygienists, -.80
or office staff who had heavy workloads.
Assisted dentists, other dental hygienists, -.64
or office staff with their work (when not
asked).
Helped orient new people even though it -.33
was not required.
Adhered to informal rules devised to -.67
maintain order.
Conserved and protected organizational .34
property. -.37

N = 479. Factor loading below .30 are not reported. Factor 1 is interpreted as task performance, Factor 2 is interpreted as organizational citizenship behavior (OCB), and Factor 3 is interpreted as counterproductive work behavior (CWB).
## Table 8
*Means, Standard Deviations, Internal Consistency Reliabilities, and Correlations*

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$</th>
<th>$SD$</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Weight (BMI)</td>
<td>26.80</td>
<td>6.97</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Weight (Images)</td>
<td>4.57</td>
<td>1.59</td>
<td>.78**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. LMX</td>
<td>3.46</td>
<td>.93</td>
<td>-.09</td>
<td>-.02</td>
<td>(.93)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Competence</td>
<td>4.04</td>
<td>.77</td>
<td>-.11+</td>
<td>-.01</td>
<td>.28**</td>
<td>(.74)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Relatedness</td>
<td>4.04</td>
<td>.77</td>
<td>-.07</td>
<td>.02</td>
<td>.43**</td>
<td>.44**</td>
<td>(.74)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Autonomy</td>
<td>3.79</td>
<td>.76</td>
<td>-.07</td>
<td>.02</td>
<td>.51**</td>
<td>.49**</td>
<td>.56**</td>
<td>(.78)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Intrinsic Motivation</td>
<td>4.05</td>
<td>.71</td>
<td>-.04</td>
<td>.32**</td>
<td>.29**</td>
<td>.38**</td>
<td>.50**</td>
<td>(.84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Task Performance</td>
<td>4.44</td>
<td>.48</td>
<td>-.14*</td>
<td>-.03</td>
<td>.13*</td>
<td>.46**</td>
<td>.22**</td>
<td>.31**</td>
<td>.25**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. OCB</td>
<td>4.39</td>
<td>.66</td>
<td>.08</td>
<td>.05</td>
<td>.10+</td>
<td>.09+</td>
<td>.22**</td>
<td>.11+</td>
<td>.09+</td>
<td>.10+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. CWB</td>
<td>1.96</td>
<td>.68</td>
<td>.13*</td>
<td>.07</td>
<td>-.10+</td>
<td>-.11+</td>
<td>-.08</td>
<td>-.22**</td>
<td>-.20**</td>
<td>-.31**</td>
<td>.13*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Incivility</td>
<td>2.09</td>
<td>1.01</td>
<td>.04</td>
<td>.00</td>
<td>-.40**</td>
<td>-.32**</td>
<td>-.53**</td>
<td>-.44**</td>
<td>-.27**</td>
<td>-.25**</td>
<td>-.02</td>
<td>.18**</td>
<td>(.88)</td>
</tr>
</tbody>
</table>

N = 479. **$p < .001$. *$p < .01. +p < .01$. LMX = leader-member exchange; POS = perceived organizational support; OCB = organizational citizenship behavior; CWB = counterproductive work behavior; Scale reliabilities listed along the diagonal.
Table 9

Fit Statistic Information

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>$df$</th>
<th>$\Delta\chi^2$</th>
<th>$\Delta df$</th>
<th>CFI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement Model</td>
<td>1126.50***</td>
<td>630</td>
<td></td>
<td></td>
<td>.94</td>
<td>.04</td>
<td>.05</td>
</tr>
<tr>
<td>Hypothesized Model</td>
<td>1259.42***</td>
<td>650</td>
<td></td>
<td></td>
<td>.92</td>
<td>.04</td>
<td>.07</td>
</tr>
<tr>
<td>Competing Model 1</td>
<td>1256.66***</td>
<td>647</td>
<td>2.76</td>
<td>3</td>
<td>.92</td>
<td>.04</td>
<td>.07</td>
</tr>
<tr>
<td>Competing Model 2</td>
<td>1256.76***</td>
<td>647</td>
<td>2.66</td>
<td>3</td>
<td>.92</td>
<td>.04</td>
<td>.07</td>
</tr>
<tr>
<td>Competing Model 3</td>
<td>1135.48***</td>
<td>641</td>
<td>123.94**</td>
<td>9</td>
<td>.94</td>
<td>.04</td>
<td>.05</td>
</tr>
<tr>
<td>Competing Model 4</td>
<td>1257.10***</td>
<td>647</td>
<td>2.32</td>
<td>3</td>
<td>.92</td>
<td>.04</td>
<td>.07</td>
</tr>
<tr>
<td>Final Empirical Model</td>
<td>1147.01***</td>
<td>653</td>
<td>11.53**</td>
<td>12</td>
<td>.94</td>
<td>.04</td>
<td>.05</td>
</tr>
</tbody>
</table>

Note. All competing models are compared to the Hypothesized Model. The Final Empirical Model is compared to Competing Model 3. Competing Model 1 = hypothesized model plus direct path from weight to performance; Competing Model 2 = hypothesized model plus direct path from LMX to performance; Competing Model 3 = hypothesized model plus direct paths from psychological needs to performance; Competing Model 4 = hypothesized model plus direct paths from weight to psychological needs; $\chi^2$ = chi-square; $\Delta\chi^2$ = change in chi-square from the previous model; $df$ = degrees of freedom; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root mean square residual. **$p < .001$. 
APPENDIX B
MEASURES

Weight

Images
Participants were asked to identify the image that most closely represents their body weight using the 9-point image scale (below).

BMI
Participants were asked to provide their weight (in pounds) and height (in feet and inches). BMI = (weight in pounds * 703)/(height in inches, squared).
LMX

Participants were instructed to respond on 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) with instructions to think about their supervisor over the past month.

1. My supervisor and I have a two-way exchange relationship.
2. I do not have to specify the exact conditions to know my supervisor will return a favor.
3. If I do something for my supervisor, he or she will eventually repay me.
4. My efforts are reciprocated by my supervisor.
5. My relationship with my supervisor is composed of comparable exchanges of giving and taking.
6. When I give effort at work, my supervisor will return it.
Psychological Needs Satisfaction

Participants were instructed to respond on 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) with instructions to think about their job over the past month.

1. At work, I feel a sense of choice and freedom in the things I undertake.
2. I feel confident that I can do things well on my job.
3. I feel that the people I care at work about also care about me.
4. I feel that my decisions on my job reflect what I really want.
5. At work, I feel capable at what I do.
6. I feel connected with people who care for me at work, and for whom I care at work.
7. I feel my choices on my job express who I really am.
8. When I am at work, I feel competent to achieve my goals.
9. At work, I feel close and connected with other people who are important to me.
10. I feel I have been doing what really interests me in my job.
11. In my job, I feel I can successfully complete difficult tasks.
12. I experience a warm feeling with the people I spend time with at work.

1, 4, 7, 10 = Autonomy need satisfaction
2, 5, 8, 11 = Competence need satisfaction
3, 6, 9, 12 = Relatedness need satisfaction
Intrinsic Motivation

Participants were instructed to respond on 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) with instructions to think about their job over the past month.

1. Because it has become a fundamental part of who I am.
2. For the satisfaction I experience from taking on interesting challenges.
3. For the satisfaction I experience when I am successful at doing difficult tasks.
Task Performance

Participants were asked to indicate how their supervisor would rate their performance on the following activities on a 5-point Likert scale from 1 (needs much improvement) to 5 (excellent) with instructions to think about the past month.

1. Removed tarter, calculus, and strains from teeth and beneath the gum lines using dental instruments.
2. Recorded and reviewed patient medical histories.
3. Examined gums using periodontal probes and recognized periodontal pockets, recessed gum lines, and signs of periodontal disease.
4. Took and prepared x-rays.
5. Charted conditions of decay and disease for diagnosis and treatment by dentist.
7. Provided oral health education to maintain the health of patients.
8. Applied fluorides or other cavity preventing agents to arrest dental decay.
10. Ensured positive client experiences by being friendly, informative, and gentle.
Organizational Citizenship Behavior (OCB)

Participants were asked to rate how frequently they performed the following activities on a 5-point Likert scale from 1 (never) to 5 (every day) with instructions to think about the past month.

1. Helped dentists, other dental hygienists, or office staff who have heavy workloads.
2. Helped orient new people even though it is not required.
3. Assisted dentists, other dental hygienists, or office staff with their work (when not asked).
4. Took time to listen to co-workers' problems and worries.
5. Took a personal interest in other employees.
6. Passed along information to co-workers.
7. Had attendance at work that was above the norm.
8. Gave advance notice when I was unable to come to work.
9. Conserved and protected organizational property.
10. Adhered to informal rules devised to maintain order.
Counterproductive Work Behavior (CWB)

Participants were asked to rate how frequently they performed the following activities on a 5-point Likert scale from 1 (never) to 5 (every day) with instructions to think about the past month.

1. Made fun of someone at work.
2. Said something hurtful to someone at work.
3. Cursed at someone at work.
4. Acted rudely toward someone at work.
5. Spent too much time fantasizing or daydreaming instead of working.
6. Taken an additional or longer break than is acceptable at your workplace.
7. Neglected to follow your boss's instructions.
8. Used a cell phone/computer for non-work purposes during work hours.
9. Gossiped about someone at work.
10. Rushed through a patient’s appointment.
Incivility

Participants were instructed to respond on 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) with instructions to think about their job over the past month.

Prompt: Have you been put in a situation where other people (including coworkers, supervisors, and patients)...

1. Ignored you or failed to speak to you (e.g., gave you the silent treatment).
2. Made jokes at your expense.
3. Paid little attention to your statements or showed little interest in your opinions.
4. Interrupted or spoke over you.
APPENDIX C

INTERVIEW MATERIALS

Informed Consent

My name is Alexandra Henderson and I am an Instructor and Doctoral Candidate in Industrial/Organizational Psychology at Bowling Green State University. My advisor (Russell Matthews) and I are conducting research on the health and work behavior of dental hygienists. As a part of this research, we are developing performance measures to include in future surveys. We are requesting your participation because you are either 1) a dental hygienist or 2) work directly with dental hygienists, and can therefore provide us with critical information that will help us develop valid performance measures.

**Purpose:** The purpose of the interview is to help develop three dental hygienist performance measures, which will be used in future survey research on dental hygienist health and work behavior. There is no form of compensation for participation in the interview.

**Procedure:** The interview will be conducted over the phone and will last approximately 30 minutes. Before the interview, you will be provided with definitions and preliminary items for each of the three performance measures. The interviewer (Alexandra Henderson) will ask you to 1) identify items that you believe do not accurately represent that type of performance and 2) identify additional behaviors that can be added to the measures.

**Voluntary Nature:** Your participation is completely voluntary. You are free to withdraw at any time. You may decide to skip questions or discontinue participation at any time without penalty. Deciding to participate or not will not affect your relationship with Bowling Green State University.

**Confidentiality/Anonymity Protection:** During the interview, the interviewer will take typed notes of your responses. Your responses will be stored on a password-protected computer and only the primary researcher (Alexandra Henderson) will have access to these responses. Following the completion of the study, your name will be removed from these responses. This consent form will not be linked to your responses.

**Risks:** The risk of participation is no greater than that experienced in daily life.

**Contact Information:** For further information regarding the research project, please feel free to contact: Alexandra Henderson, primary researcher, [smrca@bgsu.edu], 419-372-4400, or Russell Matthews, researcher, [ramuth@bgsu.edu], 419-372-4337. You may also contact the Bowling Green State University Institutional Review Board at 419-372-7716 or orc@bgsu.edu, if you have any questions about your rights as a participant in this research. Thank you for your time.

I have been informed of the purposes, procedures, risks and benefits of this study. I have had the opportunity to have all my questions answered and I have been informed that my participation is completely voluntary. I agree to participate in this research.

Name

206 Psychology Building
Bowling Green, Ohio 43403-0232

Date

419-372-2361
fax 419-372-6913

BGSU IRB - APPROVED FOR USE
IRBNet ID #: 2060134
EFFECTIVE: 04/24/2017
EXPIRES: 04/22/2018
Interview Script with Dental Hygienists

This protocol describes how the interviews will be conducted with dental hygienists. The data obtained in these interviews will be analyzed and the outcome will be three performance scales (task performance, citizenship behavior, and counterproductive behavior)

I. Background and Demographic Information

SAY:

Hello, my name is Ali Henderson. I am conducting research on the health and work experiences of dental hygienists. As part of this research study, I am creating work-specific performance scales. Thank you for taking the time to provide me with your feedback and suggestions on the development of these performance scales. **Ensure they have submitted the signed consent form**

This interview is divided into four sections and will take approximately 30 minutes. We will start with a few questions about your background. Next, I will ask you questions about three specific types of behaviors that dental hygienists perform on the job.

Do you have any questions before we get started?

Demographic questions

ASK:

- What is your age/race/gender?
- How long have you been a dental hygienist?
- How would you describe your practice? (Private practice, rural/urban location)
- Did you receive the performance scales in my last email? (If not, ask them if they at least have it available and can open it on their computer)

II. Task Performance

ASK: In general, dental hygienists have to perform a range of task behaviors on the job. Task behaviors are defined as the duties and behaviors that are formally required to perform one’s job.

- Thinking about this definition, do you believe that any of the task behaviors in the current scale are not applicable?
- Which behaviors do you think are the most applicable?

1. Clean calcareous deposits, accretions, and stains from teeth and beneath margins of gums, using dental instruments.
2. Record and review patient medical histories.
3. Examine gums, using probes, to locate periodontal recessed gums and signs of gum disease.
4. Feel and visually examine gums for sores and signs of disease.
5. Expose and develop x-ray film.
6. Chart conditions of decay and disease for diagnosis and treatment by dentist.
7. Maintain dental equipment and sharpen and sterilize dental instruments.
8. Feel lymph nodes under patient's chin to detect swelling or tenderness that could indicate presence of oral cancer.
9. Provide clinical services or health education to improve and maintain the oral health of patients or the general public.
10. Apply fluorides or other cavity preventing agents to arrest dental decay.
11. Maintain patient recall system.
12. Administer local anesthetic agents.
13. Remove excess cement from coronal surfaces of teeth.
14. Conduct dental health clinics for community groups to augment services of dentist.

- Think about your current practice. Can you think of any additional task behaviors that dental hygienists are formally required to complete on the job?
- Think about your typical day at work. Walk me through your day.

III. Citizenship Behavior

**ASK:** In general, dental hygienists may perform a range of citizenship behaviors on the job. Citizenship behaviors are defined as the behaviors that go beyond formal role expectations (i.e., are voluntary).

- Thinking about this definition, do you believe that any of the citizenship behaviors in the current scale are not applicable?
- Which behaviors do you think are the most applicable?

1. Help others who have been absent.
2. Help others who have heavy workloads.
3. Help orient new people even though it is not required.
4. Assist supervisor with his/her work (when not asked).
5. Take time to listen to co-workers' problems and worries.
6. Take a personal interest in other employees.
7. Pass along information to co-workers.
8. Have attendance at work that is above the norm.
9. Give advance notice when unable to come to work.
10. Conserve and protect organizational property.
11. Adhere to informal rules devised to maintain order.

- Think about your current practice. Can you think of any additional citizenship behaviors that dental hygienists might perform on the job?
Think about a dental hygienist with whom you have worked that always goes above and beyond the call of duty. What types of things did he/she do that others did not do?

IV. Counterproductive Behavior

**ASK:** In general, dental hygienists may perform a range of counterproductive behaviors on the job. Counterproductive behaviors are defined as behaviors that generally go against organizational interests or norms.

- Thinking about this definition, do you believe that any of the counterproductive behaviors in the current scale are not applicable?
- Which behaviors do you think are the most applicable?

1. Make fun of someone at work
2. Say something hurtful to someone at work
3. Make an ethnic, religious, or racial remark at work
4. Curse at someone at work
5. Play a mean prank on someone at work
6. Act rudely toward someone at work
7. Publicly embarrass someone at work
8. Take property from work without permission
9. Spend too much time fantasizing or daydreaming instead of working
10. Falsify a receipt to get reimbursed for more money than is actually spent on business expenses
11. Take an additional or longer break than is acceptable at your workplace
12. Come in late to work without permission
13. Litter the work environment
14. Neglect to follow a supervisor's instructions
15. Intentionally work slower than you could have worked
16. Discuss confidential company information with an unauthorized person
17. Use an illegal drug or consumed alcohol on the job
18. Put little effort into your work
19. Drag out work in order to get overtime

- Think about your current practice. Can you think of any additional counterproductive behaviors that dental hygienists might perform on the job?
- Think about a dental hygienist with whom you have worked that is not considered an ideal employee. What types of things did he/she do that made him/her considered a poor employee?

**SAY:** This is exactly the help I needed. Thank you for your valuable time and input. The results of these interviews will be compiled and analyzed in order to further refine the performance scales for my future study. If you have any additional materials that you think might be helpful and would be willing to share, such as performance appraisal guidelines for your practice, I’d be very interested in taking a look. Do you have any additional questions for me?
This is an academic survey about workplace behaviors of dental hygienists. To participate, you must be currently employed as a dental hygienist.

ELIGIBILITY. You must be at least 18 years old to participate.
LENGTH. People typically take 5-10 minutes or less to complete the session.
PURPOSE. The purpose of this study is to better understand workplace behaviors of dental hygienists. Results will be used to inform future research on dental hygienist health and workplace behavior.
RISKS. The risk of participation is no greater than that experienced in everyday life. This means that you won’t be taking any risks by choosing to participate in this study.
BENEFITS. In return for participating, you will be entered into a drawing for an electronic Amazon gift card. There will be five (5) $20 gift cards. Odds of winning depend on number of participants who complete the survey. We plan to obtain responses from approximately 20 participants.
CONFIDENTIALITY. All of your responses will be completely confidential. Only the primary researcher will have access to your responses. Your responses will be linked to the email address that received the email invitation to participate in this study. This email address was obtained from your State dental licensing board. Your email address will be deleted from the data upon completion of the study.
SECURITY. Please be aware that (a) no form of communication (e.g. email, telephone, or regular mail) is 100% secure, (b) employers or others may be able to track the information you type into a computer, (c) it is best to clear the browser cache and page history (see your browser instructions) after you complete the study. Data will be stored on a password secured computer that only the primary researcher has access to.
VOLUNTARINESS. Your participation in the study is voluntary and you are free to withdraw at any time without penalty. Deciding to participate or not participate will not impact any relationship you may have with Bowling Green State University.
CONTACTS. You should direct any questions or concerns about your rights as a research participant to the Chair of the Bowling Green State University Institutional Review Board (Phone: 419/372-7716, Email: orc@bgsu.edu). If you have questions about the study, you may contact Alexandra Henderson, smrcina@bgsu.edu, 419-372-4400 or Dr. Russell Matthews, ramath@bgsu.edu, 419-372-4337.

Please continue with the survey ONLY if you consent to the procedures described above. In other words, if you complete the session by going to the following pages, that means you consent to the procedures described above.
APPENDIX E

SURVEY MATERIALS

This is an academic study about the health and work experiences of dental hygienists. This is the first of four surveys in the study. The remaining three surveys will be emailed in one month intervals after this survey.

ELIGIBILITY: You must be currently employed as a dental hygienist, work at least 24 hours per week, and be at least 18 years old to participate.

PURPOSE: The purpose of this study is to better understand the health and work experiences of dental hygienists.

RISKS: There is minimal risk to participating in this study. Efforts will be taken to protect confidentiality (as outlined below).

BENEFITS: The information obtained from this study will be used to inform future research and interventions aimed at improving work environments for dental hygienists. In return for participating, you will receive an entry into a lottery for one of twenty-five (25) $20 electronic Amazon gift cards for each survey that you complete. Odds of winning depend on the number of surveys you complete and the number of participants who complete the surveys. We plan to obtain responses from approximately 200-300 participants.

CONFIDENTIALITY: All of your responses will be completely confidential. Your email address (obtained from your State dental licensing board) will be used to link your responses across the four surveys and for payment purposes (the lottery). All email addresses will be deleted from the database upon completion of the study.

Please be aware that (a) no form of communication (e.g. email, telephone, or regular mail) is 100% secure, (b) employers or others may be able to track the information you type into a computer, (c) it is best to clear the browser cache and page history (see your browser instructions) after you complete the study. Data will be collected via SurveyMonkey (a password protected survey hosting site) and will be downloaded to a password protected computer that only the primary researcher will have access to. Data will be deleted from SurveyMonkey upon completion of the study.

VOLUNTARINESS: Your participation in the study is voluntary and you are free to withdraw at any time without penalty. Deciding to participate or not participate will not impact any relationship you may have with Bowling Green State University.

CONTACTS: You should direct any questions or concerns about your rights as a research participant to the Chair of the Bowling Green State University Institutional Review Board (Phone: 419-372-7716. Email: orc@bgsu.edu). If you have questions about the study, you may contact Alexandra Henderson, smcina@bgsu.edu, 419-372-4400 or Dr. Russell Matthews, ramath@bgsu.edu, 419-372-4537.

Please continue with the survey ONLY if you consent to the procedures described above.