



## AN ABSTRACT OF THE DISSERTATION OF

Steven Henry Hattrup for the degree of Doctor of Philosophy in Industrial Engineering  
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Title: The Design of Good Work.

Abstract approved: \_\_\_\_\_

Kenneth H. Funk II

Work occupies a considerable amount of time in most peoples' lives and can be a source of great pleasure or a source of pain. To enhance peoples' experience at work, we must first understand how to measure and improve the design of work. This research sought to do just that, to understand how to design good work, meaningful work that is beneficial to the physical, psychological, and social conditions of the employees performing the work.

This dissertation documents three investigations. The first investigation used a qualitative methodology to identify the characteristics or dimensions that comprise good work from employee's perspectives and compare their definitions to extant work characteristics. Data, collected from in-person interviews, revealed that the three most important characteristics of *good work* are: positive interactions with people, work that provides social value, and control over work. This study adds to extant quantitative studies

of work design characteristics by providing workers' spontaneous yet coherent perspectives and demonstrating wherein those agreed or not with prior findings.

The second investigation sought to systematically identify and classify Work Improvement Actions (WIAs) with respect to work characteristics developed in the first investigation. The resulting database of WIAs can be used to facilitate work design practices by providing a collated and coded set of previously implemented actions, which may be directly applied to a workforce, or can be used as the seed for initiating a brainstorming session with a work design team. The database can be sorted by characteristics, or by industry to facilitate its use.

The third and most significant investigation combined the findings from the first two investigations and contained two parts, an applied component, and a theoretical component. The applied component used a mixed-methods approach and implemented a work improvement process at three participating organizations. The application was interrupted due to the COVID-19 pandemic of 2019-2020; however, it nonetheless provided insight into improving the design of work. By evaluating mismatches between the current design of work and the preferred design of work, meaningful improvements were identified and implemented by each of the organizations. While complete post-WIA data could not be collected, managers reported that the WIA appeared to be working. Many factors affected the ability of organizations to implement actions, which included the amount of bureaucracy, the hierarchical structure, and the availability of liquid assets.

The theoretical component of the third investigation applied statistical analyses to questionnaire data to develop a deeper understanding of the workers' attitudes about work as captured by the Good Work Questionnaire (GWQ). The GWQ proved to be reliable, and many significant associations were identified, such as management's impact on burnout and work characteristics' impact on employee loyalty.

When viewed as a whole, this research suggests that it is not only possible to improve the design of work to better employees' experience at work, but it is also possible to confirm theoretical findings about extant relationships in work design variables. This research adds to the corpus of work design research by validating a method to improve the design of work in a continuous effort to create good work.

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The Design of Good Work

by

Steven Henry Hattrup

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APPROVED:

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Major Professor, representing Industrial Engineering

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Head of the School of Mechanical, Industrial, and Manufacturing Engineering

---

Dean of the Graduate School

I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

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Steven Henry Hattrup, Author

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“Opportunity is missed by most people because it is dressed in overalls and looks like work.” – Thomas A. Edison

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## Chapter 1

### 1 Introduction

#### 1.1 Background

Modern society's drive for inexpensive products and services has created a situation where industrial innovation leads to fiscal success and market share. Industrial institutions employ many people whose health and livelihoods are closely tied to the organization's success. Industrial institutions are required to continuously improve efficiency in order to stay in business. This pressure has led to many engineering solutions that focus on methods to reduce waste streams (Bantham & Swanson, 1995). However, this continuous striving for efficiency and productivity has put the worker in harm's way. For example, there have been enough documented suicides in Japan directly caused from overwork that a term has been created to refer to it: *Karojisatsu* (Amagasa et al., 2005).

Organizations that treat their workers inhumanely will ultimately fail. Taylor (1911) stated, "...prosperity for the employer cannot exist through a long term of years unless it is accompanied by prosperity for the worker" (Taylor, 1911, pg 1). Taylor recognized that an organization will assuredly fail if it does not create good work.

A darker side to industrialized society has been brought into the public's eye. Manufacturing waste streams have become a heavily scrutinized as environmental regulations dictate what can and cannot be discharged from a facility (Hogan, 2002). While scrutiny of waste streams has led to many environmental and industrial engineering solutions to protect the public, it has failed to provide solutions to the human workers affected by the work; i.e., human "waste" streams. The lack of engineered solutions has

resulted in human workers receiving less engineering attention, which in turn, has put the workers at risk.

If engineers are to adhere to the first fundamental canon of the National Society of Professional Engineers' (NSPE) Engineering Code of Ethics<sup>1</sup> then they must apply the same ethical responsibility to produce good outcomes in the worker output as it does to create good outcomes from its raw material, energy, finished goods, and waste streams. Figure 1 is a representation of the inputs and outputs of an organization. Engineered solutions have been developed for many of the inputs and outputs; however, there is a lack of engineered solutions for the human workers (identified in Figure 1 with red box containing a question mark). The research described herein focused on improving humans' working conditions through the design of *good work* – work that satisfies the physical, psychological, and social needs, and positively promotes health, quality of life for those who perform it (W. T. Lee, 2014).

---

<sup>1</sup> First Fundamental Canon States, “Engineers, in the fulfillment of their professional duties, shall hold paramount the safety, health and welfare of the public” (NSPE, 2020).

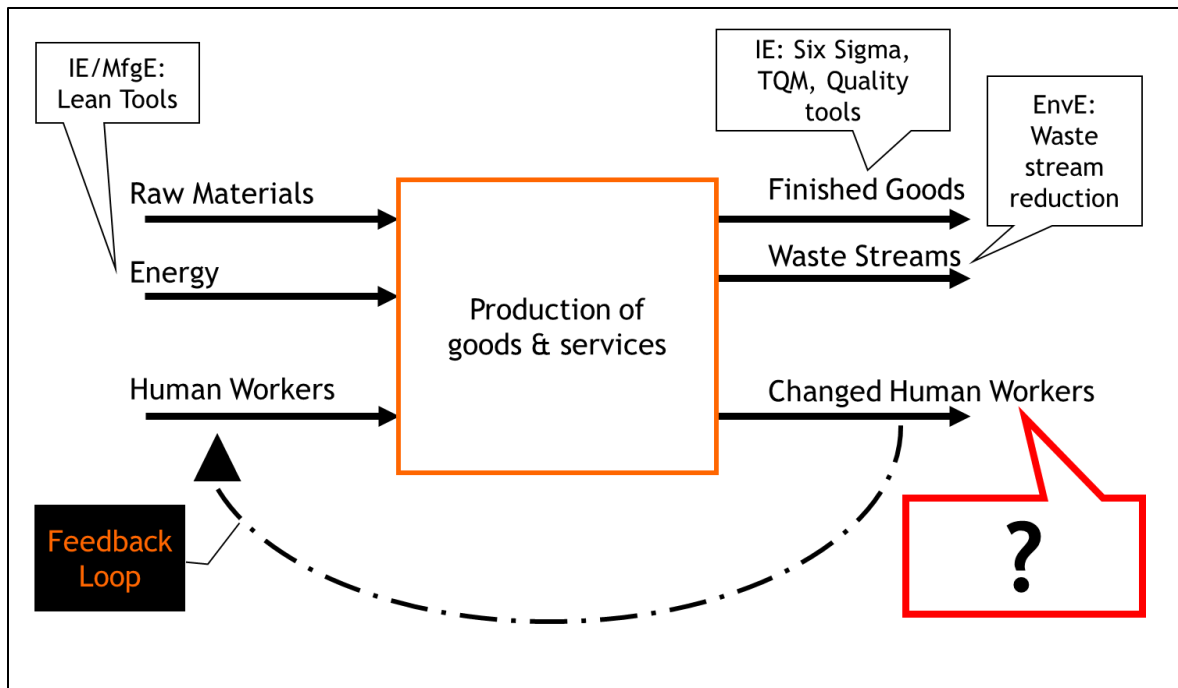


Figure 1: An organization's waste streams.

## 1.2 Ethical Framework for this Research

While the focus of the research is to improve humans' working conditions through the design of work, the motivation for the research is centered in ethics. The author believes ethical codes should be the ethos, or the at the heart, of engineers' work, not an addendum that is consulted if need be. Thus, he believes the codes should be a core tenet of engineering and continuously thought of throughout the whole engineering process, including designing work for other people. The following section describes to the reader what the author believes to be the motivation to design *good work* and presents a framework upon which to interpret an engineering Code of Ethics.



The author finds three historical ethical views to be valuable in interpreting what he believes it means to be a morally good engineer and to fulfil the duties laid out in an engineering Code of Ethics. The views are valuable for describing and detailing the author's understanding of the National Society of Professional Engineer's (NSPE) Code of Ethics, which was the specific Code consulted in this research.

The NSPE's Code was selected because it is not domain specific and is often the basis for other engineering Codes. The NSPE's Code contains six fundamental Canons that engineers in the fulfillment of their professional responsibilities must uphold (NSPE, 2020), shown in below.

Engineers in the fulfillment of their professional duties, shall:

1. Hold paramount the safety, health, and welfare of the public.
2. Perform services only in areas of their competence.
3. Issue public statements only in objective and truthful manor.
4. Act for each employer or client as faithful agents or trustees.
5. Avoid deceptive acts.
6. Conduct themselves honorably, respectively, ethically, and lawfully so to enhance, to honor, reputation, and usefulness of the profession.

The three views the author used as lenses to view, engage, and interpret the Code and the design of *good work* are Utilitarianism, Virtue Ethics, and Kantian Deontology. Utilitarianism focuses on impartially maximizing a goal, like net utility. Impartiality is required in Utilitarianism – one person's pain or pleasure must be considered equal to another's (Shafer-Landau, 2012). Maximizing a goal is a common pursuit in industrial engineering (IE), for example Operation Research, a sub-discipline of IE, uses mathematical formulations of real-life problems to optimize a goal, usually maximizing profit or minimizing cost with respect to constraints, such as time, budget, and facility capacity (Hillier & Lieberman, 2005).

Utilitarianism can be applied to the NSPE's Code by maximizing the health, safety, and welfare of the public, the paramount<sup>2</sup> Canon of the Code. Thus, the author believes an engineer, based on this view, should not maximize profit or productivity as the ultimate goals, rather they should maximize the health, safety, and welfare of the public and place productivity and profit as constraints. This applies to the design of work. Rather than optimizing the design of work with the paramount goal of productivity, engineers should be designing work to consider productivity a constraint while maximizing the health, safety, and welfare of the workers, who are members of the public<sup>3</sup>. Workers are members of the public because they belong to the community the organization employs them in and are affected by the work. This effect is brought home with them, including the negative impacts of poorly designed work. Therefore, if an engineer is to hold paramount the public's health, safety, and welfare they must ensure workers are included when considering who the public is.

Virtue Ethics focuses on what kind of person one should be by considering the character traits that are commonly attributed to good people (i.e., character traits that are praiseworthy) (Shafer-Landau, 2012). When considering good engineering, the author believes one should reference and/or consult people they know to have praiseworthy traits, like honesty and courage, because these people are experienced and are known to take right action. When considering the morally right action, an engineer can reflect on their character and ask themselves, "What kind of person am I?" and "What is it to be a good person?"

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<sup>2</sup> Paramount is defined as, "Highest in rank, power, or jurisdiction; supreme. Also: pre-eminent, leading, or most notable ("Paramount," 1994).

<sup>3</sup> The public is defined as, "relating to the people as a whole; that belongs to, affects, or concerns community or the nation" ("Public," 2003).

By thinking about their decisions based on character traits, an engineer can improve upon their ability to choose morally right actions. This applies to the design of *good work*. Engineers should reflect on how a praiseworthy person would design work. Moreover, Virtue Ethics applies to interpreting the NSPE's Code; engineers should ask themselves, "How would an honest person act" when considering the 5<sup>th</sup> Canon, "Avoid deceptive acts."

Deontology is a branch of knowledge which deals with moral obligations ("Deontology," 1883) and is akin to the Code that states engineers' duties, like the duty to, "Perform services only in the area of their competence." Thus, Kantian Deontology lends itself well to interpreting the Code and obligations to design *good work*. This view focuses on good intentions and treating everyone fairly, consistently with the Golden Rule, to "do unto other as you would have them do unto you." The author believes this view is helpful towards designing *good work* – design work for others as you would have them design for you.

Furthermore, intending to do the right thing due to fairness and justice, two core tenets of the view (Shafer-Landau, 2012), are required for good engineering. An engineer should treat the public, including workers, as dignified, autonomous, and equal beings that have value and are the reason for improving the world around us – a common goal of engineers. When considering what the right action would be, an engineer can reflect on their duties stated in the Code, which are not recommendations, but obligations that must be upheld.

When considering his own beliefs about the motivation to design *good work*, the author holds beneficence<sup>4</sup> for others as paramount, and integrity<sup>5</sup> and fairness (i.e., equal treatment) as supporting principles to guide his moral compass. Thus, the author contends *good work* design should be pursued for the betterment of people, done without the need for recognition, and would treat all employees as having equal value.

This work sought outcome-based results that hold paramount the safety, health, and welfare of the public (the first Canon in NSPE's Code of Ethics), as guided by Utilitarianism, rather than seeking profit or production-based outcomes as traditional IEs do. Of note is the term welfare in the paramount-Canon, which is defined as, "the condition of being well; prosperity, success, source of happiness" ("welfare", OED). Interestingly, the definition includes the word, **prosperity**, which Taylor himself used when recognizing that organizations will assuredly fail if they do not create good work for their employees.

This work often consulted and referenced the work of other researchers who are known to be good contributors towards the design of work as examples of what praiseworthy work design is, as guided by Virtue Ethics; after all, we stand on the shoulders of giants. Furthermore, this research, and the author's reason for pursuing it is motivated by the intent to treat workers as dignified and autonomous beings who all have equal value, as guided by Kantian Deontology. As readers continue, they are advised to keep these motivations in mind.

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<sup>4</sup> "Doing good, the manifestation of benevolence or kindly feeling, active kindness." ("Beneficence," 1853).

<sup>5</sup> "Soundness of moral principle; the character of uncorrupted virtue, esp. in relation to truth and fair dealing; uprightness, honesty, sincerity." ("Integrity," 1850).

### 1.3 Problem Statement

The research presented in this dissertation sought to accomplish two goals. One was to improve the theoretical understanding of how to define and measure work; and the second was to validate<sup>6</sup> a work design process via an applied longitudinal investigation. The theoretical aspect of this research focused on enhancing the quantitative accumulation of data collated in the published literature describing work design investigations that examined the relationship between the inputs of work design (e.g., how many different tasks a worker may be required to perform) and the outcomes of work design (e.g., the level of experienced weariness, exhaustion, and inefficacy). The applied aspect of this research focused on explicit efforts to update, expand, and in general, improve a work improvement process that takes into account the complexities of individual employee needs to find appropriate work redesign actions that mitigate the mismatch between the work employee prefer and the work she/he currently performs. The process was designed to create *good work*, which is defined as follows:

Work that satisfies the physical, psychological, and social needs, and positively promotes health, quality of life, and social and cultural integrity for its workers, stakeholders, and the broader society within which the organization exists (W. T. Lee, 2014, p. 1).

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<sup>6</sup> The term validating used in this context means not just to check the validity, but “to make valid” (“Validate,” 1916).

The process that was investigated, and hopefully validated, is one developed by Dr. Wei-Tau Lee. Lee's (2014) Work Improvement Process is comprised of five steps: (1) track the system health, (2) measure the work and the workers, (3) identify mismatches between the work offered and the work preferred by the employees, (4) identify improvement action(s), and finally (5) implement improvement actions(s). The process is an iterative and continuous effort, which intends to constantly change the design of work as the workers themselves change and the nature of the work itself changes (W. T. Lee, 2014).<sup>7</sup>

#### 1.4 Research Questions

Research questions were created to address the problems stated above.

##### First Questions: Characteristics (inputs) of Work Design

RQ 1.1 → What are the most common characteristics of work that workers identify as the **most** important factors of their work, and why do they do so?

RQ 1.2 → What are the most common characteristics of work that workers identify as the **least** important factors of their work, and why do they do so?

RQ 1.3 → Are there characteristics that are identified by workers to be important characteristics of work, but are currently neglected by the literature investigating characteristics that are defined as attributes of the work design (as opposed to keywords investigated in the literature)?

##### Second Questions: Established examples of *Good Work* design

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<sup>7</sup> For more information regarding Lee's (2014) Work Improvement Process, see Section 2.8.

RQ 2.1 → What improvement actions can be identified from industry and academia that are believed to improve work along a/many characteristic(s)?

RQ 2.2 → What trends can be identified from the collection of improvement actions?

#### Third Questions: Validating Lee's Work Improvement Process

RQ 3.1 → How reliable is the Good Work Questionnaire in measuring the inputs and outcomes of work when compared to the benchmark data presented in a seminal Meta Analytic summary of virtually all investigations about the design of work (Humphrey et al., 2007).

RQ 3.2 → Does Lee's Work Improvement Process decrease the mismatch between what the workers desire and the work they are required to perform?

#### Fourth Question: A deeper understanding of work preferences

RQ 4.1 → What is the context behind, and what are the reasons for, people's preferences about defined Work Characteristics?

### 1.5 Research Objective

The objective of the proposed research was to help organizations create and provide *good work* for their employees by understanding the characteristics, or dimensions, of *good work* and validating Lee's (2014) Work Improvement Process, shown below in Figure 2. While Lee's method was well documented, it had yet to be validated through a full iterative cycle where steps one through five are repeated to ensure that the method improves work (W. T. Lee, 2014).

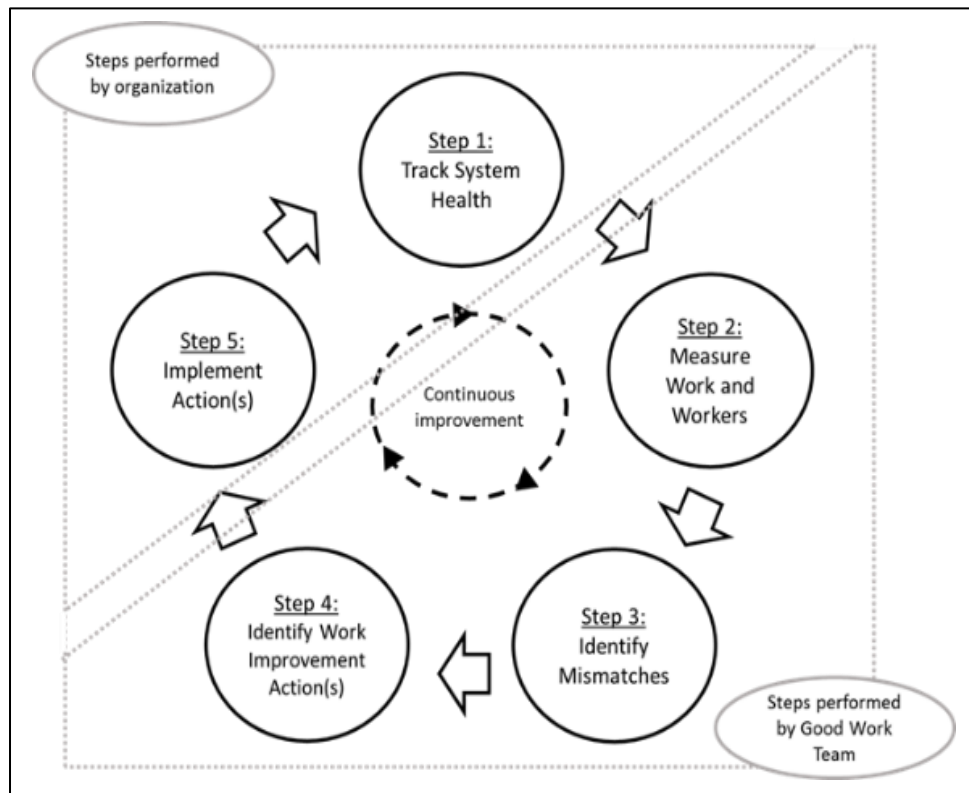


Figure 2: Lee's (2014) Work Improvement Process

Lee's method was improved and brought into validity through this research by implementing the Process at participating organizations and testing if the Process improved the workers' perception of their work. In addition to substantiating, the research improved upon Lee's Work Improvement Process through modifications, such as the following:

- Adding additional Work Characteristics that were identified via a qualitative investigation, presented in Chapter 4
- utilizing qualitative methods to analyze and interpret data collected from in-person interviews to further understand workers' preferences towards their work
- adding/identifying additional Work Improvement Actions via an investigation presented in Chapter 5



- rewriting Lee's survey to enhance readability and participant understanding of questions
- adding additional survey questions that have been validated in the Industrial and Organizational Psychology literature as being effective measures of employee burn-out, loyalty, quality management practices, and expectations.
- assessing the reliability of survey components

Moreover, this research probed the relationships between Work Characteristics, Work Outcomes, and Organizational Culture to understand how work design impacts the system of work.

## 1.6 Research Outputs and Outcomes

This research produced the following:

1. 19 characteristics of *good work* that can be used as the basis for future investigations into the design of work.
2. Reasons for the importance of each of the 19 *good work* Characteristics.
3. A database of Work Improvement Actions, which were used in Lee's Process to illustrate examples of what could be done to improve the design of work.
4. Detailed description of the implementation of Lee's Process at three occupationally different organizations.
5. Relationships between Work Characteristics, Work Outcomes, and Organizational Culture.
6. Analysis and comparison of the variables affecting the ability to redesign work at the three participating organizations.
7. A deeper understanding of the questionnaire used in Lee's Process, including its benefits and limitations.

## 1.7 Overview of Dissertation

Chapter 2 of this dissertation provides a literature review of the corpus of research relevant to attaining and realizing *good work*. Results from the extant literature are summarized synthesized in a conceptual model related to how to design work. Chapter 3 provides the research questions and general methodology used to answer the research questions.

Chapter 4 presents the methodology, results, and discussion for Investigation #1, which used a qualitative methodology to establish 19 Characteristics of *good work* and presents contextualized reasons why each characteristic is important to the design of work. Chapter 5 presents the methodology, results, and discussion of a study conducted to systematically identify Work Improvement Actions and code each to the work characteristic the action is intended to improve.

Chapter 6 provides the methodology, results, and a discussion of the applications of Lee's Work Improvement Process at three participating organizations. While the mismatches were quite similar, the reasons for the mismatch and the improvement actions implemented to address the mismatch were quite different. All organizations made changes to the design of work based on the data collected and were committed to the Process from recruitment to the end. Chapter 7 dives deeper into the GWQ used in Lee's Process by assessing the reliability of the questionnaire along with developing relationships between Work Characteristics, Work Outcomes, and Organizational Culture.

Chapter 8 provides a general discussion of the research and notes limitations of each study. Chapter 9 presents the conclusions this research along with recommendations for future research into the design of work.

## Chapter 2

### 2 Literature Review: Attempts to define and realize *good work*

#### 2.1 Introduction

The following review of the literature documents our understanding of designing work for people, focusing on how *good work* has, and has not, been achieved. The goal of this chapter is to develop a comprehensive view of what *good work* is, or could be, and how to achieve it. While the term *good work* is occasionally used in the work design literature (Schumacher, 1979; Wu et al., 2015), more common terms that capture the idea include meaningful work (Lips-Wiersma et al., 2016), healthy work (Karasek & Theorell, 1990; Parker, 2014), and/or better work (Perlow & Kelly, 2014).

The knowledge of work design has been developed predominantly in three separate fields: industrial engineering, industrial and organizational psychology (I/O psychology), and sociology. In Section 2.2, industrial engineering literature is examined to provide the reader with an understanding of how the field of industrial engineering has developed a system of designing work. Section 2.3 follows with related literature from sustainable engineering. Section 2.4 describes what the field of I/O psychology contributes towards an understanding of work design. Next, in Section 2.5, the sociology literature is examined in regards to its considerations towards, and sociological implications of, the design of work.

Section 2.6 describes human issues arising from bad work as means to illustrate how poorly designed work can be harmful to people, which highlights the importance of designing *good work*. Section 2.7 describes examples of organizations which have made specific efforts towards humanizing the design of work to illustrate how *good work* can,

and has been, achieved. In Section 2.8 Lee's Work Improvement Process is detailed to equip the reader with an understanding of the process this research seeks to substantiate. Then, Section 2.9 summarizes and synthesizes the current state of *good work* as supported by the extant literature. Finally, Section 2.10 identifies the most significant gaps in the literature, which motivates the need for this research.

## 2.2 Industrial Engineering: A history of designing work, both good and bad

To improve work, one must first understand how work design methods developed. Fredrick W. Taylor, the founder of modern scientific management, developed calculations to optimize the efficiency of workers for any type of work. These calculations replaced the standard rules of thumb that dictated work standards (Koumparoulis & Solomos, 2012). While Taylor directly stated that an organization cannot be successful without considerations for its workers (1916), some organizations have gone on to use Taylor's methods to design bad work. Examples of bad work design include jobs that are as simple as possible (low training time, no required expertise), have little or no interactions with other people (social interactions distract from the task at hand), and little or no freedom and control over work tasks (engineers and managers exclusively dictate what workers do) (Lawrence, 2010).

Baker (1957) outlines the evolution of industrial engineering from its origins before the 17<sup>th</sup> century (well before Taylor developed the scientific Management Method), through the 1950's. Baker's work describes the need for industrial engineers' education and full recognition of individual human rights. Conventional work design methods usually fail to consider workers' well-being beyond money, safety, and hours worked. Human rights and values are not readily incorporated into the rationale of the economic pressure

industry is under, and Baker states that industrial engineers need to be educated on the rights of humans in order to protect those values. Not only do industrial engineers need to be aware of human rights, they also need to be educated on the collective action of democratic systems that protect the interest of human rights, such as labor unions, government entities, and professional societies (Baker, 1957).

Baker's (1957) work is particularly important to this research because it explains how the progress of industrial engineering has led to many worker issues. Additionally, Baker's work clarifies the importance of interactions between management, industrial engineers, and worker interest groups. Understanding and navigating these interactions is crucial to the success of designing, or redesigning, work (Baker, 1957).

Industrial engineers (IEs) today have taken Baker's advice, in a limited way, into their considerations towards the design of work. They have not given much consideration to human rights, nor have IE Faculty educated IE students on the collective action of democratic systems that protect human rights. However, they have considered worker's needs when designing work. Some IEs have evaluated and considered worker's needs based on Maslow's hierarchy of needs (Konz & Johnson, 2008), which proposes a hierarchy of needs that motivate people.

According to Maslow's theory, once each level is satisfied only the pursuit of the next level will motivate someone. The five needs are: (1) *physical* (food, shelter, health), (2) *safety* (personal security), (3) *social* (belonging and inclusion), (4) *Ego* (self-esteem, power, recognition), (5) *Self-actualization* (development and creativity) (Maslow, 1943, 1970).

An adaptation of Maslow's hierarchy of needs is presented in Konz and Johnson (2008) to facilitate understanding an employee's needs.

1. *Physical needs*: Adequate pay for food shelter, physical rest and comfort on and off the job
2. *Safety needs*: Job security, peace of mind, supervisory practices, seniority rights
3. *Social needs*: job status, enjoyment of work, social interactions, group relations, knowledge of group goals
4. *Ego needs*: reputation, achievement, recognition, challenge, responsibility, competence, challenging work
5. *Self-actualization*: personal fulfillment, realization of potential, liberation of creativity, widest use of creativity, maximum self-confidence

IEs question how relevant each of these needs are to work design. Should an engineer be concerned with satisfying higher order wants? Someone must perform dead-end jobs, and some workers are well paid and are willing to trade job satisfaction for satisfaction off the job. It is difficult to find employees if the job is dirty, boring, monotonous, and low paid, so redesigning that work is particularly important to fill the open positions. It may be possible to increase the motivation of an employee by designing for safety and productivity. Ultimately, IEs have focused more on ergonomics (i.e., keeping workers physically safe), than on mental health and the motivation of the employees (e.g., worker well-being, job satisfaction, and engagement).

Based on IEs understanding of work design, eight foundations, or underlying trends, of work design have emerged, and are detailed in Konz and Johnson (2008).

1. *People vary*, not only in size, but in personal preferences.

2. *People are becoming more educated*, which is particularly true compared to Taylor's time.
3. *People want a say*, democracy has increased at the industrial level in the developed countries.
4. *The world is becoming smaller*, due to changes in communication and transportation multinational firms now produce at a global level.
5. *Machines are becoming more capable*, computer cost has become more economically feasible while labor costs have continued to increase.
6. *Safety and health are more important*, the increased number of members of safety and ergonomic societies reflects this shift.
7. *Job specialization is changing*, in developed countries, specialization in cognitive and social jobs (engineers, supervisors, and teachers) has increased, while specialization of physical and procedural jobs has decreased due to the computerization and mechanization that has replaced most physical labor.
8. *Jobs are more interrelated*, very few jobs stand alone.

The eight foundations lead to six criteria of work design.

1. *Safety is first*: jobs that endanger workers are unacceptable
2. *Make the machine user-friendly*: the machine should adjust to the worker, not the worker to the machine
3. *Reduce the percent excluded by the design*: allow any worker to use the machine
4. *Design jobs to be cognitive and social*: physical and procedural jobs are mostly done by machines in the developed world



5. *Emphasize communication*: good communication between people and machines can increase output and reduce errors
6. *Use machines to extend human performance*: the choice is not worker or machine, it is which machine to use (Konz & Johnson, 2008).

### 2.3 Sustainable Engineering Considerations in the Design of Work

Although much of the focus to date has been on the pillars of environmental and economic sustainability, this research has been motivated in part by social sustainability. Organizations are receiving increased pressure to be more environmentally responsible when producing goods and services. This pressure has encouraged organizations to innovate and implement methods to reduce energy and waste and be more sustainable (Rusinko, 2007). In 1987, the Brundtland Report, *Our Common Future* defined sustainability as, "...development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (1987, p. 41).

Engineers have a significant impact on progress towards sustainable development because their work provides an essential role in the practice of meeting basic human needs. The American Society of Civil Engineers (ASCE) fully recognizes the importance of engineers in developing a sustainable future. The Society changed its First Canon in the Code of Ethics to reflect this, "Engineers shall hold paramount the safety, health and welfare of the public and shall strive to comply with the principles of sustainable development in the performance of their professional duties" (ASCE, 2017).

Human needs include water, food, housing, sanitation and waste management, energy, transportation, communication, industrial processing, and the development of natural resources. Sustainable engineering considers meeting these needs while working to

eliminate or reduce environmental and social problems, such as, cleaning up polluted waste sites, siting and planning projects to reduce environmental and social impacts, restoring natural environments like lakes, forests, and streams, improving industrial processes to eliminate waste and reduce consumption, and recommending the appropriate and innovate use of technology. All engineers (i.e. mechanical, industrial, manufacturing, civil, environmental, ecological, and electrical engineers) could take an active role in providing solutions to any number of those problems (*Sustainable Engineering Practice: An Introduction*, 2004).

Social sustainability includes a large realm of human-related issues that range from tangible and basic measurements (such the ones measured in Zhang & Haapala's (2015) study, e.g., employee wage, workload, and injuries) to less tangible measures (such as education, employment, equity, and justice). While the environmental pillar of sustainability often receives more attention, social sustainability is arguably where development efforts should be initially focused because it is unrealistic to expect people to care about global warming or deforestation when they are hungry, sick and/or unemployed (Bhatti & Dixon, 2003).

Three sub-categories of social sustainability have been identified in order to operationalize and address social sustainability, each with their own development in the literature. First, 'development social sustainability' addresses poverty and inequality. The concern is justified, as individuals whose basic needs are not met cannot actively address concerns for the environment, as they are preoccupied with survival. Next, 'bridge social sustainability' searches for methods to encourage environmentally responsible behavior and/or stronger environmental ethics. Attempts are made to harness human potential to

improve environmental outcomes by identifying the conditions necessary to support environmental sustainability. Finally, ‘maintenance social sustainability’ addresses peoples’ preferences, customs, and traditions that they would like to see maintained or improved. Examples include living in low-density suburban housing, using a private car, and preserving landscapes. Maintenance sustainability suggests that a sustainable city needs to be engineered or planned in such a way that people actually want to live there, and indeed enjoy living there. The same holds true for employment: a sustainable organization would be engineered in such a way that people actually want to work there. Otherwise, those who can leave will, leaving behind the most disadvantaged individuals, resulting in an unsustainable city or organization.

To further complicate social sustainability, all three sub-categories may conflict with one another. Examples are arguably the best way to understand these conflicts. Development and bridge sustainability categories conflicted when the UK imposed a tax on fuel (bridge) to encourage people to use other forms of transportation, or simply drive less. Poorer people were unable to view the tax as means to counter global warming, because the tax exacerbated their already low budget, resulting in an impediment to heating their homes (development). Development and maintenance sustainability categories are in conflict when people seek large plots of lands to build their suburban home (maintenance). This desire raises the cost of land, due to the limited supply of land, which denies poorer people from owning their own home (development) (Vallance et al., 2011).

Measuring the impacts of social sustainability is currently difficult, and as a result, social sustainability as a concept is at risk, which undermines its importance and utility (Vallance et al., 2011). Without solidifying what the concept means and knowing how to

measure the impacts of social sustainability, the progress towards a sustainable future is at a standstill. For this reason, the United Nations Division for Sustainable Development created a framework comprised of themes and sub-themes, with each sub-theme having at least one quantifiable indicator that has data readily obtainable for many countries. The framework defines five themes: equity, health, education, housing security, and population. A sub-theme for equity is poverty, which has three indicators: percent of the population living below the poverty line, Gini index of inequality, and unemployment rate ( a measure directly related to work) (Hutchins & Sutherland, 2008).

Sustainability's notion of meeting today's needs without compromising the needs of the future (Brundtland, 1987), align in many ways with the current understanding of *good work*. Operationalized measures of the outcomes of healthy work often include employee turnover and absenteeism (Humphrey et al., 2007). Turnover is measured as the number of employees that leave their job and are replaced, and absenteeism is measured as a percentage of working time missed by an employee that fall outside of excused absences. Both high employee turnover and high absenteeism are at odds with sustainability, that is: sustainable work keeps employees wanting to return to work.

Concepts referring to the social pillar of sustainability can be found in the work design literature. Well-being outcomes (or the lack of well-being outcomes), such as anxiety, stress, burnout, and overload, all directly relate to the “development social sustainability” category proposed by Vallance, Perkins and Dixon (2011). Work is not sustainable when employees are burned-out, stressed, and anxious because the employees will find other work if possible, which is arguably the best-case scenario for the employee if the employer is unwilling to improve the working conditions. Employees that are unable

to find other work may suffer from physical and/or psychological issues, death due to cardiovascular issues, and even suicide (Amagasa et al., 2005; Iwasaki et al., 2006).

Work that is psychologically damaging enough to drive the employees to commit suicide is arguably the least sustainable work imaginable. Unfortunately, that is occurring in today's working environment (Perlin, 2013). Individuals responsible for designing work (often engineers) and holding employees accountable for performing work (often managers) can improve the lives of their organization's employees by learning the concepts and theory behind socially sustainable development.

The social sustainability framework proposed by the United Nations Division for Sustainable Development does already contain indicators relating to the employment of people (i.e. percentage of population living below the poverty line and unemployment rate) (Vallance et al., 2011). This framework, or others developed, can improve the measurability of social sustainability by adding already used metrics of the quality of work (i.e. absenteeism, turnover, and even attrition). Attrition, or the process of gradually reducing the workforce, would be an appropriate indicator of social sustainability because a sustainable workforce would replace retiring employees with new ones, which is in alignment with meeting today's needs (being able to retire) and providing the future needs (employment for the young).

Sustainable engineering researchers could potentially benefit from the *good work* research by being provided with another metric towards operationalizing social sustainability in order to measure and understand its effects (e.g., Lee's (2010) 12 dimensions of work, described later in this chapter). Additionally, researchers could benefit from the theory of *good work* developed through the qualitative research methods proposed

in the methodology. Once a theory regarding the attitudes and opinions of workers towards the Work Characteristics is identified, a researcher can use that information as the basis for understanding and advancing sustainability via the “maintenance social sustainability” category.

Industry may also benefit from the *good work* research by being provided with more data about their workers’ preferences. Such data can be used as the basis for making socially sustainable decisions that are in alignment with the employees’ values, beliefs, and traditions that they would like to see sustained. The most sustainable solution to a problem may not be a technical one, but without data to inform decision makers with the social preferences of the workers, a feasible social solution may never be identified.

#### 2.4 Industrial and Organizational Psychology:

Industrial and organizational (I/O) psychology, a specialty area in psychology, is concerned with understanding and advancing the knowledge of people’s behavior at work. There are two sides to the discipline: science and practice. The science poses questions to guide investigation and obtain answers that are useful in explaining the behavior of people at work. The practice, or professional side of I/O psychology, is concerned with the application of the knowledge to solve real world employment problems such as hiring better qualified employees, reducing absenteeism, improving communication, increasing job satisfaction, increasing employee engagement, and addressing a host of other work-related concerns.

While pursuing knowledge related to people’s experiences at work, I/O psychology has produced many useful findings that facilitate an understanding of peoples’ behavior at work. By utilizing these significant findings, work can be designed in such a way that it

workers, as opposed to harming them (Muchinsky & Howes, 2019). The following section splits I/O psychology findings relevant to attaining *good work* into three sub-sections. First, affect, attitudes, and behaviors of people at work are detailed to aid in the understanding of how work can shape peoples' behavior and emotions. Next, workplace psychological health and its relevance towards the creation of *good work* is examined. Finally, a generalized work design theory based on I/O psychology principles is presented.

#### 2.4.1 Affect, attitudes and behaviors of people at work

I/O psychology has shown correlations between working conditions and people's emotions and behaviors. Moods and emotions are contagious and influence individuals' job performance and decisions, suggesting that groups can affect individual's attitudes and negative attitudes reduce job performance. Positive and negative definitions and subsequent measurement techniques have been created to enhance both the theory of work affect and assessment tools practitioners can use to measure working conditions.

##### 2.4.1.1 Positive (good) constructs and measures of work

One of the most commonly measured outcomes of work is *job satisfaction* (i.e., the degree of pleasure an employee derives from his/her job) and is associated with both an individual's personality and the objective characteristics of the work he/she performs. For more information on characteristics, see Section 2.4.3.1. Another commonly measured outcome is *employee engagement* (i.e., the degree to which a person feels invigorated, dedicated, and absorbed in his/her work), which is a hybrid construct that has gained attention and draws upon many theories of I/O psychology. Both job satisfaction and employee engagement are considered positive and organizations strive to increase these two metrics (Muchinsky & Howes, 2019). In addition, *vigor* has been studied as an

outcome of work. Vigor is defined as a positive affective response to employees' ongoing interactions with their work system and comprises a combination of positive energy, balance, and pleasantness or contentment (Shraga & Shirom, 2009).

#### 2.4.1.2 Negative (bad) constructs and measures of work

On the other hand, counterproductive work (i.e. *bad work*) behaviors includes insults, threats, bullying, lies, theft, sabotage, physical violence, suicide, absenteeism, attrition, turnover and occupational homicide (Muchinsky & Howes, 2019). The most common measurement to assess how bad work can be is *burnout*, (i.e., a state of exhaustion caused by stressors on the job), which has been the topic of research for decades. Two of the most common measures of burnout are the Maslach Burnout Inventory-General Survey (MBI-GS) and the Shirom-Melamed Burnout Measure (SMBM) (Shirom & Melamed, 2006).

The MBI-GS considers burnout to be a psychological syndrome that can occur among people who work. As a syndrome, burnout refers to a group of signs and symptoms that occur together and characterize the abnormality (Maslach et al., 2001). MBI-GS is comprised of three subscales that should not be combined into a single measure: exhaustion (primary depletion of physical energy and fatigue), cynicism (indifference or distant attitude towards one's work in general), and reduced personal efficacy (decline of one's feelings of competence and successful achievement in one's work) (Maslach et al., 2001; Shirom & Melamed, 2006). All meta-analytic studies done using the MBI-GS have found that each component is related to unique precursors and consequences (R. L. Lee & Ashforth, 1996).

The SMBM is based on Hobfoll's Conservation of Resources theory that postulates people have a basic motivation to obtain, retain, and protect resources that they value,



including material, social, and energetic resources. The SMBM relates only to the energetic resources and has three sub measures that can be combined into a single measure, which is a distinct contrast from the MBI-GS. The three sub measures are: Physical Fatigue, Cognitive Weariness, and Emotional Exhaustion (Melamed et al., 2006; Shirom, 2005; Shirom & Melamed, 2006). The SMBM proved to have superior fit over the MBI-GS via a confirmatory factor analysis that compared to two (Shirom & Melamed, 2006).

#### 2.4.2 Workplace psychological health

As I/O psychologists are pursuing employee health, they have extensively examined the psychological health of the workplace. The topic of workplace psychological health emerged as they came to understand that both work and family issues contribute to one's overall welfare. I/O psychology has shown that the workplace can indeed be quite stressful for individuals, which has negative health consequences for both the individual and the organization.

Understanding the conflict and enrichment between work and family, and creating work systems that seek to reduce work family conflict, is a major activity for I/O psychologists. For example, flexible work hours and onsite day care have been shown to alleviate work-family conflict. Attitudes about jobs are also impactful. Jobs and tasks that are seen as repulsive, distasteful, or derogating can be stigmatizing for people, leading to negative work outcomes. In addition, not having work may be harmful as the psychological effects of unemployment can be severe, especially over a prolonged time. (Muchinsky & Howes, 2019).

### 2.4.3 Work design theory

I/O Psychology's work design theory posits that a worker's motivation is based on the presence of specific Work Characteristics, which facilitate the expenditure of effort. Work Characteristics, or factors of work, are defined as the attributes of the job, task(s), and social and organizational environment (Morgeson & Humphrey, 2006). Given the proper design of work (i.e., the correct levels of characteristics), an individual will feel motivated to perform that work. Identifying and defining these characteristics has been the subject of extensive research. The process of designing work that enhances those motivating attributes is known as job enrichment (Muchinsky & Howes, 2019).

#### 2.4.3.1 Motivational characteristics:

Motivational characteristics, also known as core job dimensions, comprise the beginning of work design theory and are the factors that motivate workers to perform their work duties. Turner and Lawrence (1965) developed operational measures of six work task attributes that purport to be positively associated with worker satisfaction: skill variety, autonomy, required interaction, optional interaction, knowledge and skill required, and responsibility. The authors found mixed results supporting their theory. Workers who worked in a small town showed a positive correlation between work attributes and worker satisfaction, while city workers' satisfaction was negatively correlated, a finding implying that the cultural background of the workers moderated the effect of work attributes on satisfaction (Turner & Lawrence, 1965).

Hackman and Lawrence (1971) suggested that the characteristics of the work need to be considered simultaneously with the characteristics of the worker in order to predict the

behavioral and motivational responses of workers. The authors suggested alleviating the problem of motivating workers through the consideration of five propositions.

1. Actions that the individual believes will result in a desired or valued outcome (intrinsic or extrinsic) will motivate that individual to perform those actions.
2. If there is no value in outcome there is no incentive; if outcomes are not linked to satisfaction the work task will not continue to be valued.
3. Work should be designed in such a way that workers benefit only when the outcomes align with the organizational goals (i.e. do not reward incorrect or destructive behavior).
4. Higher order needs (Self-Esteem and Self Actualization (Maslow, 1943, 1970)) should be considered, however not all employees will be equally motivated to achieve these higher order needs, as Self-Actualization is defined on an individual basis.
5. To establish internal work motivation the work must:
  - a. Permit workers to feel personally responsible for an identified and meaningful share of work.
  - b. Provide work outcomes that are experienced by the worker as worthwhile.
  - c. Provide feedback regarding performance effectiveness.

Hackman and Lawrence's five propositions led to the conclusion that it may be possible to achieve high employee satisfaction and high employee effort towards organizational goals by focusing on the motivational aspects of the job. However, it is not the objectively measured level of each characteristic that affects work outcomes; rather it is the perceived level that each worker feels she/he is receiving from each characteristic.

The theory implies that satisfaction, performance, and attendance (work outcomes) should be highest when the worker perceives that all motivational characteristics are addressed. In addition, the results indicate that the motivational potential of work can only be actualized by fitting jobs to people and people to jobs simultaneously and continuously as the organization and the workers change over time; i.e. there needs to be a continual work design and redesign process to achieve and sustain worker motivation (Hackman & Lawler, 1971).

To evaluate a job's ability to provide motivation to employees performing the work, Hackman and Oldham (1975) developed the Job Diagnostic Survey (JDS), which indeed is the origins of the questionnaire used in this research and described later in this dissertation. The survey measures five core motivational Work Characteristics: skill variety, task identity, task significance, autonomy, and feedback. The survey was designed to be used to diagnose jobs prior to their redesign and in research and evaluations aimed at assessing the effects of redesigned jobs on the people who perform them. The theory postulates that positive outcomes (high internal motivation, high work satisfaction, high quality performance, and low absenteeism and turnover) are obtained when all three critical psychological states are present for employees; the three states are: experienced meaningfulness of the work, experienced responsibility for the outcomes of the work, and knowledge of the results of the work activities. Each critical state is said to be affected by specific Work Characteristics. Experienced meaningfulness of the work is bolstered primarily by skill variety, task identity, and task significance. Experienced responsibility for work outcomes is increased by high levels of autonomy. Knowledge of results is enhanced by effective feedback from the job.

By measuring the quantity of each Work Characteristics on a Likert-scale the JDS can evaluate the Motivational Potential Score of a job via the following equation:

$$MPS = \left( \frac{Skill\ Variety + Task\ Identity + Task\ Significance}{3} \right) + (Autonomy) \\ + (Feedback)$$

However, a high MPS will not necessarily affect all people the same way. People with a high Growth Need Strength (i.e., a personality trait where people desire greater growth opportunities and experiences at work) will be positively affected and experience the critical psychological states, while those who do not have a desire to seek growth at work will be drained or burnt-out by the work. Therefore, the Growth Need Strength of individuals must be measured to evaluate if the mediator is affecting the relationship between Work Characteristics and work outcomes. A diagram illustrating the relationship between motivational characteristics, critical psychological states, and positive outcomes can be seen in Figure 3.

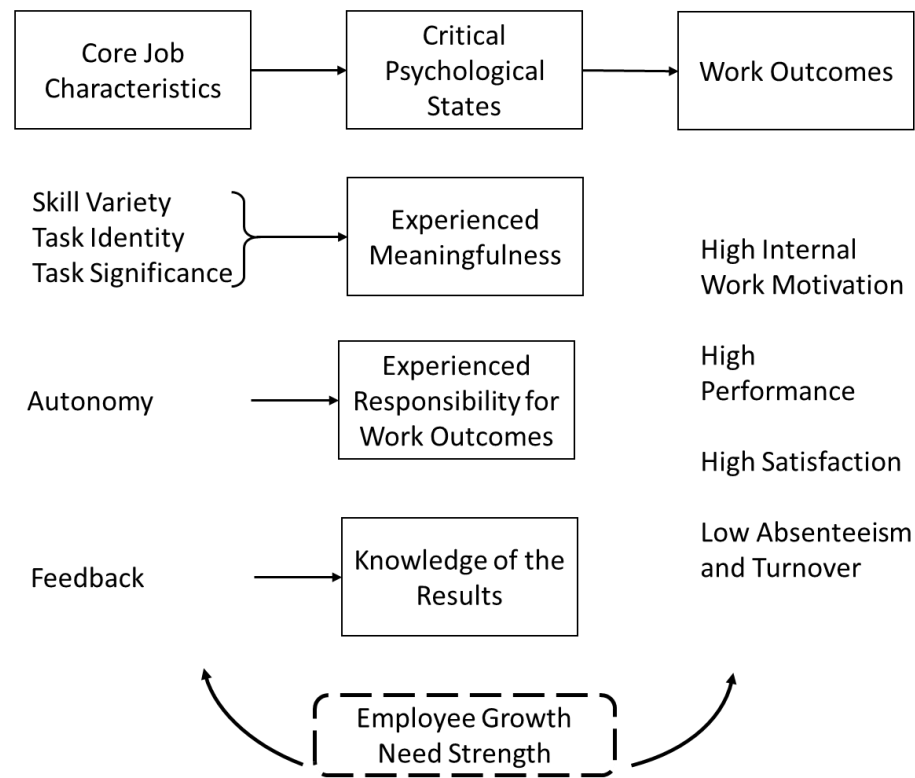


Figure 3: A theoretical model relating Work Characteristics, critical psychological states, and work outcomes, as moderated by an employee's Growth Need Strength. Adapted from Hackman & Oldham (1975).

Redesigning work by focusing on skill variety, task identity, task significance, autonomy, and feedback is claimed to result in workers attaining the three psychological states so long as they have a Growth Need Strength. GNS was measured by asking employees “would like” questions such as, how much you would like a “job where you are often required to make important decisions”. The resulting increase of effectiveness provides the organizational benefits for redesigning work (Hackman & Oldham, 1976, 1980).

#### 2.4.3.2 Demand and Control (Autonomy) Model

Karasek and Theorell (1990) developed a model of work based on two Work Characteristics: demand and control (autonomy). Demand is the amount of pressure an

employee is under to complete work tasks. Control is the level of authority an employee has to make decisions over his or her own work. Karasek and Theorell's demand and control model categorizes jobs into four different categories based on the level of demand and control each job has: (1) *low-strain*, high control and low demand, (2) *active*, high control and high demand, (3) *passive*, low control and low demand, and (4) *high strain*, low control high demand. Figure 4 summarizes the relationship and provides examples of jobs that fall under that category.

Control	High	<b><u>Low-Strain</u></b> lineman, natural scientist, repairman	<b><u>Active</u></b> electrical engineer, nurse, physician, farmer
	Low	<b><u>Passive</u></b> security person, dispatcher, janitor	<b><u>High-Strain</u></b> server, electronic assembler, nurse's aide (CNA)
		Low	High
		Demand	

Figure 4: Karasek and Theorell's Demand and Control Model

Employee outcomes, e.g., physical and mental injury, engagement, and satisfaction, can be predicted based on the levels of control and demand a job has. For example, employees who have high-strain jobs (high demand and low autonomy) are at risk of psychological strain, physical illness, anxiety, and depression. It would be beneficial to employees' health to redesign these jobs to have either less demand or more autonomy.

Interestingly, employees who experience high demand and high autonomy are not at risk; instead, these employees are predicted to have a positive set of outcomes, such as engagement, learning, and growth (job examples include electrical engineer, professor, and physician) (Karasek & Theorell, 1990).

#### 2.4.3.3 Critiques of focusing on solely motivational characteristics:

Motivational characteristics developed by Turner and Lawrence (1965), and subsequently by Hackman and Lawler (1971), have been critiqued for their *a priori* development (Stone & Gueutal, 1985), universal acceptance, and lack of questioning (Roberts & Glick, 1981). The characteristics were developed by searching the literature, reflectively reviewing their own ideas, and by trial and error. The result was characteristics that may represent how the researchers perceived work more than the way workers in general perceive work. In order to provide solutions to this critique, Stone and Gueutal (1985) conducted a study to empirically derive the characteristics along which individuals actually perceive Work Characteristics. Three broad characteristics named *job complexity*, *serves the public*, and *physical demand* resulted from the study (1985). One critique of Stone and Gueutal's study is its utilization of students as participants upon which to derive characteristics of work; using students as participants is not necessarily invalid, but it is most assuredly suspect as students may not have the work experience necessary to prioritize and critically think about work (Peterson & Merunka, 2014).

Beyond the critique of *a priori* development, two issues have arisen due to the success of the motivational work design theory. First, the initial success of the motivational approach facilitated wide acceptance of the theory and thereby the decline of research starting in the 1980's. Secondly, the theory focuses on a limited set of motivational work



features, thereby leaving out social and contextual aspects of work, which have received less attention (Humphrey et al., 2007; Morgeson & Humphrey, 2006). These limitations inspired questions regarding what is missing from defined Work Characteristics that fall outside of the motivational framework, which then spawned efforts to identify a comprehensive way to understand and measure Work Characteristics (Morgeson & Humphrey, 2006).

#### *2.4.3.4 Comprehensive work design characteristics*

Morgeson and Humphrey's (2006) Work Design Questionnaire was developed to provide a comprehensive method to measure Work Characteristics that includes motivational, social, and contextual characteristics. The Work Design Questionnaire was created by reviewing the work design literature to identify key characteristics and the measures previously used. The authors used the following key words to identify related articles: "work design", "job design", "work characteristics", "job characteristics", "job demands", "job content". After a process of classification and sorting based on the underlying content of the characteristic, 21 work design characteristics were identified, each of which was placed into one of three major categories:

- Motivational characteristics (subcategories):
  - Task (concerned with how the work itself is accomplished)
  - Knowledge (knowledge, skill, and ability demands needed to accomplish the work)
- Social characteristics
- Contextual characteristics

The 21 characteristics are shown in Table 1.

Table 1: 21 Work Design Characteristics

Category	Characteristic	Definition
Task (Motivational)	Work scheduling autonomy	The extent to which a job allows freedom, independence, and discretion to <u>schedule work</u> .
	Decision-making autonomy	The extent to which a job allows freedom, independence, and discretion to <u>make decisions</u> .
	Work methods autonomy	The extent to which a job allows freedom, independence, and discretion to <u>choose the methods used to perform tasks</u> .
	Task variety	The degree to which a job requires employees to perform a wide range of tasks on the job
	Task significance	The degree to which a job influences the lives or work of others, whether inside or outside the organization.
	Task identity	The degree to which a job involves a whole piece of work, the results of which can be easily identified.
	Feedback from the job	The degree to which the job provides direct and clear information about the effectiveness of task performance.
Knowledge (Motivational):	Job complexity	The extent to which the tasks on a job are complex and difficult to perform
	Information processing	The degree to which a job requires attending to and processing data or other information.
	Problem solving	The degree to which a job requires unique ideas or solutions and reflects the more active cognitive processing requirements of a job.
	Skill variety	The extent to which a job requires an individual to use a variety of different skills to complete the work.
	Specialization	The extent to which a job involves performing specialized tasks or possessing specialized knowledge and skill.
Social	Social support	Reflects the degree to which a job provides opportunities for advice and assistance from others.

<b>Category</b>	<b>Characteristic</b>	<b>Definition</b>
	Initiated interdependence	Reflects the extent to which work flows from one job to other jobs.
	Received interdependence	Reflects the extent to which a job is affected by work from other jobs.
	Interactions outside organization	Reflects the extent to which the job requires employees to interact and communicate with individuals external to the organization.
	Feedback from others	Reflects the degree to which others in the organization provide information about performance.
Contextual	Ergonomics	Reflects the degree to which a job allows correct or appropriate posture and movement.
	Physical Demands	Reflect the level of physical activity or effort required in the job.
	Work conditions	Reflect the environment (temperature, health hazards, noise, cleanliness, etc.) within which a job is performed.
	Equipment use	Reflects the variety and complexity of the technology and equipment used in a job.

The Work Design Questionnaire was validated utilizing data from 540 participants holding 243 different jobs. Results show that each one of the categories (motivation, social, and work context) has a different effect, at a potentially different level of explained variance, on work outcomes. While some work outcomes are affected by several different Work Characteristics (e.g., task and knowledge characteristics predicted job satisfaction), other outcomes are specific to a single characteristic (e.g., knowledge characteristics predicted compensation outcomes). The Work Design Questionnaire appears promising as means to understand the nature of work and/or to design and redesign jobs to further employee success (Morgeson & Humphrey, 2006).

In order to further test and extend a generalized work design theory, Humphrey et al (2007) conducted a meta-analytic study that integrated motivational, social, and work context characteristics. The study aggregated 259 studies with 219,625 participants and showed that 14 Work Characteristics explained 43% (on average) of the variance in the 19 worker attitudes and behaviors (work outcomes). An expanded work design model was constructed based on the culmination of many work design studies, to establish a comprehensive theory based on research findings thus far, as shown in Figure 5.

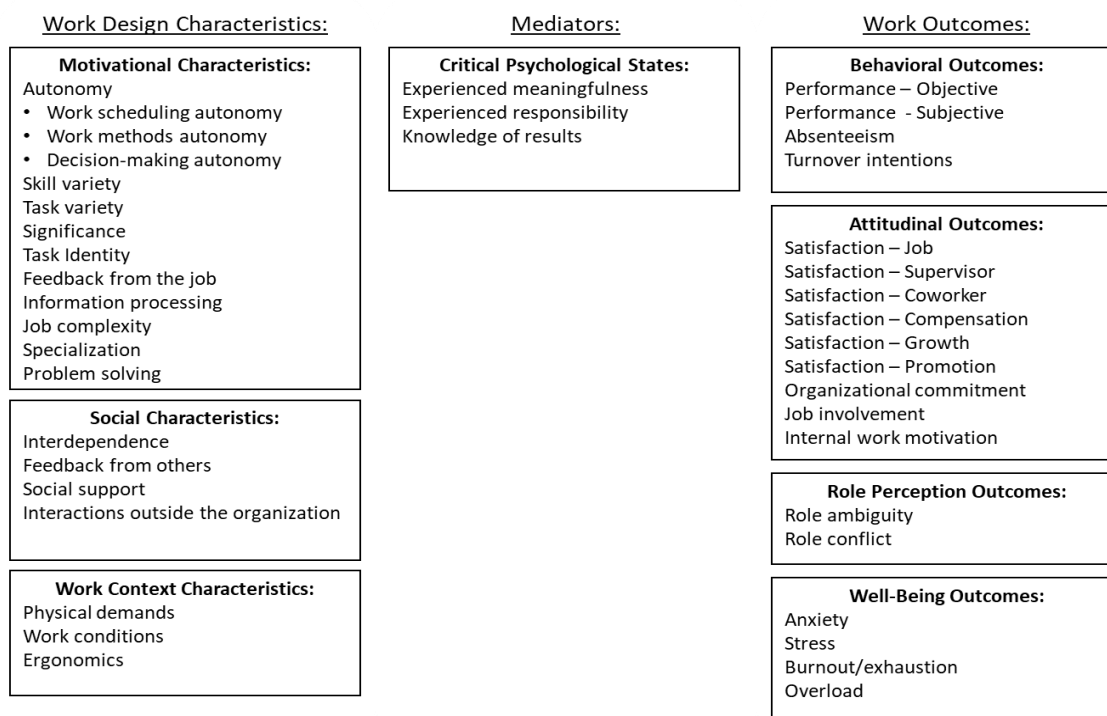


Figure 5: Expanded work design model (Adapted from Humphrey et al., 2007)

Results indicate that work design characteristics were interrelated; however, they were not so highly correlated as to be multiple indicators of the same construct. The motivational Work Characteristics were more correlated with each other than with the social or the work context characteristics, providing evidence that motivational, social, and

work context are unique categories of characteristics. In addition, results show that the five motivational characteristics (skill variety, task identity, task significance, autonomy, and task feedback), originally proposed by Hackman and Oldham (1976), explained 25% of the variance in job performance, 35% of the variation in job satisfaction, and 24% in organizational commitment, indicating the validity of those initial characteristics.

Humphrey et al's (2007) meta-analytic summary shows many correlations between Work Characteristics and work outcomes. For example, autonomy, one of the most studied Work Characteristics, has positive correlations with performance, satisfaction, and internal work motivation. Moreover, autonomy is negatively correlated with absenteeism, stress, and burnout. Figure 6 shows a visualization of the correlations between autonomy and work outcomes (behavioral, role perception, and well-being) along with correlations with critical psychological states. Positive correlations are shown as 0.XX and negative correlations are shown as (0.XX).

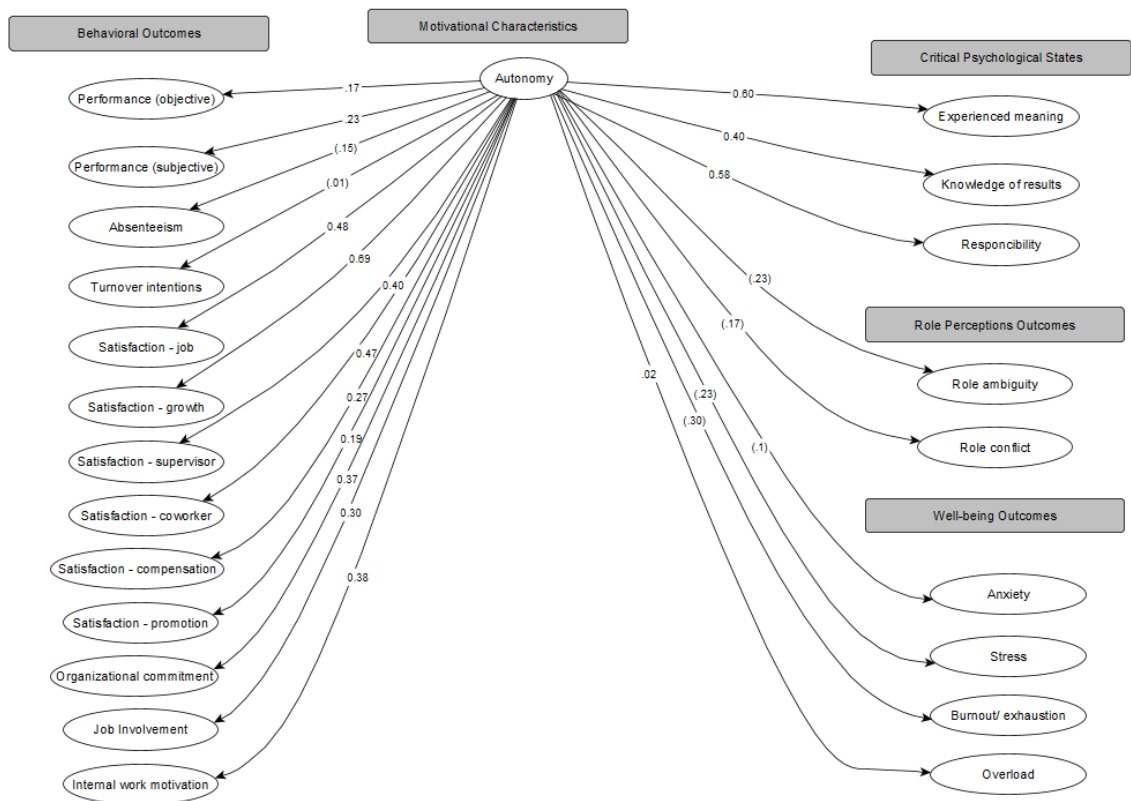


Figure 6: *Autonomy's Correlations (Adapted from Humphrey et al. (2007))*

#### 2.4.3.5 Other notable facets of good work

Other researchers have identified many other vital facets, or constructs, beyond the Work Characteristics defined by Humphrey et al. (2007) that must be considered to design and achieve *good work*. Namely:

- *job security/stability* (Munoz de Bustillo et al., 2011)
- *opportunities for career growth* (Munoz de Bustillo et al., 2011)
- *mutual trust* (Lewicki & Bunker, 1996; Lewicki & Wiethoff, 2000)
- *effective* (Stockard & Lehman, 2004) *and ethical* (Valentine et al., 2011) *management*

- *creativity* (Madrid & Patterson, 2016)
- *and a work/life balance* (Chan et al., 2016; Haar et al., 2014; Kalleberg & Marsden, 2013; Karasek & Theorell, 1990; Kelliher & Anderson, 2010; B. G. Maxwell et al., 2008; Morrison & Thurnell, 2012; Surlenty et al., 2014)

While the constructs are not currently recognized as Work Characteristics, they indeed should be as they are attributes of the job, task(s), and social and organizational environment of work, which fits the definition of Work Characteristics (Morgeson & Humphrey, 2006). Many studies have been undertaken to investigate and illustrate the importance of each.

#### 2.4.4 Comprehensive summary of I/O Psychology's knowledge of Good Work

The concept map, shown in Figure 7, summarizes virtually all of I/O psychology's work to define and actualize *good work* thus far. A concept map is a diagram that conveys knowledge through nodes that represent concepts and links that connects node to represent key relationships among the concepts. The diagram can be read as individual statements that convey information by reading the node-link-node triplets as standalone meaningful expressions (Crandall et al., 2006). For example, 'I/O psychology measures inputs via characteristics', can be read from the top node down.

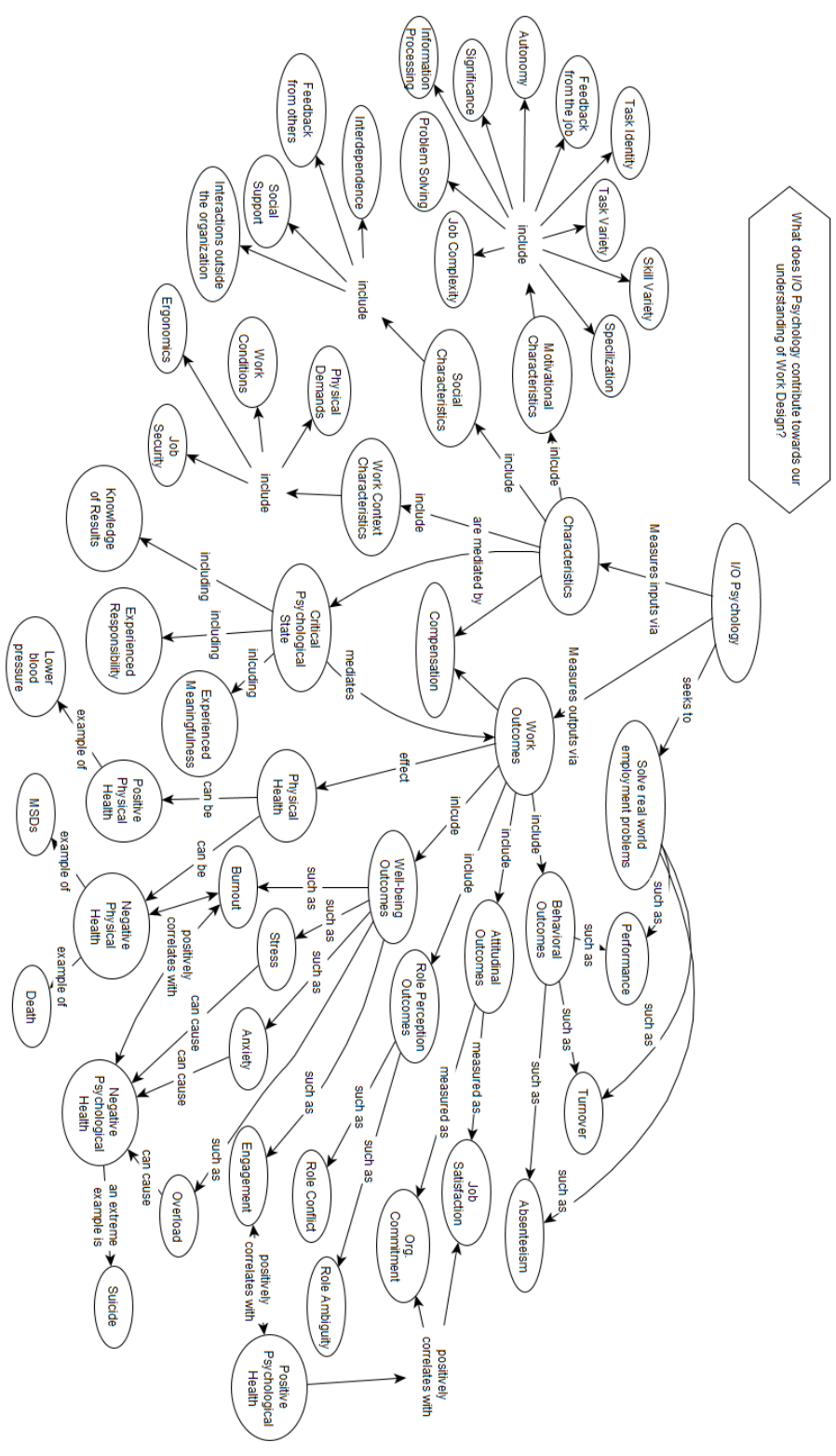


Figure 7: I/O psychology's contribution to our understanding of good work



## 2.5 Sociological Considerations in the Design of Work

The following sections review sociological considerations in the design of work. Section 2.5.1 details how an organization's hierarchy structure can affect work. Section 2.5.2 then focus on horizontal hierarchies, a specific hierarchy type. Next, in Section 2.5.3, labor unions effect on working conditions is described. Finally, Section 2.5.4 explains why social interaction at work is critical for achieving good work.

### 2.5.1 Organizational Hierarchy & Good Work

A hierarchy is defined as a group of people that are ranked in classes above one another ("Hierarchy," 2017, sec. 4). The ranking of people forms a social construct that defines roles and authority among people. Hierarchies can be identified in most all human social systems (Diefenbach & Sillince, 2011) including the social system the proposed research is concerned with: organizations. Hierarchies in organizations have existed for over 3,000 years with the goal of holding employees accountable to the work they are assigned to complete (Jaques, 1990). Hierarchies not only establish a defined control process that is essential to the function of an organization, but also outline a way to distribute rewards and punishments throughout the organization (Tannenbaum & Kahn, 1970).

Organizational hierarchies fall into four distinct categories based on the level of control employees have. Control can be distributed between upper (e.g., CEOs & Presidents) and lower (e.g., production workers) ranking employees. The four categories, referred to as control graphs by Tannenbaum and Kahn (1970), describe how much control top and low hierarchical levels have.

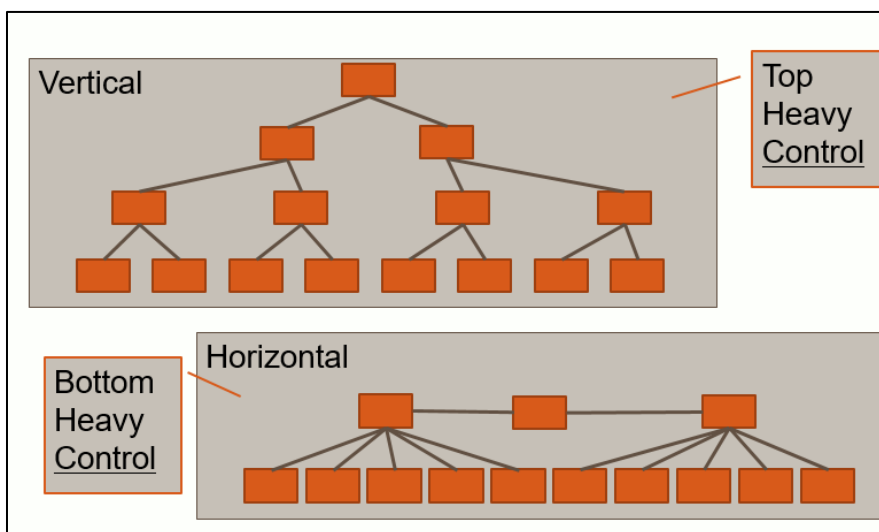
Category one can be thought of as linear control, where control increases linearly as one moves from lower levels (virtually no control) to higher levels (virtually complete control) of the hierarchy. Category two can be thought of as top-heavy control. In this category, only a few top individuals have complete control, and all others in the organization have virtually no control. The opposite of category number two can be found in number three, bottom-heavy control, where individuals at the bottom of the hierarchy have the most control, and individuals at the top of the hierarchy have virtually no control. For example, imagine an organization where employees at the lower level, as a group, have more control than the workers do at the highest level of the hierarchy. Finally, the fourth category, level control, describes an organizational hierarchy where all employees have similar levels of control, either high or low, over the organization (1970).

It is valuable to define hierarchical control categories because the level of control an employee has can predict health and behavioral consequences. Specifically, employees who have high demand and low control are at risk of psychological strain and physical illness (job examples include electronic assembler, waitress/waiter, garment stitcher). It would be beneficial to employees' health to redesign these jobs to have the proper balance of demand and control. Interestingly, employees who have high demand and high control are not at risk, instead these employees are predicted to have a positive set of outcomes, i.e. learning and growth (job examples include electrical engineer, farmer, and physician) (Karasek & Theorell, 1990).

If job demand cannot be readily changed due to the competitiveness of industry (Bantham & Swanson, 1995), then redesigning the hierarchical control structure from a category two (top heavy control) to a category three (bottom heavy control) or category

four (equal control) would help improve the design of the work by giving employees more control in decision making (Semler, 1989; Vanderburg, 2004).

Horizontal, or flat, organizational structure is defined as an organization that has groups of employees reporting to one manager, i.e. managing occurs across the organization as opposed to up and down (vertical organization). When charted, a horizontal structure would look very wide and short (as opposed to the pyramid structure of a vertical, top-heavy control hierarchy) with multiple self-managing teams as the building blocks for the organization (See Figure 8). All teams would work together and report to a single chairperson, or small group of executive managers. This is said to eliminate wasted time and energy spent running the internal workings of the complex organizational structure and, relaying information up and down the hierarchy (Byrne, 1993).



*Figure 8: Vertical and Horizontal Hierarchy Structures*

In terms of Tannenbaum and Kahn's (1970) control curves, a bottom-heavy or level control curve would describe the control employees have in the organization. For example, employees have control over their daily operations and report to management only if there

are larger issues (1970). With more control comes more autonomy, which is one of the most common characteristics considered in the work design theory (e.g., Hackman and Oldham (1976) and Morgeson and Humphrey's (2006) described above). Increasing worker autonomy can have many benefits to employees' work, and a horizontal structure will increase autonomy via the development of self-managing employee groups that serve as semi-autonomous work teams, which vertically load the work (i.e. increase responsibilities including scheduling, assigning, and managing work) (Hackman & Oldham, 1980; Kelly et al., 2011; Semler, 1989).

### 2.5.2 Horizontal Hierarchies & Good Work

Horizontal structure, in a manufacturing setting, facilitates the development of semi-autonomous work groups that complete entire builds of products, as opposed to individuals just attaching specific components. This has been shown to provide workers with a sense of connection to the product and to allow them to understand how their work contributes to the organization's success. The added value and feedback (two more characteristics of work) results in higher quality, productivity, and flexibility, coupled with lower rates of absenteeism and turnover (Jenkins, 1996).

Focusing on customer needs is also claimed to provide benefits to an organization that has a horizontal structure. This focus involves a custom-made set of reliable products and/or services for each customer, making the relationships between the employees in an organization and their customers the most valuable asset of the organization (Chenhall, 2008). Allowing workers to be directly in contact with customers (e.g., end users), and/or their needs, gives employees a greater sense of value to their job because direct contact allows improvements to be made more quickly and effectively. Additionally, direct

feedback from the customer through communication increases opportunities for employees to obtain immediate praise or criticism of their work from the people who are actually utilizing the product and/or service which will also give a greater sense of value to their work (Gyllenhammar, 1977; Hackman & Oldham, 1980; Jenkins, 1996).

While there are benefits for employees' work, as described above, for a horizontal structure, there are also downfalls. Rindfleisch (2000) found that organizations that utilize a vertical structure displayed a higher level of trust in their co-workers, compared to organizations with a horizontal structure. There can be a downfall in cooperation when employees are less trusting of their co-workers, making a horizontal structure seem less effective. However, the study found that while trust is positively associated with cooperation in vertical structure, the relationship between trust and cooperation is weaker with organizations utilizing a horizontal structure due to the moderating effect of alliance. This finding suggests that the relationship between trust and cooperation has little effect in a horizontal structure (2000), indicating that organizations can have cooperation without high levels of trust. However, employee trust is positively associated with employee engagement (Wang & Hsieh, 2013). Regarding *good work* design, the lack of trust could create an unwanted, or negative, social interaction experience between employees, which would degrade the goodness of their work.

### 2.5.3 Labor Unions and Good Work

Employees that work together establish social bonds and often see that their problems are not unique to themselves, but instead are shared by all workers. This establishes a need to come together to improve their working conditions and end grievances in labor organizations known as unions. Action will only occur if workers are committed

to their work enough not to leave and are not deterred due to fear from management's punishment. Many different occupations have formed unions, but most union members are from transportation, government, manufacturing, mining, and construction industries. The oldest labor organization, established in 1886, is the American Federation of Labor (AFL). The AFL originally functioned as an umbrella organization coordinating the collective efforts of other smaller craft unions, which has helped set the pattern of what labor unions look like today. As of 1989 the top five largest labor unions in the US were:

1. Teamsters: 1,891,000 members
2. National Education Association: 1,684,000 members
3. State, County, and Municipal (AFSCME): 1,032,000 members
4. Food and Commercial Workers: 1,000,000 members
5. Automobile Workers (UAW): 998,000 members

Unions have had positive impacts for workers through higher wages, shorter working hours, increased safety in the workplace, and increased bilateral governance of the workplace through negotiated rules. There have also been negative impacts on working conditions due to unions. After WWII, some unions kept African Americans from obtaining jobs, or restricted them to jobs located in specific locations with lower-paying positions. Practices of this nature were particularly pervasive in building trade unions such as the plumbers, electricians, and sheet metal workers and occurred as late as the 1960's. It was not until pressure from government and the community during the civil rights movement that these practices were abolished.

The union practice of allocating layoffs based on seniority has had a negative impact on women and minorities. The practice has tended to favor white men over the more recently hired women and minorities. Starting in the 1970's the AFL was strongly influenced by the women's movement and subsequently endorsed the Equal Rights Amendment. While some men resisted the Coalition of Labor Union Women formation in 1974, it was supported by many others. The solidarity between men and women workers has gone far in easing tensions as women expand into previously male-dominated occupations (Sullivan & Hodson, 1990).

#### 2.5.4 Social Interaction and Good Work

According to the philosopher, Karl Marx, human beings exist on interactions with one another, they are social beings; and this is what characterizes the human species as a species (Wallimann, 1981). He also postulates that humans by nature tend to engage in work activities, i.e. labor: the creative and productive method of changing the natural environment with conscious intent and planning. This concept is embodied when he writes, "...the productive life is the life of the species. It is life-engendering life. The whole character of a species, its species-character, is contained in the character of its life activity; and free, conscious activity is man's species-character" (Marx, 1944, p. 5).

This provides evidence for two conclusions; most humans require (1) social interaction and (2) work in order to fulfill their human nature. Therefore, social interaction within a person's community and at their work are essential to living a healthy life. The qualifier 'most' is used because there are some who would prefer to live in isolation.

Social interactions are the basis for social support, which has three classes.

1. Interactions (verbal and non-verbal) leading the person to feel loved and cared for.
2. Interactions (verbal and non-verbal) leading the person to believe that he or she is esteemed and valued.
3. Interactions (verbal and non-verbal) leading the person to believe that she or he belongs to community.

Social support has been shown to reduce life stress and is proactive in preventing a list of pathological states like depression and alcoholism. Moreover, social support may reduce the amount of medication required and accelerate the recovery period (Cobb, 1976).

Berry et al. (2012) conducted a study to understand the effects of social isolation on stress levels within a population of rats. The researchers induced stressful conditions by socially isolating the rats from one another and found that isolation triggered anxiety and depression behaviors. The study concluded that social isolation has harmful health outcomes, and is regarded as the most relevant causes of diseases in human and other mammalian species (2012). In addition, social experiences were shown to mediate the correlation between socioeconomic status and system outcomes of health, education, and social status. Humans' ability to remain healthy in the face of adversity was correlated with a combination of social interactions with adults that demonstrate consistent care during critical formative development stages of youth (Bloomberg et al., 1994). These findings give further evidence to the importance of social interaction at work.

In a meta-analytic study, Humphrey, Nahrgang, and Morgeson (2007) found that social support via social interactions at work were positively correlated with performance, job satisfaction, growth satisfaction, supervisor satisfaction, co-worker satisfaction,



compensation satisfaction, promotion satisfaction, organizational commitment, job involvement, and internal work motivation. Social support was negatively correlated with absenteeism, turnover intentions, role ambiguity, role conflict, anxiety, stress, burnout, and overload. Thus, social interactions at work are expected to increase a workers' well-being. The results illustrate the many benefits for healthy social interactions at work and the negative, and costly, consequences avoided via social support (Humphrey et al., 2007).

An anecdote from the production industry can be found in Lawrence's time spent working in a machine shop as a participant observer, which was never as tough as it was when he was required to work in isolation. He claimed to have never been more exhausted than he was after a day of operating a loud machine alone and without social support. He described it as solitary confinement and experienced it as extreme punishment. Later jobs he performed may have been more physically demanding, but their efforts paled in comparison to the negative effects of social isolation (Lawrence, 2010).

Work can often interfere with social interactions at home. It was found that those who have little or no control over their schedule have more conflicts between work and family, and conversely those who have control over their schedule have fewer conflicts (Glavin & Schieman, 2012; Perlow & Kelly, 2014). A longitudinal study showed that conflicts between work and family predict later absences from work due to illness, and work-family conflict increases the risk of heart disease, depression, and anxiety (Correll et al., 2014).

Scheduling practices that give workers autonomy over when and where they perform their work has shown to reduce conflicts between work and family (Kelly et al., 2011; Moen et al., 2015). This concept is referred to as work-life fit, and has a number of

studies providing theory behind, and solutions to resolving, conflicts between work and family, most of which emphasize scheduling techniques to resolve the conflict (Hackman & Oldham, 1980; Perlow & Kelly, 2014; Sandberg, 1995; Semler, 1989). The efforts an organization puts into work redesign, including flexible scheduling techniques, will result in measurable and sustainable effects on both work effectiveness and employees' lives making the investment well worth it the organization (Perlow & Kelly, 2014).

## 2.6 Human Issues arising from Bad Work

A particularly serious example of bad work can be found at Foxconn, whereas of 2013, 14 workers committed suicide by jumping off the roof of the worker dormitories to protest the working conditions. Foxconn is an electronics manufacturing organization located in China that produces components for many electronic devices used today, like the Apple iPhone. As an extreme example of Industrial Engineers' ability to simplify work, Foxconn has designed highly efficient work that utilizes waste elimination techniques to the fullest. One example of a waste elimination technique used by Foxconn was the organization's policy that prohibited workers from talking to one another (eliminating "waste" in socialization). Moreover, workers were required to perform identical movements each time a task is performed. Tasks were defined in such detail that they describe how workers must move and where they placed their right and left feet, so as to eliminate waste of motion (Perlin, 2013).

According to Perlin, the pressure Foxconn puts on its 1.4 million workers to produce efficiently created a working climate that is so inhumane that workers resorted to committing suicide as means of protesting the working conditions. After media attention

and pressure from Apple, one of Foxconn's primary customers, the organization made efforts to improve the design of work and to repair public relations. One effort to increase workers' physical safety was installing anti-suicide nets on the first floor of the dormitories. The nets were designed to catch workers attempting suicide by catching them before they hit the ground, ensuring the workers remain physically safe and able to return to work. In an attempt to repair public relations, the organization raised workers' wages. This was unfortunate for the workers, as the raised wages came with higher productivity standards resulting in the same pay-per-job as before. Bad work conditions continue to affect Foxconn's workers to such an extent that in 2012, 150 protesting workers threatened to commit group suicide by jumping off their dormitories (Perlin, 2013). This example clearly illustrates the need for a valid work improvement process.

## 2.7 Work Improvement Actions

Foxconn's worker dissatisfaction is not a new phenomenon. According to Gyllenhammar, Volvo faced issues with worker dissatisfaction in the 1970's that resulted in high worker turnover and difficulty in recruiting new workers. In contrast to Foxconn, Volvo's reaction was to implement work improvement methods that focused on creating better and more attractive work using a humanistic approach to the design of work. Pehr Gyllenhammar, Volvo's President at the time, championed the organization's efforts and documented them in his book, *People at Work*. Efforts included giving workers responsibility and autonomy over their work which resulted in a five percent decrease in turnover and absenteeism while maintaining prior productivity standards (Gyllenhammar, 1977). Volvo's Uddevalla and Kalmar plants work redesign efforts reduced absenteeism

and turnover, both of which contribute to an organization's overhead costs (Sandberg, 1995). Volvo's efforts to design work for the needs of human workers prove that the design of work can be improved without sacrificing productivity.

Another work design example can be found at Semco, a Brazilian company, that changed the way they viewed the design of work. Semco began focusing on human aspects of their work design after their CEO, Richard Semler, saw his own health deteriorate due to over-work. He went on to drastically change the management system. Semco allowed their workers more autonomy by changing the demand and giving their workers complete control over their own work. Semco began splitting up the manufacturing plants, which allowed the employees more involvement in the managing and running of the company. Semco can be looked at as an example of how a company can successfully redesign work in a humanistic and ethical way while remaining financially viable (Semler, 1989; Vanderburg, 2004).

Hackman and Oldham (1980) found that increasing an employee's internal motivation not only resulted in greater levels of satisfaction among the employees, but also increased quality of output and effectiveness of teams (1980). Semler found the same benefits after his efforts to improve Semco were established (Semler, 1989; Vanderburg, 2004). Their work proves that organizations can be more profitable, and exist over the longer term, if they consider designing work in such a way as to engage employees in a way that is personally fulfilling. The process proposed by Lee (2014) seeks to do just that: reduce mismatches between what an organization offers and what an employee would prefer in order to align the work with the worker, thus providing personal reward.

## 2.8 Lee's Work Improvement Process

To engineer progress on social problems that arise from bad work, Lee (2014) outlined a principled approach to improve work, referred to hereafter as ‘Lee’s Work Improvement Process’. The process focuses on creating work that is good from the workers’ perspective while remaining profitable for the employer. Lee’s process improves the psychological goodness of work by reducing mismatches between workers’ preferences and the work provided.

Psychological quality characteristics, also known as dimensions in Lee’s (2014) work, were developed that made the process of systematically defining, comparing, and making changes to work possible. The characteristics, which were equivalent to the work characteristics described in Section 2.4, were developed from the original literature on motivational characteristics (e.g., Hackman and Oldham (1976) and from other motivational theories (e.g., Maslow’s Hierarchy of needs (Maslow, 1943)). The twelve work dimensions comprising Lee’s process are defined below. Table 2 summarizes the characteristics and gives their sources of inspiration.

1. **Compensation:** All the material gains workers could obtain by performing their assigned work. This includes salary or hourly wages, bonuses, and benefits. Jobs with adequate compensation allow the worker to meet their basic needs.
2. **Safety:** The degree to which workers are protected from physical harm while performing their work within the workplace. Jobs with high levels of safety prevent short-term injury from accidents, prevent long-term effects such as repetitive stress injuries, and allow workers enough time off to maintain good health.

3. **Social Interaction:** The degree to which workers interact with each other during the course of performing their work. Examples of social interaction may include talking to other workers or just working together on tasks.
4. **Variety:** The number of different types of tasks and/or activities workers perform at work. This could include either performing different tasks during the day or working at different workstations.
5. **Aesthetics:** Exposure to elements of beauty and creativity while performing work, possibly from the physical design of the workplace, the work environment, or the workpiece itself. Beauty in the workplace can be expressed in adequate lighting, cleanliness, and access to views of the outdoors.
6. **Feedback:** The quantity and quality of knowledge workers receive regarding their work performance. External feedback from management includes positive feedback when a job is well done, as well as constructive criticism when improvement is needed. Internal feedback results from work that is designed in a way that an employee can see the impact of their efforts on the goals of an organization.
7. **Accomplishment and Status:** Feeling of satisfaction towards one's contribution to an organization. This dimension is composed of the worker's internal feeling of accomplishment and external recognition of the worker having contributed in an organization.
8. **Demand:** The physical and psychological effort required from the worker to accomplish the work. Physically demanding jobs are generally associated with

manual labor or public safety. Psychological demand at a job may take many forms, from fast-paced routine work on an assembly line to jobs with large responsibility and little authority.

9. **Autonomy:** The degree of freedom and control workers can exert over their work in terms of being able to freely apply their knowledge, judgment, skills, and creativity towards performing work. Jobs with high levels of autonomy allow workers to schedule and execute their work in the way they think is best.
10. **Value:** The significance of one's role and its impact within and beyond the organization. High value jobs may be in organizations that serve an obvious public good, such as the job of a paramedic. A high value job may also be one that has an obvious and direct impact on the success of the organization, such as that of a CEO or controller. In contrast, low value jobs may be ones where workers assemble small electronic subassemblies, which are shipped elsewhere to become a finished product.
11. **Technical Growth:** Opportunities available to workers to improve work-related knowledge, skills, and abilities that could be applied to workers' immediate work and careers. Technical competence may be an initial requirement for being hired, but as the organization evolves, a job with technical growth potential may encourage workers to improve their technical skills through education or trade specific training.
12. **Personal Growth:** The degree to which work helps its workers further themselves according to their personal beliefs, values, and aspirations. Jobs with

low personal growth potential may require a worker to do something that conflicts with their values or hold them back from achieving their personal potential.

*Table 2: Lee's Characteristics (Lee, 2014)*

<b>Characteristic</b>	<b>Definition</b>	<b>Main Sources of Inspiration</b>
Compensation	All material gains workers can obtain by performing their assigned work.	Maslow (1943, 1954), Chan & Ngai (2009).
Safety	Degree to which workers are protected from physical and psychological harm while performing their work and within the premises of the workplace.	Maslow (1943, 1954),
Social Interaction	Degree to which workers interact with each other during their work.	Karasek & Theorell (1990), Deci & Ryan (2000, 2004), Hackman & Oldham (1980), Maslach & Goldberg (1998).
Variety	The variety of tasks workers perform in the workplace.	Hackman & Oldham (1980).
Aesthetics	Exposure to beauty and creativity while performing work, possibly from the workplace, the work environment, or the workpiece itself.	Maslow (1943, 1954).
Feedback	Amount and quality of knowledge workers receive regarding their work performance.	Hackman & Oldham (1980).
Accomplishment and Status	Feeling of satisfaction towards one's attainments at work and one's place within an organization.	Maslow (1943, 1954), Keegan & Green (2005).
Demand	Physical and psychological effort required from the worker to accomplish the work.	Karasek & Theorell (1990), Maslach & Goldberg (1998).
Autonomy	Degree of control workers can exert over their work in terms of being able to freely apply their knowledge, judgment, skills, and creativity.	Hackman & Oldham (1980), Karasek & Theorell (1990), Maslach & Goldberg (1998), Maiscampo & Baumeister (2008).



Characteristic	Definition	Main Sources of Inspiration
Value	Significance of one's role and its impact within and beyond the organization.	Hackmen & Oldham (1980), Senge (1990), Maslow (1954).
Technical Growth	Opportunities available to workers to obtain work-related skills and knowledge that could be applied to their work and career.	Deci & Ryan (2004), Hackman & Oldham (1980), Senge (1990), Maslow (1954).
Personal Growth	Degree to which work helps its workers further themselves according to their personal beliefs and values.	Maslow (1954), Hofstede & Hofstede (2004), Schumacher (1976).

Many of Lee's work improvement measures are directly from Gyllenhammar's success in the Volvo plant and Hackman and Oldham's book (W. T. Lee, 2014). Lee's Work Improvement Process seeks to minimize mismatches in each of the dimensions by using a five step cyclical process, illustrated in Figure 9.

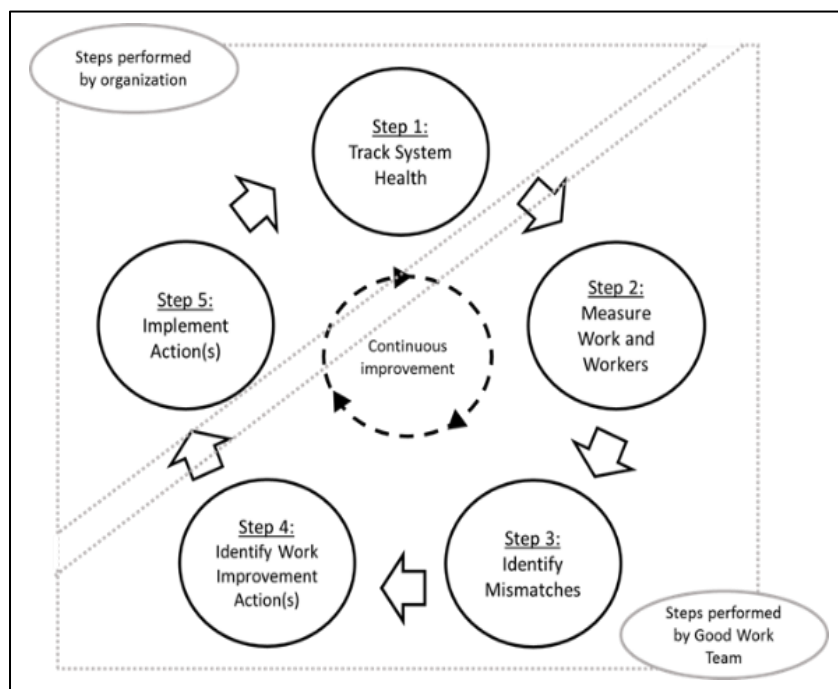


Figure 9: Lee's (2014) Work Improvement Process (Adapted from Lee (2014), 95)

The first step establishes a baseline system health in terms of measures related to human resources (e.g. attrition, turnover, and absenteeism (W. T. Lee, 2014)). The second step measures the work and workers using surveys and interviews to establish potential mismatches between the work offered by the organization and the work preferred by the workers. The third step uses statistical analysis, especially hypothesis testing, of the survey data, and qualitative methods from the interview, to identify mismatches. The fourth step identifies Work Improvement Actions that attempt to mitigate the identified mismatches. Finally, the improvement actions are implemented in the fifth step. Then the process begins again, and the system health is re-assessed.

The questionnaire used to measure work and workers contains three parts (the complete questionnaire used by Lee (2014) can be found in Appendix A).

- Part 1 identifies how important each dimension is to the workers. For example, autonomy might be very important to the workers while aesthetics is not as important.
- Part 2 identifies the magnitude needed in each of the dimension to satisfy workers. For example, workers might desire high variety but understand that their work needs to realistically be limited in scope. These data points are identified as work preferred by the worker population or  $Work_{pop}$ .
- Part 3 identifies how well the workers' current work satisfies them in each specific dimension, for example, the current demand of the work and current

level of feedback they receive. These data points are identified as work currently being provided by the company to the workers, or  $Work_{com}$ .

All three parts contain one question for each of the 12 dimensions, making the questionnaire comprise a total of 36 questions. Answers to the questions provide data about the level of satisfaction desired and received by workers in each dimension. All questions on the questionnaire use a 1-7 point Likert scale, 1 indicating low, which transfers the qualitative worker opinions onto an ordinal scale. As stated before, the system health metrics are provided by organizational management.

Questionnaire results are statistically analyzed once the questionnaire data is collected, producing the dimensional difference that exists between the  $Work_{com}$  and  $Work_{pop}$ . A statistically significantly positive mismatch suggests that there exists dimensional excess. In other words, the work is richer in that dimension than the workers need, or even want, to feel satisfied. For example, if aesthetics showed a significantly positive dimensional difference the work provides more aesthetics than the workers desire to be satisfied. A significantly negative mismatch suggests that there exists a dimensional shortage, or the work needs to be enriched along that dimension. For example, more autonomy might be required to satisfy worker preferences. A significant dimensional mismatch is identified using the p-value of a paired t-test<sup>8</sup>. If a dimensional difference's p-value is less than 0.05, the dimension is considered statistically significant.

For all dimensional mismatches that are identified as significant, a list of improvement actions is generated. The list of improvement actions is a customized subset of all

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<sup>8</sup> Paired t-tests require data that is normally distributed. It may have been the case the questionnaire data is normally distributed; however, a test for normality was not described by Lee (2014).

improvement actions in that dimension and need to be applicable to the surveyed organization. For example, state organizations cannot use profit-sharing strategies to mitigate a compensation shortage, so suggesting that improvement action would provide little to no value to the organization and therefore should be left out. Lee (2014) identified a set of improvement actions, related to each characteristic, which can be found in Table 3.

*Table 3: Improvement Actions related to each characteristic (verbatim from Lee (2014))*

<b>Dimensions</b>	<b>Measures (VT: Volvo Torslanda, VK: Volvo Kalmar, VU: Volvo Uddevalla, OA: Other Automakers, SC: Semco, WR: Work Redesign, PRC: Practices in PRC)</b>
Autonomy	<ul style="list-style-type: none"> <li>• Autonomy of team function (VK, VU, SC)</li> <li>• Involvement in creating instructions/SOPs, goals, plans, actions, and changes (VK, SC, OA)</li> <li>• Flexibility of work hours and location (SC)</li> <li>• Freedom to question seemingly established rules (SC)</li> <li>• Participation in hiring and evaluation of management (SC)</li> <li>• Control/influence over one's own compensation (SC)</li> <li>• Company (does not) exert control over person lives of employees (PRC)</li> </ul>
Compensation	<ul style="list-style-type: none"> <li>• Coupling between salary and productivity (OA)</li> <li>• Sharing a portion of company profit (SC)</li> <li>• Wage increases with skillset (VT, VU)</li> <li>• Job security increases with seniority (SC)</li> <li>• Average wage comparable to local standards (PRC)</li> <li>• Wage above legal minimum (PRC)</li> <li>• Available of paid overtime work (PRC)</li> </ul>
Demand	<ul style="list-style-type: none"> <li>• Buffers to allow pace flexibility (VK, OA)</li> <li>• De-coupling from bigger assembly lines (VU)</li> <li>• Parallel assembly (VU)</li> <li>• Reasonable time and resources to meet goals (OA)</li> <li>• Measures of continuous improvement (i.e. Kaizen) (OA, SC)</li> <li>• Coupling between salary and productivity (OA, PRC)</li> <li>• Reasonable work hours (PRC)</li> </ul>
Technical Growth	<ul style="list-style-type: none"> <li>• Job rotation (VT, SC)</li> <li>• Cross training (VT)</li> </ul>

Dimensions	Measures (VT: Volvo Torslanda, VK: Volvo Kalmar, VU: Volvo Uddevalla, OA: Other Automakers, SC: Semco, WR: Work Redesign, PRC: Practices in PRC)
	<ul style="list-style-type: none"> <li>• Other arrangement to receive job-related skills (i.e. classes) (VT, SC)</li> <li>• Compensation increases with possession of job-related skills (VT)</li> </ul>
Accomplishment & Status	<ul style="list-style-type: none"> <li>• Opportunity to serve in leadership roles (VK, VU, SC)</li> <li>• Seniority leads to job security (SC)</li> </ul>
Safety	<ul style="list-style-type: none"> <li>• Workspace ergonomics considerations such as noise, physical dimensions, and equipment safety (VT)</li> <li>• Accommodation for handicapped workers (VT)</li> <li>• Mechanization, automation, or avoidance of dirty, heavy, and noisy work (VT)</li> <li>• Work piece oriented for the worker (VT)</li> <li>• Periodic work rotation (within each workday) (VT)</li> <li>• Formal system to handle and track work ergonomics (VT, OA)</li> <li>• Clean air, water, and work environment (PRC)</li> </ul>
Personal Growth	<ul style="list-style-type: none"> <li>• Opportunities to pursue personal interests and given opportunity to work later in life (SC)</li> <li>• Avoidance of measures (such as body searches and abuse) that could be considered demeaning (SC, PRC)</li> </ul>
Social Interaction	<ul style="list-style-type: none"> <li>• Breaks scheduled so entire teams, or even plant, takes breaks at the same time (VT)</li> <li>• Group work (VT, SC, OA)</li> <li>• Permitted to carry out conversation at work (PRC)</li> <li>• Regular team meetings (VT, OA, WR)</li> <li>• Cross training (SC, VU, WR)</li> </ul>
Value	<ul style="list-style-type: none"> <li>• Individuals build significant or entire parts of a product (VK)</li> <li>• Opportunity to know and interact with end users (VU, WR)</li> <li>• Small divisions or organizations (SC)</li> <li>• Opportunity to provide input for organizational-level issues (SC)</li> <li>• Disclosure of information such as finances, productivity, and salary distribution (SC)</li> </ul>
Variety	<ul style="list-style-type: none"> <li>• Periodic work rotation (within each workday) (VT)</li> <li>• Periodic job change (long term work content) (SC)</li> <li>• Individuals/teams build significant or entire product (VK, OA, WR)</li> <li>• Work designed with long cycle times (VU, OA)</li> <li>• Work responsibility beyond that of production (VK, SC)</li> </ul>
Aesthetics	<ul style="list-style-type: none"> <li>• Presence of green areas, recreational areas, and lunchrooms (VT, OA)</li> <li>• Measures to maintain sanitation of workplace (PRC, VU, OA)</li> </ul>

<b>Dimensions</b>	<b>Measures (VT: Volvo Torslanda, VK: Volvo Kalmar, VU: Volvo Uddevalla, OA: Other Automakers, SC: Semco, WR: Work Redesign, PRC: Practices in PRC)</b>
	<ul style="list-style-type: none"> <li>• Attention to lighting, vibration, and noise control (VT, OA)</li> </ul>
Feedback	<ul style="list-style-type: none"> <li>• Individuals are responsible for inspection and quality of own work (VT)</li> <li>• Teams are responsible for the quality of their own work (VK, OA, SC)</li> <li>• Teams receive feedback from users (WR)</li> </ul>

Part of Lee's Work Improvement Process was tested on two electronic manufacturing organizations, one located in the US and the other in the People's Republic of China. The testing included measuring work and workers, identifying mismatches, and identifying potential improvement actions (Steps 2, 3 and 4). This resulted in a list of suggested improvement actions for each organization, which were validated through documented industry examples found in the literature. However, the actions were not implemented, nor their effect measured, as part of Lee's research (W. T. Lee, 2014).

## 2.9 Synthesis of the literature

The design of work can be considered as a series of inputs and outputs, mediated by the people at work. Figure 10 illustrates a subset of work inputs and outputs. This research is not aimed at adapting the people to the work (e.g., implement weight training workouts to improve the physical strength of the employees so they can better lift heavy objects). Instead, it is interested in redesigning the work so that it better suits the people.

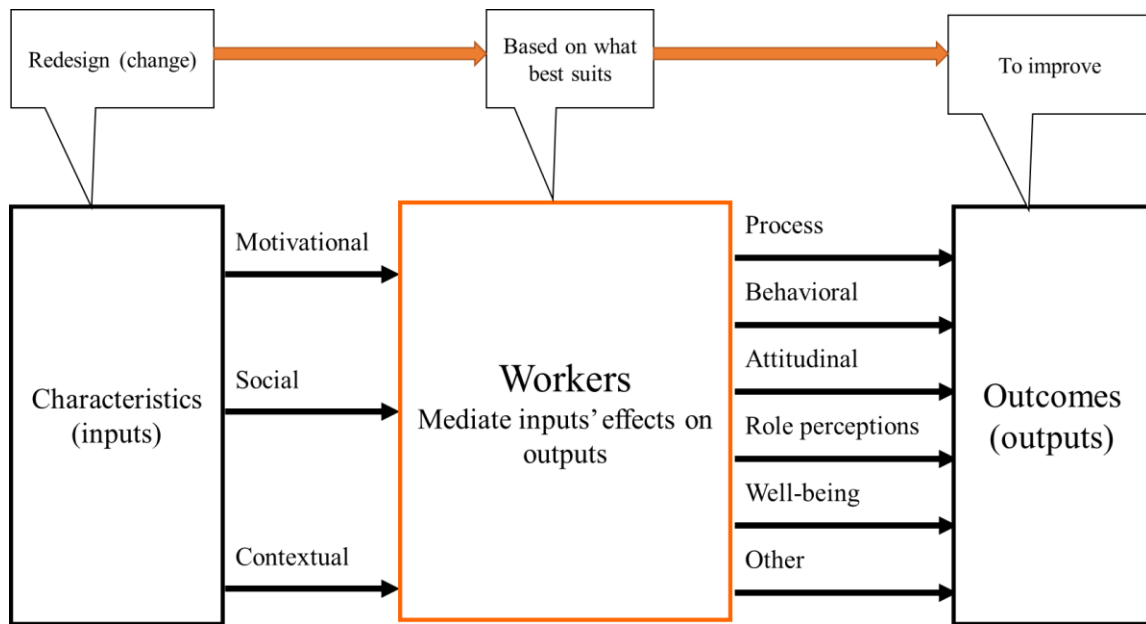


Figure 10: Work design inputs and outputs

Work Characteristics are considered as the inputs to design of work, i.e., the directly controllable dimensions that can be changed (redesigned) to affect the workers. Table 4 summarizes characteristics from three fields: industrial engineering, industrial and organizational psychology, and sociology. The right most column highlights some, but not necessarily all, of the literature that utilizes that characteristic in their measurements and analysis of work.

Most characteristics are bimodal in terms of their effect on the worker; they could positively or negatively affect the measure of the work on that characteristic. For example, some workers would react positively to some level of *demand*; it keeps them challenged and interested in their work. On the other hand, too much *demand* can cause burnout, leading to physical and psychological health problems. Other characteristics are unimodal; they can only positively affect employee well-being, or not affect it at all. For example,

*value* may improve employee well-being, but has yet to show a decrease in well-being, or cause negative health consequences as it increases.

Table 4: Work Characteristics - The inputs to work design.

Characteristic +/- = bimodal; + = unimodal	Definition	Source(s): [IE] = industrial engineering, [I/O] = industrial and organizational psychology, [SOC] = sociology
<b><u>Motivational</u></b>		
Autonomy +/-	The extent to which a job allows freedom, control, independence, and discretion to (1) schedule work, (2) make decisions, and (3) choose the methods used to perform tasks.	Hackman & Oldham, 1976 [I/O]; Karasek & Theorell, 1990 [I/O]; Konz, 2007 [IE]; Lee, 2014 [IE]; Morgeson & Humphrey, 2006 [I/O]; Perlow & Kelly, 2014 [SOC]
Variety (i.e., task and skill variety) +/-	The degree to which a job requires employees to perform a wide range of tasks and skills on the job.	Hackman & Oldham, 1976 [I/O]; Lee, 2014 [I/E]; Morgeson & Humphrey, 2006 [I/O]
Value (i.e., task significance) +	The degree to which a job influences or is significant to the lives or work of others, whether inside or outside the organization.	Hackman & Oldham, 1980 [I/O]; Lee, 2014 [IE]; Morgeson & Humphrey, 2006 [I/O]
Feedback from the job +/-	The degree to which the job, or the work itself provides direct and clear information about the effectiveness of task performance.	Lee, 2014 [IE]; Morgeson & Humphrey, 2006 [I/O]
Cognitive demand (i.e., job complexity, information processing) +/-	The extent to which the tasks on a job are mentally complex and/or difficult to perform	Karasek & Theorell, 1990 [I/O]; Lee, 2014 [IE]; Morgeson & Humphrey, 2006 [I/O]
Technical growth +/-	Opportunities available to workers to obtain work-related skills and knowledge that could be applied to their work and career.	Lee, 2014 [IE]
<b><u>Social</u></b>		



<b>Characteristic</b> +/- = bimodal; + = unimodal	<b>Definition</b>	Source(s): [IE] = industrial engineering, [I/O] = industrial and organizational psychology, [SOC] = sociology
Social support +	Reflects the degree to which a job provides opportunities for advice and assistance from others.	Cobb, 1976 [SOC]; Correll, Kelly, O'Connor, & Williams, 2014 [SOC]; Kelly et al., 2011; Moen, Kelly, Tranby, & Huang, 2015 [SOC]; Morgeson & Humphrey, 2006 [I/O]
Social interaction +/-	Reflects the degree to which workers interact with each other during performing their work regarding work related and non-work-related items.	Lee, 2014 [IE]; Lawrence, 2010 [IE]; Perlow and Kelly, 2014 [SOC]
Feedback from others +/-	Reflects the degree to which others in the organization provide information about performance.	Lee, 2014 [IE]; Morgeson & Humphrey, 2006 [I/O]
<b><u>Work Context</u></b>		
Ergonomics +	Reflects the degree to which a job allows correct or appropriate posture and movement.	Morgeson & Humphrey, 2006 [I/O]; Konz, 2007 [IE]
Physical demands +/-	Reflect the level of physical activity or effort required in the job.	Lee, 2014 [IE]; Morgeson & Humphrey, 2006 [I/O]
Aesthetics (i.e., work conditions) +	Reflect the environment (temperature, health hazards, noise, cleanliness, etc.) within which a job is performed.	Lee, 2014 [IE]; Morgeson & Humphrey, 2006 [I/O]
Compensation (often measured as a work outcome) +	All the material gains workers can obtain by performing their work, includes salary, health care, bonus, etc.	Lee, 2014 [IE]; Morgeson & Humphrey, 2006 [I/O]; Konz, 2007 [IE]
Accomplishment and status +	Reflects the degree to which workers feel satisfied towards their contribution to an organization.	Lee, (2014) [IE]
Personal growth +	Degree to which work helps its workers further themselves according to their personal beliefs and values.	Lee, 2014 [IE]

Work outputs are the outcomes of the work design. Table 5 summarizes different outputs from three fields: industrial engineering, industrial and organizational psychology, and sociology. The farthest right column highlights some, but not necessarily all, of the literature sources that utilize that output in their measurements of work.

Table 5: Work Outcomes - The outputs of work design

<b>Outcomes</b>	<b>Definition</b>	Selected Source(s): [IE] = industrial engineering, [I/O] = industrial and organizational psychology, [SOC] = sociology
<b><u>Process outcomes</u></b>		
Productivity (i.e., performance-objective)	The level of production (e.g., parts per shift)	Morgeson & Humphrey, 2006 [I/O]; Konz, 2007 [IE]; Lee, (2014) [IE]
Quality	The number of defects	Konz, 2007 [IE]; Lee, (2014) [IE];
Cost of overhead	The amount of money required to meet the business overhead (e.g., rent, electric, etc.)	Konz, 2007 [IE]; Lee, (2014) [IE];
Profit	The financial gain of the organization	Konz, 2007 [IE]; Lee, (2014) [IE];
<b><u>Behavioral outcomes</u></b>		
Performance - Subjective	An employee's subjective level of performance	Morgeson & Humphrey, 2006 [I/O];
Absenteeism	An employee's absences from work that are not due to illness or injury	Konz, 2007 [IE]; Lee, (2014) [IE]; Morgeson & Humphrey, 2006 [I/O];
Turnover	The rate at which employees leave and are replaced	Konz, 2007 [IE]; Lee, (2014) [IE]; Morgeson & Humphrey, 2006 [I/O];
Attrition	The rate at which employees leave and are <b>not</b> replaced	Konz, (2007) [IE]; Lee, (2014) [IE];
<b><u>Attitudinal outcomes</u></b>		
Satisfaction: job, supervisor, co-worker, compensation, growth, promotion	The subjective satisfaction a worker has over their (individual measurements): job, supervisor, co-worker, compensation, growth, <b>or</b> promotion	Morgeson & Humphrey, 2006 [I/O];
Organizational commitment	An employee's commitment to the organization	Morgeson & Humphrey, 2006 [I/O];
Job involvement	The extent to which employees participates in their work.	Morgeson & Humphrey, 2006 [I/O];
Internal work motivation	The intrinsic motivation an employee feels while working	Morgeson & Humphrey, 2006 [I/O]; Lee, (2014) [IE];

<b><u>Role perceptions</u></b>		
Role ambiguity	Unclear or uncertain about expectations	Morgeson & Humphrey, 2006 [I/O];
Role conflict	Incompatible goals are imposed that cannot be simultaneously met	Morgeson & Humphrey, 2006 [I/O];
<b><u>Well-being</u></b>		
Anxiety	An employee's feeling of worry	Morgeson & Humphrey, 2006 [I/O]; Lee, 2014 [IE]; Perlow and Kelly, 2014 [SOC]
Stress	The extent of pressure or tension resulting from a job	Morgeson & Humphrey, 2006 [I/O]; Lee, (2014) [IE]; Perlow and Kelly, 2014 [SOC]
Burnout/exhaustion	Weariness with work characterized by exhaustion and inefficacy	Morgeson & Humphrey, 2006 [I/O]; Lee, (2014) [IE]; Perlow and Kelly, 2014 [SOC]
Overload	A feeling of excess work that cannot be completed	Morgeson & Humphrey, 2006 [I/O];
Work/family conflict	Incompatible demands between an employee's work life and their home life	Correll et al., 2014 [SOC]; Kelly et al., 2011 [SOC]; Lee, (2014) [IE]; Moen et al., 2015 [SOC]; Perlow and Kelly, 2014 [SOC]
<b><u>Other</u></b>		
Compensation	All the material gains workers can obtain by performing their work, includes salary, health care, bonus, etc.	Humphrey et al., 2007 [I/O]; Konz, 2007 [IE]; Taylor, 1911 [IE]
Suicides	Voluntary employee death	Amagasa et al., 2005; Perlin, 2013;

In order to design *good work* an engineer must consider all inputs and outputs simultaneously. While this may seem daunting at first, a holistic approach to the design of work may be the only way to improve work for employees. A parochial approach, e.g., the

current IE approach (see Section 2.2), may not be capable of achieving *good work*. Figure 11 illustrates a concept map<sup>9</sup> of the topics that one must understand to improve the design of work.

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<sup>9</sup> For information about what a concept map is see the end of Section 2.4.3.

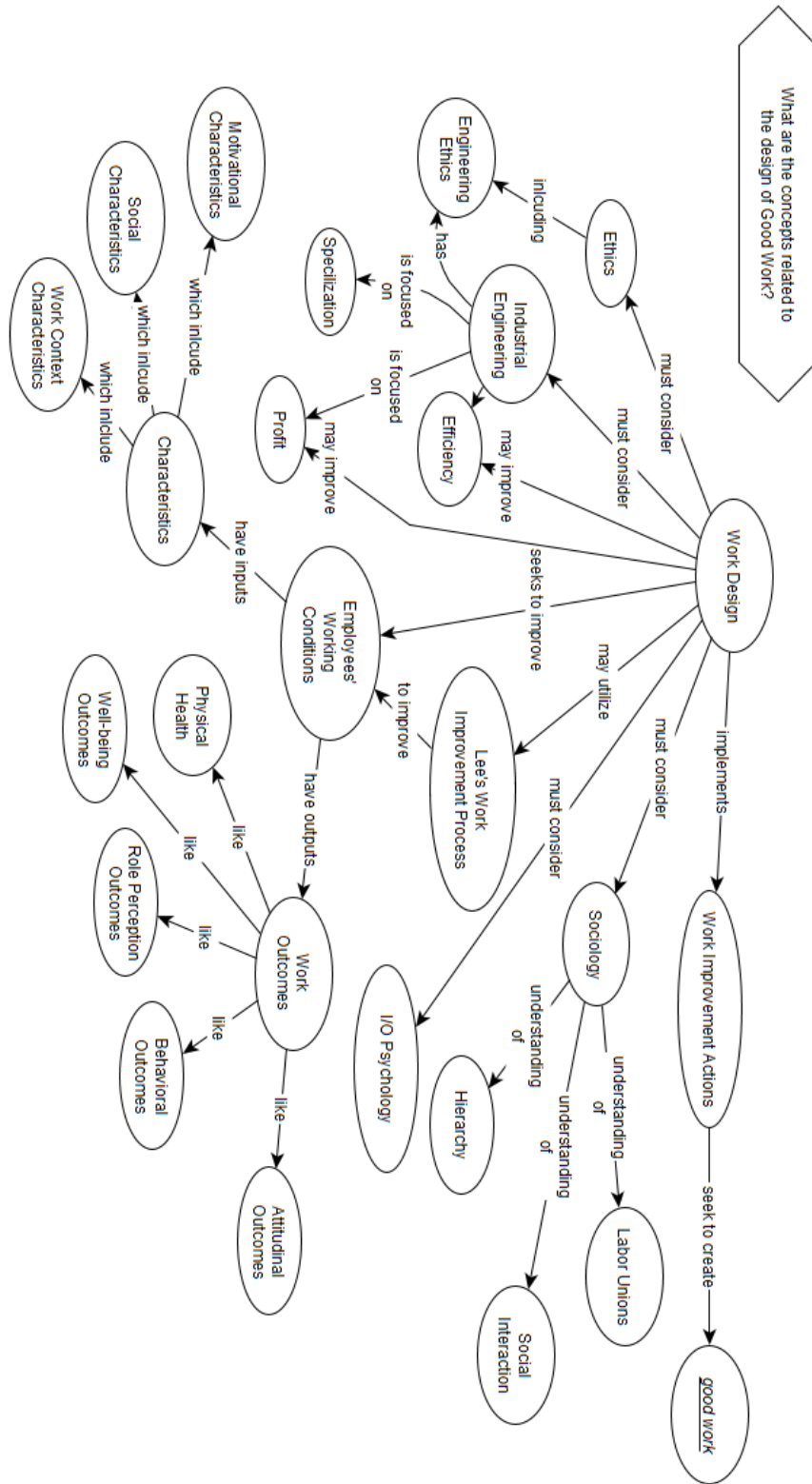


Figure 11: Concepts related to good work.

## 2.10 Gaps in the Literature

While the literature has documented how work design has progressed in different fields, the effects of bad work on workers, and individual organizational Work Improvement Actions, gaps in the literature do exist. Literature has yet to provide a valid and well-tested method to improve work that can be applied to organizations that want to improve work. Lee's method began to bridge this gap, and the proposed research further adds to work design knowledge, specifically, developing and testing a practical method to improve work along Work Characteristics synthesized in Table 4.

Prior literature has shown that there exists a need to improve the goodness of work. Improving work requires a validated, engineered process. Each employee group is different in regards their preference towards work. This process should not impose a one-size-fits-all approach, but instead outline an iterative process that only suggests improvements that are targeted towards a specific employee group's anonymous responses to questionnaire questions. Trying to enhance every characteristic is bound to be costly overkill. Plus, since workers have different preferences, indiscriminately raising one characteristic without data to support the need to enhance said characteristic may not provide any benefit to the design of *good work*. Since employee groups are continuously changing, their preferences towards work are also changing. This requires the process to be a continuous cycle to follow the preferences of workers.

## Chapter 3

### 3 Research Questions and General Research Methodology

#### 3.1 Research Questions and Investigations

The primary research questions guiding the entire scope of this dissertation are as follows:

##### 3.1.1 Work Design Input Questions: Characteristics (inputs) of Work Design

###### [Investigation #1]

RQ 1.1 → What are the most common characteristics of work that workers identify as the **most** important factors of their work, and why?

RQ 1.2 → What are the most common characteristics of work that workers identify as the **least** important factors of their work, and why?

RQ 1.3 → Are there characteristics that are identified by workers to be important characteristics of work, but are currently neglected by the literature investigating characteristics that are defined as attributes of the work design (as opposed to keywords investigated in the literature)?

##### 3.1.2 Work Improvement Action Questions: Examples of *Good Work* design

###### [Investigation #2]

RQ 2.1 → What improvement actions can be identified from industry and academia that can reasonably be expected to improve work along a/many characteristic(s)?

RQ 2.2 → What patterns can be identified from the collection of Work Improvement Actions?

### 3.1.3 Process Validation Questions: Validating Lee's Work Improvement Process

#### **[Investigation #3]**

RQ 3.1 → How reliable, as measured by a Cronbach alpha test for internal consistency (Cronbach, 1951), is the Good Work Questionnaire (GWQ) in measuring the inputs and outcomes of work when compared to the benchmark data presented in a seminal Meta Analytic summary of virtually all investigations about the design of work (Humphrey et al., 2007).

RQ 3.2 → Does Lee's Work Improvement Process decrease the mismatch between what the workers desire and the work they are required to perform?

### 3.1.4 Fundamental Question: A deeper understanding of work preferences

#### **[Investigation #1, 2, & 3]**

RQ 4.1 → What is the context behind, and what are the reasons for, people's preferences about defined Work Characteristics?

## 3.2 Research Methodology

The objectives of this research were to 1) enhance the understanding of Work Characteristics, 2) identify and classify Work Improvement Actions to improve the design of work, 3) validate Lee's Work Improvement Process, and 4) develop a deeper understanding of the relationships between work components. Each of the four objectives result in research questions that require distinct investigations to answer that must be performed in order, as the results from one provide information into the next.

Figure 12, shown below, illustrates the methodological process followed, starting with a survey of the current state of extant literature and ending with three completed



investigations. Investigation #1, a qualitative study, was designed to answer the first set of Research Questions regarding the characteristics, or inputs, of work design. The characteristics identified in Investigation #1 were used in the subsequent two investigations. Investigation #2 utilized a bibliometric analysis on documented Work Improvement Actions (WIAs) to answer the second set of Research Questions. The database of WIAs were then used in Investigation #3.

Investigation #3, being a longitudinal, mixed-methods investigation and significantly larger in scope, was designed to answer the third set of Research Questions. Investigations #1 through #3 all contributed towards answering the fourth Research Question. Investigation #3a describes the application of Lee's Work Improvement Process at three organizations. Investigation #3b describes statistical analyses used to develop a deeper understanding of the Good Work Questionnaire's reliability to assess the design of work, and a deeper understanding of the relationships between Work Characteristics, work outcomes, and organizational culture.

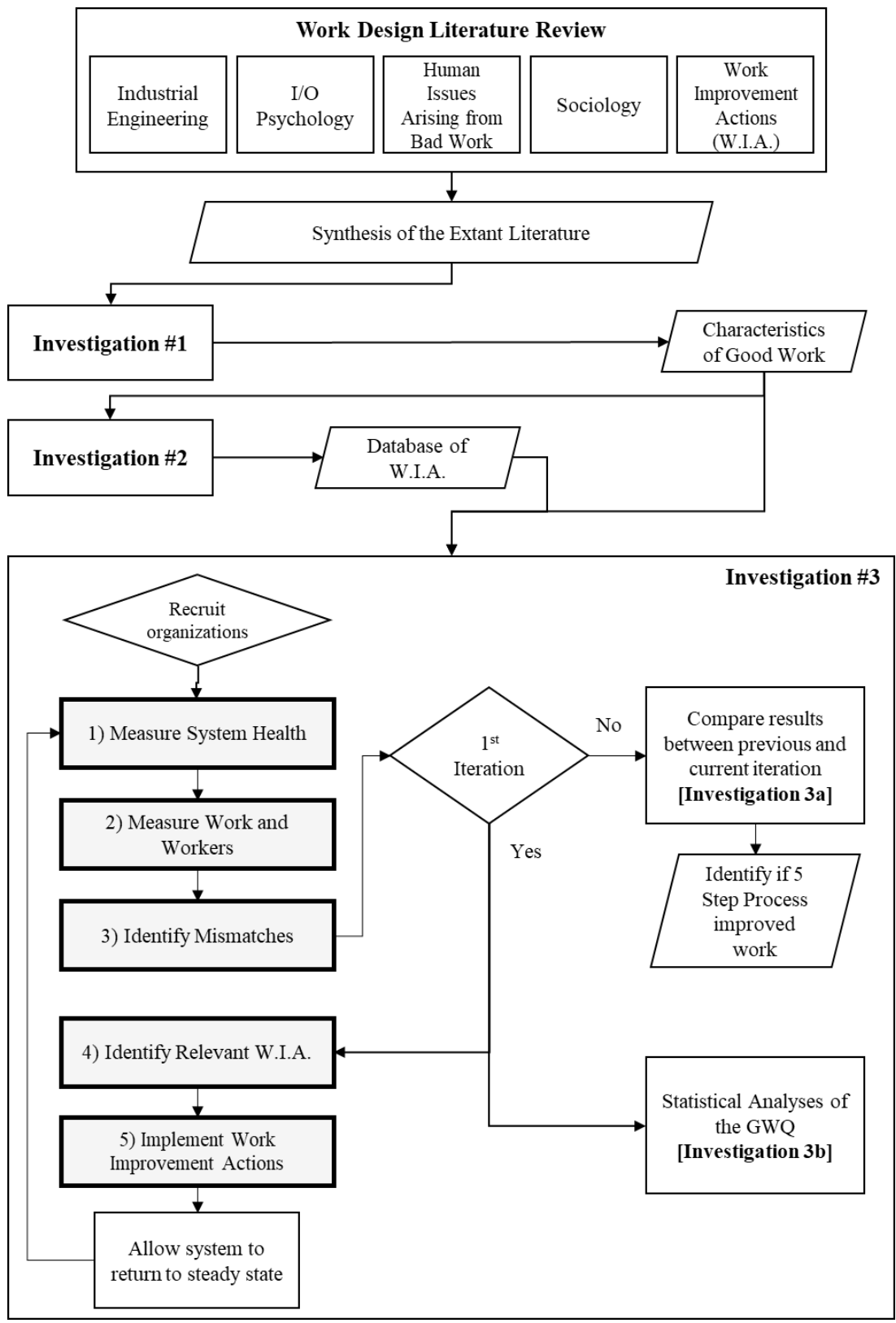


Figure 12: Methodological process

## Chapter 4

### 4 Investigation #1: Qualitative Analysis of the characteristics of good work

#### Abstract<sup>10</sup>

Managers and work design engineers seek to improve productivity while maintaining sustainable and viable organizations. This study provides new information for such practitioners to do that while informing theoretical reflections on what constitutes “good work”. Using an inductive qualitative approach, we describe results of a study of 30 in-depth interviews with full-time workers in the Western United States representing a wide range of occupations. We allow workers to generate their concepts about what constitutes good work and compare this with their reactions to prompts derived from existing research. The three most common job characteristics that workers say are important are (1) positive interactions with people, (2) work that provides social value, and (3) control over work. This study adds to extant quantitative studies of work design characteristics because it provides workers’ spontaneous yet coherent perspectives and demonstrates where those agree or not with prior findings. For example, our study reveals that workers strongly distinguish between two kinds of feedback at work: feedback from impersonal systems (e.g., equipment displays) and feedback from managers and other employees. Our study also finds newly emerging

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<sup>10</sup> This study will be published in late June 2020 in *Management Revue – Socio-Economic Studies* (Hatrup et al., 2020). The Chapter herein includes additional analysis that was not included in the manuscript due to length requirements.

characteristics that have yet to be adequately addressed in assessing “good work”: effective and ethical management, job stability, and mutual trust.

Keywords: work design, job characteristics, Work Characteristics, good work, meaningful work (JEL: J24, J28, J81)

#### 4.1 Introduction

“Those three things - autonomy, complexity and a connection between effort and reward - are, most people agree, the three qualities that work has to have if it is to be satisfying.

It is not how much money we make that ultimately makes us happy between nine and five. It's whether our work fulfills us.”

— Malcolm Gladwell, *Outliers: The Story of Success*, (2008, p. 149)

Assertions like Gladwell’s about what workers want often come from anecdotal observation, from experts’ opinions, or from expressed grievances in contract disputes. Some aspects of work may be acceptable but not preferred, and others may be essential yet never given voice. What characteristics should managers, engineers, industrial and organizational psychologists, and the like consider to effectively design and redesign work that is meaningful, engaging, and promotes the well-being of employees?

With potentially invalid measures or naïve assumptions about what workers regard as elements of *good work*, it is impossible to design or redesign work that improves worker well-being. For example, consider the Work Characteristics of demand and autonomy: employees who have high demand (in terms of productivity expectations) and low autonomy (in terms of freedom and control to make decisions regarding their work) are at risk of psychological strain and physical illness (job examples include electronic

assembler, waitress/waiter, garment stitcher). Employees' mental and physical health would improve with redesign of these jobs to have either less demand or more autonomy. But the effects of combined job characteristics are not always predictable. For example, interestingly, employees who have high demand and high autonomy are not at risk for the same negative health outcomes; instead these employees demonstrate a positive set of outcomes, such as expressing that they learn and grow through their employment (job examples include electrical engineer, professor, and physician) (Karasek & Theorell, 1990). These sorts of findings suggest that there is good reason to talk with employees about such complexities and about what they value most in their work.

The purpose of this investigation was to clarify and validate a set of Work Characteristics that can be used by researchers and practitioners intending to improve the sustainability of work. This pursuit addresses three related research questions. The first is *“what do employee’s say are the most important characteristics of their work, and why?”* The second question is, *“how do employees perceive the importance of job characteristics that researchers say are important, and why?”* Finally, *“what are the similarities and differences between what employee’s value and what researchers have said they value in “good work?”*

## 4.2 Methodology

### 4.2.1 Research Design

In order to ascertain the most common characteristics of work that workers' identify as the most (RQ 1.1) and least (RQ 1.2) important factors of their work, identify previously unknown Work Characteristics that workers find to be important (RQ 1.3), and understand

the employment context of discussed Work Characteristics (RQ 4.1), 30 semi-structured, in-depth interviews with full-time workers were conducted in 2018. This investigation received Institutional Review Board approval under the ‘Exempt-Category 2’. The interviews were guided by an interview plan, which can be seen in Appendix B. The interviews contained research questions but were unstructured enough to facilitate the discovery of new ideas and themes regarding good work.

While others had called for more qualitative studies in understanding work design (Parker, 2014), a qualitative analysis was used for two more fundamental reasons. First, qualitative analysis lends itself to developing a deeper understanding of complexity in human relationships and, in this case, complexity in humans’ relationship to their work (Creswell, 2013; Strauss & Corbin, 1990). By better describing workers’ views about their relationship to their work, we are better positioned to see how valid are the characteristics heretofore suggested as important in work design theory. Second, and related to the first reason, to inductively examine unprompted comments from workers about what characteristics of work are important to them and why, a qualitative approach permits great opportunity to explore, probe, and understand.

#### 4.2.2 Data Collection

The interviews, occurring at the participant’s workplace or in a public space where she/he felt comfortable, lasted on average 75 minutes and had three connected sections: an open-ended section, a prompted section, and a comparing and contrasting section all of which were focused on discussing characteristics, or factors, of work. The open-ended section asked participants to suggest what they considered to be the most important characteristics, or factors, of *good work*, and which they considered to be the least

important characteristics, in two distinct questions. Then the prompted section presented each participant with a set of Lee’s 12 Work Characteristics and asked the participant to choose from the set and explain what he or she considered the top three most important characteristics and three least important characteristics were. The characteristics were presented on individual 3” by 5” note cards to allow the participant a chance to view all characteristics simultaneously and neatly. The third section asked interviewees to compare and contrast the characteristics that developed from the open-ended section with the characteristics presented on note cards.

A stratified sample of workers was interviewed, with recruitment strata guided by the United States’ Bureau of Labor Statistics’ (BLS) Occupation Profiles (United States Department of Labor, 2018). Stratifying participants via Occupational Profiles was performed for two reasons. First, there was an explicit effort to interview an occupationally diverse sample of workers with considerable work experience. In addition, utilizing occupational profiles as the basis for classifying workers has been used in other studies concerning Work Characteristics and job satisfaction (e.g. (Morgeson & Humphrey, 2006; Raymark et al., 1997)). The occupational stratification fulfillment can be seen in Table 6.

*Table 6: Occupational Stratification Fulfillment (Organized by most common occupation in Oregon). The “# in Oregon” column refers to the number of people working in the state of Oregon in that profile and “n” refers to the number of people interviewed in that profile.*

<b>Occupational Profile</b>	<b># in Oregon</b>	<b>n</b>
43-0000 Office and Administrative Support Occupations	265,770	3
41-0000 Sales and Related Occupations	181,760	2
35-0000 Food Preparation and Serving Related Occupations	170,710	2
53-0000 Transportation and Material Moving Occupations	119,650	1
51-0000 Production Occupations	113,230	1
25-0000 Education, Training, and Library Occupations	103,930	2
29-0000 Healthcare Practitioners and Technical Occupations	98,610	2

<b>Occupational Profile</b>	<b># in Oregon</b>	<b>n</b>
13-0000 Business and Financial Operations Occupations	83,790	0
11-0000 Management Occupations	110,970	2
47-0000 Construction and Extraction Occupations	72,580	1
49-0000 Installation, Maintenance, and Repair Occupations	61,940	3
39-0000 Personal Care and Service Occupations	63,360	0
37-0000 Building and Grounds Cleaning and Maintenance Occupations	55,400	1
15-0000 Computer and Mathematical Occupations	50,900	1
31-0000 Healthcare Support Occupations	48,130	1
33-0000 Protective Service Occupations	32,740	1
17-0000 Architecture and Engineering Occupations	40,820	1
21-0000 Community and Social Service Occupations	35,930	1
27-0000 Arts, Design, Entertainment, Sports, and Media Occupations	27,780	2
19-0000 Life, Physical, and Social Science Occupations	20,750	1
23-0000 Legal Occupations	12,030	0
45-0000 Farming, Fishing, and Forestry Occupations	14,150	2

Participants were recruited via flyers and “researcher on the street technique” and offered a ten-dollar bill as compensation for their time. All participants were employed in the state of Oregon, on the Pacific coast of the United States. The industrial base is a mix of agriculture and high-tech, with a declining extractive sector (forestry, mining, fishing, etc.). There is little reason to believe that the respondents in Oregon would differ significantly from those in other states regarding favored Work Characteristics. This investigation does not intend to generalize numerically to all workers, but to sensitize researchers to emerging likely important Work Characteristics and to demonstrate the importance of undertaking additional examinations such as this.

All participants were full-time workers over the age of 18, and no university students were interviewed. This restriction was placed on participants to target people who spend a majority of their week working at an organization. It was anticipated that workers



spending the majority of the work week in their role as workers would have more stable and considered opinions about Work Characteristics as compared to people with less labor force attachment. The mean years of working experience was 26.6, with men and women equally represented. Half of the respondents were between 18 and 45 years old, and the other half 46 years old and older. Summarized participant demographics can be seen in Table 7.

*Table 7: Investigation #1 Participant Demographics*

Age	n	Years of working experience		Gender	n
		average	St. dev		
18 to 35	8	26.60	12.89	F	14
36 to 45	7	27	48	M	16
46 to 55	9				
56 to 65	4				
65+	2				

#### 4.2.3 Data Analysis

During each interview the author wrote detailed notes about the interviewee's responses by hand. Writing notes by hand, instead of typing them on a computer, was chosen to facilitate a more personal conversation, particularly for employees who may find the typing a distraction to the dialog. The author occasionally asked participants to repeat statements or pause so he could write them verbatim. In addition, the author read back written summarizations of longer dialogs to confirm with the participant that was their intent.

Immediately after each in-person interview, the author wrote thorough interview memos, which were then content analyzed. Research memos (i.e., any writings, ranging

from a brief marginal comment to a full-fledged analytic essay, that a researcher does related to the research other than actual field notes) were also utilized as memos have been identified as a common way of getting ideas down on paper throughout the research process. Moreover, memos help researchers think and understand a topic (i.e., think on paper) (Creswell, 2013; J. A. Maxwell, 2013). All handwritten notes and memos taken during the interviews were typed and entered into a Computer Assisted Qualitative Data Analysis program directly after each interview: the program selected was NVivo Pro 11. All interview notes and author memos were coded using a Grounded Theory approach (Creswell, 2013; Strauss & Corbin, 1990) to generate a theory, or context behind, workers' preferred Work Characteristics.

Themes, or patterns, were used as the basis for coding. Previously identified Work Characteristics and other keywords commonly found in the relevant literature (e.g. motivation (Maslow, 1970)) served as the initial codes. Secondary coding methods, including Axial coding where concepts and themes were related to one another (Saldana, 2009; Strauss & Corbin, 1990), was then conducted. Additionally, the second cycle coding included magnitude coding to establish if that code, or characteristic, helps a worker perform their work [+], or that code does not help a worker perform their work [-] (Saldana, 2009). For example, statements that described managers who helped remove roadblocks so the participant could perform their work more effectively were coded with a [+], while statements that described managers who did the opposite were coded with a [-]. The methodological approach for Investigation #1 can be seen in Figure 13.

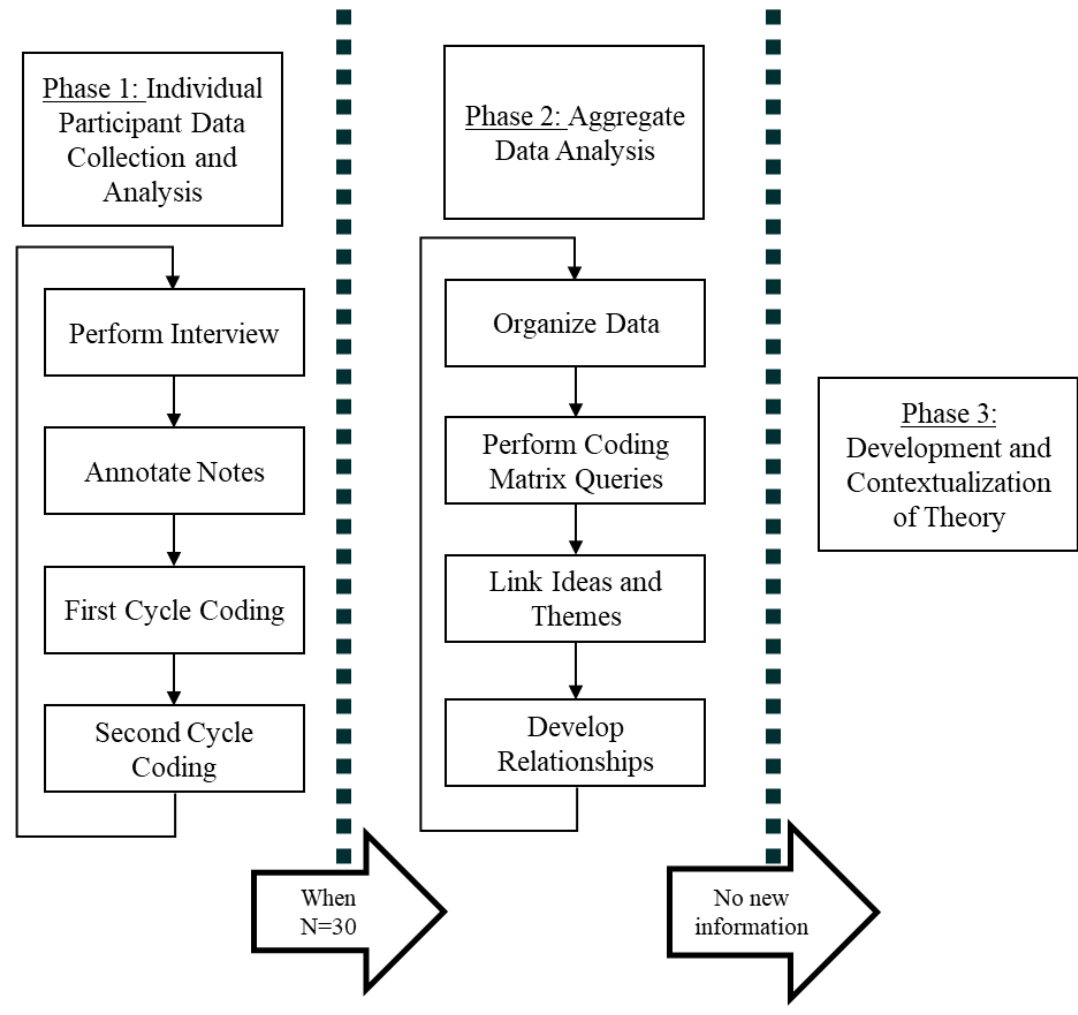


Figure 13: Investigation #1 Methodological Process

### 4.3 Results

The results from the qualitative research described here reflect participants' experiences with characteristics of their preferred work and their reasons for these preferences. First discussed is what employees offered (without prompt) as most and least important characteristics of work. Then discussed is how participants responded to prompts based on earlier research. Then, a comparison is made between these two sets of responses.

#### 4.3.1 Employee generated most and least important characteristics of *good work*

##### 4.3.1.1 *Most commonly mentioned important characteristics of work*

Interviewees were asked the open-ended question, “What characteristics, or factors, or work are most important to you?” Themes regarding the Work Characteristics considered most important by participants are listed from most commonly mentioned to least common below. All theme definitions are rooted in phrases used by the participants themselves, making the definition match directly with their answers to the interview questions. Context behind the importance of the characteristics are then summarized and when possible related to supporting literature.

All the themes identified throughout the open-ended section of the interview are supported with prior studies investigating peoples’ experiences at work. In said studies, some themes are referred to as a work characteristic, while other themes were investigated but were not directly defined as a work characteristic. A small sample of studies that investigated each theme can be seen in Table 8. The term ‘constructs’ has been used to encapsulate both defined Work Characteristics and important themes investigated in referenced studies.

**Positive interactions with people:** The most commonly identified characteristic that employees identified as important focused on communication and relationships with other workers. Effective communication, kindness, and/or teamwork comprise this theme. Workers want to give and receive respect and kindness in their interactions with others, while working as part of a team. Moreover, workers who spoke to communication universally stated that effective communication allowed

them to do their job better. As one protective services employee said, *“Being clear, honest and open is very important. Having a job that allows and encourages open communication is one part of good work.”* For this Protective Service worker, knowing their interactions with people, both the public and other co-workers, are honest and forthright is crucial to what she/he sees as the most critical task of their work: keeping the public safe. Conversely, participants disliked, felt stressed, or hated a job where there was tension among co-workers. Some participants shared they left their old job due to a lack of respect and kindness, even if it resulted in a pay decrease.

**Valuable work:** Almost half of the interviews indicated that it is important to them that their work benefits society, that a high-quality product or service is produced by their work, that the work be rewarding to themselves and others, and/or that it be worthwhile. Workers want knowledge of how their work is helpful towards someone; it is this knowledge that provides motivation for them to perform the work to the best of their ability. A farmer indicated, *“I started to farm in order to help remove the injustice of the world; I saw food as the barrier between people. I need to do something with my time that is valuable, and I see growing food as very valuable.”* Such claims suggest that participants obtain a great sense of joy and fulfillment by providing value to others and often spoke to a self-attributed personality trait of a giving person and seeing their customer’s excitement and positive reaction provides great enjoyment.

Consistent with this theme, workers often felt obligated by their desire to provide value to others so much, so they needed their performance/outcomes to be of high quality. A worker in a healthcare occupation said, *“I could not work for someone, or someplace, with poor quality. Ethically I cannot do this, as we are providing a health service to people.”* As someone who seeks healthy outcomes for their patients, this healthcare worker has a clear line in the sand when it comes the quality of their work and their unwillingness to compromise.

Of interest is the fact that the first two, most commonly mentioned Work Characteristics for workers have nothing to do with Tayloristic job design, but with qualities that are social and ethical in nature. However, the next three are consistent with more materialistic sources of work satisfaction, consistent with Taylor’s interests in both motivating employees with compensation, but also their own sense of ‘prosperity’ (career growth) and even their own concerns about being controlled by their work.

**Control over work:** Almost half of the workers indicated that they want to have autonomy, flexibility, freedom, independence, responsibility, control, and/or decision making over their work. Employees indicated that autonomy often makes them feel needed at work. In addition, many studies have shown autonomy can help workers better manage their life outside of work (Karasek & Theorell, 1990; Lyness et al., 2012; Saragih, 2011) [e.g. taking a longer lunch to run an errand and staying longer to finish the day’s work] and can have positive effects on both learning related outcomes and strain (Holman & Wall, 2002). Autonomy was particularly important to

participants who identified themselves to be an expert at their job. For example, a building and maintenance worker asserted, *“I need to be able to make the decisions regarding my expertise at work; I have been doing this a long time and I know what needs to be done”* In addition, participants use an increase in autonomy at work as an indicator of their success, it lets them know they are progressing in their career. Others spoke to needing high autonomy due to a personality trait of not enjoying being told what to do.

**Opportunities for career growth:** Workers want to have opportunities for promotion, advancement, and/or progress available to them. They do not want to feel stagnant. Often workers perceive opportunities for career growth as a motivating factor to do their work well, which promotes a higher quality of work. For example, an office and administrative support worker stated, *“If I know there is nowhere to go, no room for growth within the company, or growth for me to obtain a higher position outside of this company, I do not enjoy working there”*.

In addition, participants spoke to a feeling of commitment between them and their employer upon receiving career advancement opportunities, providing further evidence for the negative relationship between career growth and turnover intentions (Nouri & Parker, 2013): employers should facilitate and pay attention to providing employees opportunities to advance if they intend to retain the employee over time.

**Money and benefits:** The amount of money (salary or hourly pay), the quality of health insurance, and/or paid time off comprises this theme. This

was often framed by a participant as necessary for the person to provide for her/his family, rather than for their own luxuries. When paid well, workers often want to rise to the challenges of the job and feel motivated; conversely, underpaid workers feel taken advantage of. An illustration of the importance of compensation can be found in the words of an installation, maintenance, and repair worker, “*A steady paycheck and good benefits for loved ones is very important. My wife would not be here today if we did not have the good [medical] insurance we have from this job. My job is the bedrock for our lives, and I can provide for us with the job, this is very important*”. Others spoke candidly about compensation being the main reason for putting the time and effort into the job, pointing out the obvious, that no one in the organization would show up if he/she were not paid.

The remaining valued Work Characteristics cover a range of topics, ranging again from ethics to personal development to social concerns of mutual trust to personal concerns of work-life balance to material concerns of job security. We make no claims here about the relative weight of these other than to point out that non-material characteristics regularly appear in workers expressed preferences for valued characteristics of their work.

**Effective and ethical management:** Workers want to be managed effectively and ethically. Participants described effective management as people who are respectful, communicate well, are committed to the prosperity of employees, allow/encourage for suggestions of improvement, and/or are well organized. Participants often equated bad work with bad managers and *good work* with good managers, providing evidence of how



impactful the people who manage others are. For example, a production worker stated, *“It is important for me to work for a company that effectively manages the staff. This management would take into consideration the personality of the workers and keep them on the same page, as in striving for the same goals and productivity of outcomes”*.

Ethical managers are described as people who do not cheat customers, are considerate towards the employees’ individual differences and problems, and/or promote competent workers, as opposed to promoting their friends and/or family. A design, entertainment, sports, and media worker said, *“If I knew that they [managers] are cheating, then I do not want to work for them. Cheating customers is not okay. I need to have responsible and ethical managers for me to consider the work to be good”*.

**Overcoming challenges:** Workers want to be challenged at work. Solving and overcoming challenges through their efforts, either individually or as a team, has a positive effect on their attitude towards work. Participants felt engaged and had a sense of accomplishment at work by encountering a challenge they had the skills and abilities to overcome. However, overly challenging work can be seen as overwhelming. A manager stated, *“I have pride and a feeling of accomplishment in getting the hard work done. The work is technically challenging, and a well-respected profession. Solving mistakes and problems is great. Collaboratively solving problems is great”*.

Interestingly, participants spoke to a relationship between challenging tasks and compensation: they were more willing to subject themselves to

challenging demands if the compensation they received matched the challenge, stating, “*I would see the work as a hindrance without the money and benefits*”. This finding relates to prior research that established a relationship between demands at work and engagement mediated by the type of demand: hindrance or challenge. Specifically, demands that employees perceive as challenging increase their engagement at work while demands employees perceive as hindrances decrease their engagement at work (Crawford et al., 2010). Money may provide a perception shift for some employees to see demands as challenging and not hindering.

**Mutual trust:** Workers want to feel trusted by management to do their job; they also want to be able to trust their co-workers. Employees often spoke to how awkward social situations/interactions at work can be without trust in one another. In addition, people with dangerous jobs described trust as particularly important as often times they need to trust their life to their co-workers’ competence. For example, a maintenance, and repair occupation stated, “*I need to have a high degree of trust with whom I work with. Trust is a big deal, as our safety relies on it, and safety is critical. I need to trust to be safe*”.

**Variety:** Workers want a diversity of tasks to perform at work; most do not want to perform the same tasks day in and out, although some do. Some participants spoke to a feeling of boredom and/or stagnation at work without variety, for example a professional driver stated, “*I do not like driving the same route. I need to see new sights and have a change in my drive*”.

**Pleasing atmosphere/environment:** Workers want to work in a clean well-organized environment. They want the machines to function properly and be well-maintained. In addition, they often describe working with esthetically pleasing materials as providing a sense of pleasure to their work (e.g., a woodcrafts person using quality wood or a jewelry maker using quality metals). Participants spoke about the positive affect a pleasant atmosphere has on them. A high-end store sales professional stated, *“I like working with beautiful well-crafted materials and tools”*.

**Recognition:** Workers want to be recognized, appreciated, and/or have a sense of affirmation for their efforts. This provides workers confirmation that their efforts are welcomed and appreciated and allows them to grow and perform their job with more confidence. Participants spoke to how lost they felt without recognition/affirmation of their efforts at work. For instance, an arts, design, entertainment, sports, and media occupation worker said, *“I need to receive affirmation from my peers and supervisors that I am doing well. I need to know that I am not totally messing up. Knowing how I am doing helps me learn and improve and allows me to know what others think of my work”*.

**Job security:** Workers want to have a job that is reliable and stable. They want to know their job is not at risk of termination due to factors outside of their control. Participants often described this characteristic as one of the primary reasons they chose their current job, e.g., the monetary compensation may be perceived as low, but the security of knowing they

will have a job tomorrow supersedes, or at least compensates for the low pay. For example, an administrative support worker said, *“I enjoy the job security, knowing that I am not going to lose my job is very important. My wages may not be that great, but having job security makes up for that”*.

In addition, some workers worry about the job security changing due to technology/automation advancement, as was the case with a transportation and material moving occupation worker who was worried automated vehicles may replace her/his job one day, *“[high job security] used to be the case with driving; who knows what it will look like in 30 years.”*

**Learning opportunities:** Workers want the opportunity to learn new things at work that advance their knowledge of the industry and make them more valuable to the organization and/or to society. Some participants spoke to the ability to help their customers more effectively when they learn new skills, which aided in continuing to advance the value they see in their work. Other participants spoke to the incentive/motivation to keep working that is enhanced when they are provided with opportunities to learn at work, as illustrated by the words of an installation, maintenance, and repair worker, *“I need to have the opportunity to continue to learn and to improve the work and myself. Otherwise, I cannot think about growth and there is not an incentive to keep working”*.

**Creativity:** Creativity at work could be in terms of finding solutions to problems, designing a product or service, and/or building a product. Participants spoke to the engagement they feel with their creative tasks at

work, and the disengagement with tasks they do not feel are creative. A professional educator stated, “*Having some creative outlet at work is important to me. Most of the time I do have some kind of creative outlet; I enjoy this. Creating an organizing method for tools, the right tool layout is very creative in nature. Designing a system that stays organized as it is used is creative. Creating learning activities that are challenging and not over the students’ heads is fun*”.

**Work-life balance:** Workers need to be able to balance their lives at work and outside of work, to strive to create a balance between working and spending time with their family, friends, and hobbies. Participants spoke to the importance of flexibility at work so they can manage their responsibilities outside of work. For example, a life, physical, and social science worker stated, “*A job that provides me the ability to take a vacation and enjoy my life outside of work is very important*”.

*Table 8: Relating participants’ open-ended characteristics with extant constructs (i.e., themes investigated in prior research. Some investigations referred to the construct as a characteristic and others that are not).*

<b>Open-ended Characteristic</b>	<b>Sample of Extant Constructs (bolded terms are defined as a work characteristic by the authors)</b>
Positive interactions with people	<ul style="list-style-type: none"> <li>• <b>Required interaction</b> (Turner &amp; Lawrence, 1965)</li> <li>• <b>Optional interaction</b> (Turner &amp; Lawrence, 1965)</li> <li>• <b>Social Support</b> (Morgeson &amp; Humphrey, 2006)</li> <li>• <b>Interactions outside organization</b> (Morgeson &amp; Humphrey, 2006)</li> </ul>
Valuable work	<ul style="list-style-type: none"> <li>• <b>Task significance</b> (Morgeson &amp; Humphrey, 2006)</li> <li>• Work that is important (Kalleberg &amp; Marsden, 2013)</li> </ul>
Control over work	<ul style="list-style-type: none"> <li>• <b>Autonomy</b> [Schedule, Decision, Work methods] (Morgeson &amp; Humphrey, 2006)</li> <li>• <b>Autonomy</b> (Turner &amp; Lawrence, 1965)</li> </ul>

<b>Open-ended Characteristic</b>	<b>Sample of Extant Constructs (bolded terms are defined as a work characteristic by the authors)</b>
	<ul style="list-style-type: none"> <li>• Control (Holman &amp; Wall, 2002; Karasek &amp; Theorell, 1990)</li> </ul>
Opportunities for career growth	<ul style="list-style-type: none"> <li>• Esteem (Maslow, 1943, 1970)</li> <li>• Career prospects (Drobnič et al., 2010)</li> <li>• Opportunities for career growth (Kalleberg &amp; Marsden, 2013; Munoz de Bustillo et al., 2011; Nouri &amp; Parker, 2013)</li> </ul>
Money and benefits	<ul style="list-style-type: none"> <li>• Safety needs (Maslow, 1943)</li> <li>• Compensation/pay (Taylor, 1911)</li> <li>• High income (Kalleberg &amp; Marsden, 2013)</li> </ul>
Effective and ethical management	<ul style="list-style-type: none"> <li>• Effective management (Stockard &amp; Lehman, 2004)</li> <li>• Ethical management (Valentine et al., 2011)</li> </ul>
Overcoming challenges	<ul style="list-style-type: none"> <li>• <b>Job complexity</b> (Morgeson &amp; Humphrey, 2006)</li> <li>• <b>Problem solving</b> (Morgeson &amp; Humphrey, 2006)</li> </ul>
Mutual trust	<ul style="list-style-type: none"> <li>• Trust in working relationships (Lewicki &amp; Bunker, 1996; Lewicki &amp; Wiethoff, 2000)</li> </ul>
Variety	<ul style="list-style-type: none"> <li>• <b>Variety</b> (Hackman &amp; Lawler, 1971; Morgeson &amp; Humphrey, 2006; Turner &amp; Lawrence, 1965)</li> </ul>
Pleasing Atmosphere/environment	<ul style="list-style-type: none"> <li>• <b>Work conditions</b> (Morgeson &amp; Humphrey, 2006)</li> </ul>
Recognition	<ul style="list-style-type: none"> <li>• <b>Feedback from others</b> (Morgeson &amp; Humphrey, 2006)</li> </ul>
Job security	<ul style="list-style-type: none"> <li>• Job security (Böckerman et al., 2011; Kalleberg &amp; Marsden, 2013; Munoz de Bustillo et al., 2011; Origo &amp; Pagani, 2009)</li> </ul>
Learning opportunities	<ul style="list-style-type: none"> <li>• Learning opportunities (Rau, 2006; Van der Sluis &amp; Poell, 2003)</li> </ul>
Creativity	<ul style="list-style-type: none"> <li>• Creativity at work (Madrid &amp; Patterson, 2016; Tavares, 2016)</li> </ul>
Work-life balance	<ul style="list-style-type: none"> <li>• Work-life balance (Chan et al., 2016; Haar et al., 2014; Karasek &amp; Theorell, 1990; B. G. Maxwell et al., 2008; Morrison &amp; Thurnell, 2012; Surlenty et al., 2014)</li> <li>• Short working hours/ free time (Kalleberg &amp; Marsden, 2013)</li> </ul>

4.3.1.2 *Most commonly mentioned characteristics workers consider  
unimportant*

While workers may select their most valued Work Characteristics, it is possible that some Work Characteristics assumed by researchers to be important are not important to workers themselves. Intriguingly, and perhaps problematically, half of participants responded initially to the question of what the least important Work Characteristics by were stating it was a difficult question to answer. They had not thought much about what characteristics were least important to them prior to the interview, and often deferred to characteristics that caused them stress, as opposed to characteristics that were least important, a small but potentially important distinction. In other words, the participants substituted an easier question, “what irritates you about work” instead of answering what is least important -- a common cognitive bias (Kahneman, 2013).

Nonetheless, when workers did answer the question (even if they ignored its intent) they selected the following Work Characteristics. Thus, we caution that at least the first and third of these Characteristics may not be things workers find least important, but in fact might be additional Characteristics they do find important because in the absence of them, they are irritated or dissatisfied by their work.

**Poorly Functioning Management:** Workers who referred to this characteristic feel hindered by poorly functioning management, and often find their management to be the greatest source of discomfort at work. This includes micromanaging, a lack of follow-through on employee suggestions, favoring non-competent workers for promotion, and/or being disrespectful. In essence, it is the opposite of Effective and Ethical

Management described previously. For example, a building and grounds maintenance worker stated, *“I am constantly being shut down on my improvement suggestions, yet they [managers] continue to ask for them and this frustrates me”*.

**Titles:** Some workers do not care about their job titles, notoriety, and/or how others perceive their job’s prestige. For example, an education, training, and library worker said, *“I am skeptical of titles; they do not mean anything really”*.

**Hindrances:** Workers dislike excessive hindrances or perceived bureaucracy at work. This includes unnecessary and/or unused paperwork, or other tasks the workers deem as irrelevant, similar to hindrance demands, or demands seen as hindering work completion (Crawford et al., 2010). For example, healthcare professional said, *“I do not like doing tasks which are outside my job. Things that are bureaucratic in nature, like scheduling. I do not like to do things that are not in my job description. People with other training can do these things and allow me to spend time with patients”*.

#### 4.3.2 Employee responses to Lee’s characteristics

Interviewees were shown 12 Work Characteristics identified in Lee’s earlier research, presented on note cards and asked, “Out of the described list, what are the 3 most important characteristics in determining whether you would consider a job good? Why?” Then they were asked, “Out of the characteristics left, which three are least important in determining whether you would consider a job good? Why?”



Out of Lee's (2014) characteristics, the three most common important characteristics identified by interviewees were personal growth, autonomy, and value. Most of the participants would consider a job good if they were able to improve themselves by making decisions over their work and knew that their work was benefiting others in some way.

Table 9 provides a summary.

*Table 9: Overview of the Most Important Characteristics (Lee's). "n" refers to the number of participants who rated the characteristic in their most important characteristic in determining if their work is good work.*

<b>Characteristics</b>	<b>n</b>
Personal Growth	15
Autonomy	15
Value	14
Technical Growth	11
Compensation	10
Social Interaction	8
Variety	7
Accomplishment and Status	6
Aesthetics	6
Safety	4
Feedback	3
Demand	2

**Personal Growth:** Those who rated personal growth as important spoke to how they want to be better off as a person because of their work. Due to the large amount of time the participant spends working, he/she thought it was necessary to grow from the work and that growth motivates them to continue to work. As one computer and mathematical occupation worker stated, *"I always am trying to grow as a person, and when that happens at*

*work, I am more motivated to go back to work. I am not stunted in my growth, this is important”.*

**Autonomy:** Many of the interviewees rated autonomy as important because they do not like to be told what to do. They find work easier to perform if they have a say over their work, and the responsibility provides motivation for them to work hard as they are personally invested in the outcomes of their own decisions. Others spoke to their expertise and the experience they have regarding the specifics of the work, stating that they are the expert and were hired to make the technical decisions that keep the operation running and/or the customers returning. A healthcare worker said, *“Having freedom over my work and time is important and makes a big difference for me. The autonomy allows me to be creative and not stuck in a rut. It avoids stagnation. Autonomy gives me creativity by allowing me the freedom to make choices and inspires me to think outside the box. The ability to use my own unique perspective is important; autonomy allows me to do this... Seems like I do not perform well without personal responsibility”.*

**Value:** Interviewees who described value as important said they want their work to be beneficial or worthwhile towards something, or more often, someone. They spoke to the meaning they derive from their work due to knowing how it benefits others. Regardless of whether the worker was a healthcare provider or a long-haul truck driver she/he identified the value of their efforts towards society and held the knowledge of their

contributions close to their self-worth at work. The participants discussed their work's perceived value as a motivating factor that keeps them coming back to work. A professional driver elaborated, "*It may not seem like it, but [truck] drivers are the reason everyone has food and stuff. We deliver the things that people need and want, whether they know it or not, I know driving provides a big value to people and society. I like that feeling of knowing my work positively affects other people*".

**Technical Growth:** Learning new work-related skills, knowledge, and abilities provides workers with the skills needed to enhance their competency at work. Often workers spoke to learning opportunities at work as proof that their employer cares about them as employees. Conversely, workers spoke to the sense of stagnation from not having learning opportunities. Learning at work kept many of the interviewees interested in their job throughout their career. A sales associate worker with 48 years of experience in the jewelry industry said, "*It is great to learn. Keeping up with the new gems and testing equipment is very fulfilling. I know I always have something to learn. This keeps me interested.*"

**Compensation:** The compensation received for work is one of the fundamental reasons people work, and many participants directly spoke to this motivation in terms of the money and the benefits they received from their job. Many stated that they would feel taken advantage of if they were not paid fairly for their efforts. Participants spoke to how their

compensation took care of their family and that motivated them to find happiness and satisfaction from their work. A food preparation and serving related occupation worker explained, *“I have many bills that need to be paid, and I work to pay them. This is an essential part of the job and motivation to go to work. This makes my efforts worth it. It gives me a better perspective over my work, like a tangible positive. Yes, my feet hurt, but I got a nice tub in a warm house to soak them in and a nice house to share with my family.”*

**Social Interaction:** Virtually all participants who identified social interaction as important spoke to how they considered themselves extroverts who get energy from being around people; they are social people. Qualifiers were often placed into the context of their explanation that framed the interactions as kind, team oriented, and respectful; i.e. no one wanted to interact with a disagreeable individual. A police officer clarified, *“This job can be unsafe; we all are protecting one another. I need to keep up with everyone and I do care. Keeping up with the fellow co-workers develops a relationship with them that allows us to work together better. We are all one big family here, and it needs to be that way due to the stress and safety of the job.”*

**Variety:** Participants who rated variety in their top three most important characteristics often spoke of being bored at work without variety. In addition, they regularly stated that they need to have a larger understanding of the process as a whole, and a variety of tasks allows them to understand

the bigger picture. An installation, maintenance, and repair worker discussed, *“My brain needs to keep busy. I need to switch between things or I get bored with my job. I do not always have the option to do different things all of the time and that is okay. But doing the same thing continuously would be dreadful. We [humans] are not meant to do the same thing all of the time”*.

**Accomplishment and Status:** A feeling of satisfaction (accomplishment) from their efforts at work was crucial to many interviewees. Knowing their work was done well, and having a sense of satisfaction from a job well done was said to be pleasing and could positively affect other parts of their life. However, no participants stated having status at work was important. An installation, maintenance, and repair worker said, *“I need to know that I have contributed so I can sleep at night. If I do not know or feel like I accomplished I cannot relax. If I do not know if I am doing well I am bothered”*.

**Aesthetics:** Some interviewees stated that having an aesthetically pleasing work environment was crucial towards their ability to perform their job; i.e. good lighting, well-organized tools, and/or a comforting environment. Others noted their job as inherently aesthetically pleasing and that is why they chose the job. For example, a wine-maker said, *“I see what I do as an art. I set out to make happy wine that people will enjoy. The wine needs to be pleasing. The thing I am making is what is important. I also like the symmetry of wine barrels and rows of grapes.”*

**Safety:** All participants who noted safety as one of their top three most important characteristics had an inherently dangerous job where being unsafe often led to injury or death. For example, a construction worker said, *“The highest and most important factor in my line of work is safety. Without safety, and working safely, you cannot continue to work and grow. I need to know everyone working around me is working safely as well. Is the other worker safe? This is an important question”*.

**Feedback:** All participants who rated feedback as important were concerned with receiving knowledge from customers and/or the system (e.g., equipment displays); however, no participants appreciated or considered feedback from managers as important. This finding gives contextual evidence to splitting feedback into two distinct characteristics: feedback from the work and feedback from others, as is the case in Morgan and Humphry’s Work Design Questionnaire (2006). A professional writer said, *“Constructive criticism is great, but have you ever met anyone good at giving it? Feedback from the process and/or environment is really important though. Customer feedback is also very important”*.

**Demand:** Demand was bimodal: one could have too much demand and feel burned out, or one could have not enough demand and be bored. Participants spoke to both sides. They may have wanted a highly demanding job to keep them busy, provide an endorphin rush, and a feeling of importance from the workload. Alternatively, they may have wanted a job which is not overly demanding. For example, someone in the arts,

design, entertainment, sports, and media occupation stated, *“If I am going through the effort, the amount of demand I take for that has to be reasonable. If the demand is above my ability, I cannot help others. I cannot have work that over demands me to the point I am hurt and/or burnt-out”*.

After elaborating upon why the participant choose their three most important characteristics, she/he was asked to rank them from “most important” to “3<sup>rd</sup> most important”. Participants were informed that their ranking was open-ended and could result in ties. While most participants cleanly ranked first, second, and third, other chose to assign ties for first and second (e.g., a participant could have said all three are equally important, and therefore are ranked “most important”). A detailed breakdown of the ratings participants gave to the characteristics – most important, second most important, and third most important - can be seen in Table 10.

*Table 10: Rating Lee's Characteristics from most important to second most important followed by third most important. Ties were allowed. The number, labeled "n" in each cell refers to the number of participants that ranked the characteristic (e.g., personal growth was ranked as the most important characteristic by ten participants, while aesthetics was never rated as the most important characteristic).*

Order	Most Important		2 <sup>nd</sup> Most Important		3 <sup>rd</sup> Most Important	
	Characteristics	n	Characteristics	n	Characteristics	n
1	Personal Growth	10	Autonomy	8	Autonomy	5
2	Value	9	Aesthetics	6	Technical Growth	5
3	Compensation	6	Personal Growth	4	Variety	3
4	Social Interaction	4	Variety	4	Value	3
5	Technical Growth	3	Technical Growth	3	Social Interaction	3
6	Feedback	2	Compensation	3	Accomplishment and Status	3
7	Accomplishment and Status	2	Value	2	Safety	2
8	Autonomy	2	Social Interaction	1	Demand	2
9	Safety	1	Accomplishment and Status	1	Personal Growth	1
10	Demand	0	Safety	1	Compensation	1
11	Variety	0	Feedback	0	Feedback	1
12	Aesthetics	0	Demand	0	Aesthetics	0



As expected, the ratings of the three least important characteristics were nearly opposite of the most important characteristics, with a few notable exceptions. Demand, both low and high levels, was the most commonly cited least important characteristic. In explaining their reasoning, participants spoke to different levels of demand as unimportant (high, low, or either high or low). When participants rated safety as a least important characteristic, they spoke to how their job was not dangerous and therefore this was of no concern to them directly. People who rated social interaction as a least important characteristic explained how they did not like to socialize with people in general. When compensation was rated as a least important characteristic, they clarified that they needed at least enough money to live but did not consider it important beyond that. When workers rated feedback as a least important characteristic, they were referring to feedback from others, and did consider feedback from the system as very important. Value was never rated as a least important characteristic; everyone interviewed perceived value as at least somewhat important. Table 11 provides an overview of the ratings.

*Table 11: Participant's rating of extant (Lee's) least important characteristics*

<b>Order</b>	<b>Characteristic</b>	<b>N</b>
1	Demand	14
2	Aesthetics	12
3	Safety	11
4	Social Interaction	10
5	Accomplishment and Status	9
6	Compensation	7
7	Feedback	7
8	Variety	5
9	Autonomy	4
10	Personal Growth	3
11	Technical Growth	1

Order	Characteristic	N
12	Value	0

#### 4.3.3 Comparing and contrasting open-ended characteristics with prompted characteristics

In the third section of the interview, participants were asked, “*Do you see any similarities between the characteristics you identified, and the characteristics presented on the note cards?*” The participants were able to move the note cards containing characteristics around to physically interact with the terms, providing a useful tactile method for comparisons. Many of the open-ended characteristics were clearly in the set of extant characteristics (e.g., autonomy and variety), while others were not included and therefore emerged from the participant’s own preferences. All emerging characteristics are indeed well studied terms/topics in the pursuit of knowledge regarding people at work, even though they may not be currently considered and defined as a work characteristics (Humphrey et al., 2007).

##### 4.3.3.1 Similarities between open-ended inquiry results and existing literature

As illustrated in Table 12, participants in our study identified multiple similarities between the characteristics they felt were important (open-ended) to them and the ones previously identified in the literature (prompted), illustrating the current set of characteristics is near exhaustive. Money and benefits was related to Compensation, Control over work was related to autonomy, Positive interactions with people was related to Social interaction, Variety was related to Variety, and Valuable work was related to Value.

Table 12: Comparing open-ended and prompted Extant (Lee's) characteristics. The numbers in the cells refer to the number of participants who mentioned the characteristic, using their own words (in the left column). Shaded cells highlight the highest participant agreement in similarity between the open-ended and Lee's characteristic. (e.g., money and benefits [open-ended theme] was seen as similar to compensation [Lee's characteristic] by 8 participants).

Open-ended Characteristics	Lee's 12 Characteristics											
	Accomplishment	Aesthetics	Autonomy	Compensation	Demand	Feedback	Personal Growth	Safety	Social Interaction	Technical Growth	Value	Variety
Recognition	2	0	0	0	0	3	0	0	0	0	0	0
Control over work	0	0	12	0	0	0	1	0	1	1	1	2
Learning Opportunities	0	0	0	0	0	0	3	0	0	4	0	0
Positive interactions with people	0	0	1	0	0	2	0	1	12	0	0	0
Money and benefits	0	0	0	8	0	0	0	0	0	0	0	0
Opportunities for career growth	2	0	0	1	0	0	8	0	0	8	1	0
Variety	1	0	0	0	0	0	0	0	0	1	0	6
Valuable work	2	0	3	1	1	1	2	0	0	1	13	1

#### 4.3.3.2 *Emerging Characteristics:*

Figure 14 details the emerging characteristics with an “\*”, which are Work Characteristics identified by participants as completely different from Lee's characteristics.

That is not to say these are new keywords or constructs that have not been investigated, rather these are not currently defined as Work Characteristics in the literature regarding work design. The most common emerging characteristic was Effective and Ethical Management. Opportunities for career growth was seen as new by 33% of the participants who identified it as an important characteristic; the other 66% said it was similar to technical and personal growth. Of those who did not related opportunities for career growth to either technical or personal growth explained that providing training and growth as a person may not lead to progress in their career. They suggest that it is the ability to be promoted in their career that was important to them, not the mere availability of learning opportunities.

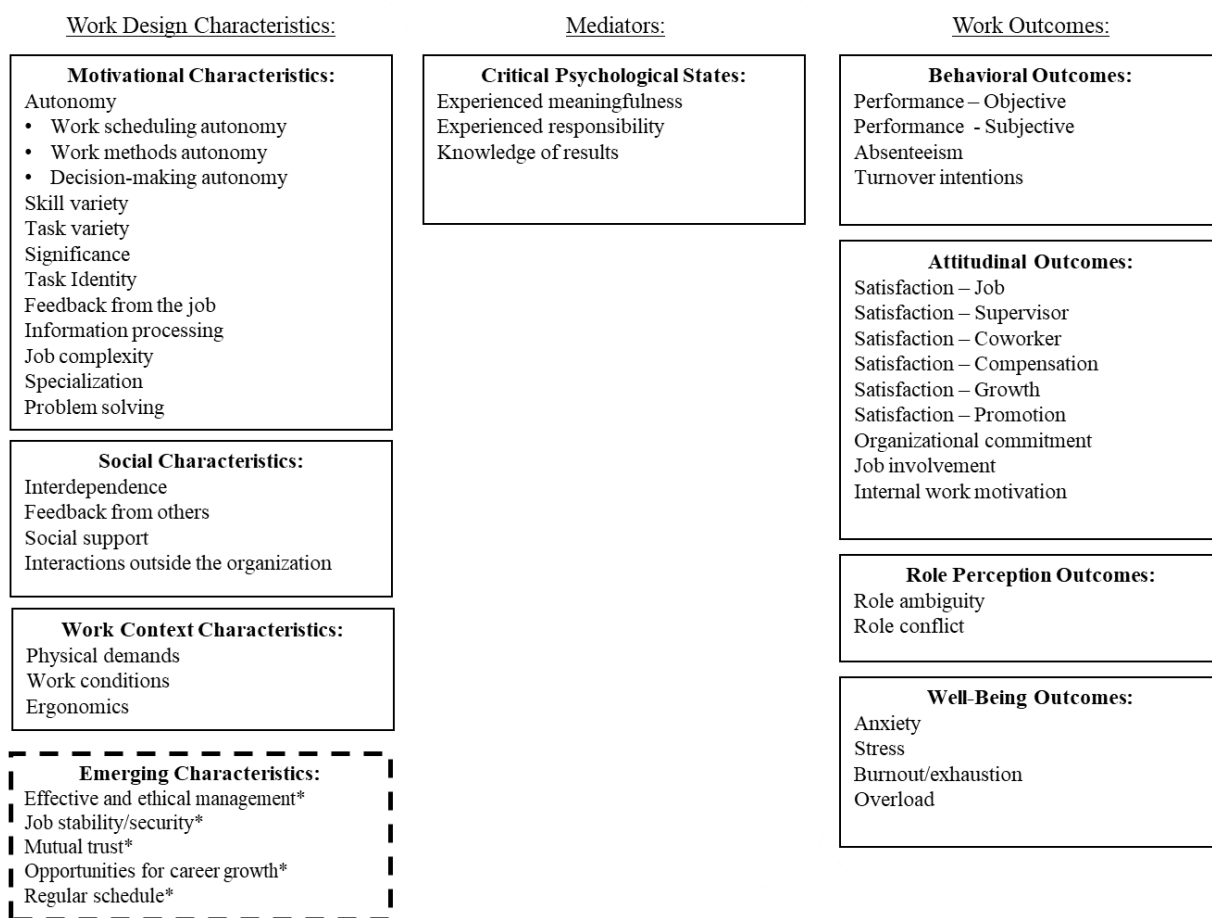


Figure 14: Expanded Work Design Model (Adapted from Humphrey et. al., 2007)

#### 4.4 Discussion

One finding from these results is evidence that people have different preferences regarding what Work Characteristics are important to them. All the presented characteristics were rated in the top three most important characteristics at least twice. This finding suggests two things. First, any work design, or redesign efforts will need to cater to a specific group of employees, or even to an individual employee, rather than create a uniform protocol for improving workers' perceptions of their work. For example,

“increasing workers’ autonomy will always increase their motivation to perform the work” would be an incorrect assessment of that characteristic, as there are some workers who do not want autonomy. In reference to autonomy being one of her least important characteristics a sales and related occupation worker said, “*I like to have direction. I like outlines. I do not want a blank slate.*”

Secondly, the results further illustrate the concept of unimodal and bimodal Work Characteristics, as shown in Table 4. The bimodal characteristics are ones where some participants would prefer an increase in that characteristic and other would prefer a low degree of the characteristic (e.g., autonomy, or social interaction). A unimodal characteristic would be one where an increase would never be seen as harmful but may be perceived as motivating. One unimodal characteristic is value, which was regularly rated as important, and was never rated as unimportant. Increasing value would benefit some employees but would not harm others. Employers may help alleviate worker distress by showing employees the value of their work towards someone.

While these warnings may seem obvious, they are often not heeded in practice. Due to the specialization that the modern workplace utilizes in job design (referring back to “Taylorism,” as it is too often operationalized), workers at the beginning of the process often do not understand what happens at the end of the process, nor do they see who uses the product or service once it is finished. In this study, one production worker spoke to a prior job where she/he did not know what happened to the small subassembly they were building once it left their area. It was not until an end user took a shop tour and spoke with her/him about how the product greatly improved their and their family’s lives, that she/he understood the meaning of their work. She/he stated that discovering the value of her/his

work to others was a turning point in their attitude at work; just knowing how her/his work benefited others alleviated the feeling of a lack of meaning and improved her/his motivation on the job.

Some limitations of this study and a future research suggestion need to be noted. One limitation is the generalizability of the findings, as they represent the participants' experiences and preferences and not those of all workers. A larger scale study would be needed to generalize to all workers. A second limitation is regarding the candor of the participants. They were speaking one-on-one to another person and potentially influenced by responding to questions with answers they thought the researcher wanted to hear, as opposed to what they actually thought (e.g., responding to questions regarding the importance of compensation may have been downplayed to seem less "greedy").

Despite these shortcomings, the new or emerging characteristics (identified with an asterisk \* in Figure 14) should be considered in future research and industry implementations of Work Characteristics. Investigation #3 will take the findings from this investigation to guide what characteristics are measured in Step 3: Measuring the work and the workers. Table 13 details the exact characteristics and their definitions that be utilized in Investigation #2 and #3. Based on the accumulated knowledge of how participants' grouped characteristics together, and the current theory (e.g., Humphrey et. al. 2007) all emerging Work Characteristics have either been added to the sets of characteristics (Motivational, Social, or Work Context) or they have been grouped into a new set, named Growth. This new set, titled Growth, reflects the interdependences and/or similarities between the three characteristics that measure an employee's Growth Need Strength<sup>11</sup> (i.e.,

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<sup>11</sup> For more information of Growth Need Strength see Section 2.4.3.

the amount of growth they would like to experience while at work). People vary greatly regarding how much they expect growth at work, some require their job provides them many opportunities to experience growth while others do not. The three characteristics that have been collated to create this new set are Personal Growth, Technical Growth, and Career Growth.

*Table 13: Resulting Work Characteristics from Investigation #1*

<b>Characteristic</b>	<b>Definition</b>
<b>Motivational</b>	
<b>Accomplishment</b>	Feeling of satisfaction towards one's contribution to an organization.
<b>Autonomy</b>	The degree of freedom and control workers can exert over their work in terms of being able to freely apply their knowledge, judgment, skills, and creativity towards performing work.
<b>Demand</b>	The physical and psychological effort required from the worker to accomplish the work.
<b>Feedback from the job</b>	The degree to which the job provides direct and clear information about the effectiveness of task performance.
<b>Value</b>	The significance of one's role and its impact within and beyond the organization.
<b>Variety</b>	The number of different types of tasks and/or activities workers perform at work.
<b>Social</b>	
<b>Feedback from others</b>	Reflects the degree to which others in the organization provide information about performance.
<b>Mutual Trust</b>	The degree to which workers feel trusted by and/or trust in managers and co-workers.
<b>Social Interaction</b>	The degree to which workers interact with each other during the course of performing their work.
<b>Social Support</b>	Reflects the degree to which a job provides opportunities for advice and assistance from others.



Characteristic	Definition
<b>Growth</b>	
<b>Career Growth</b>	Opportunities for career growth and advancement within, or outside, the organization.
<b>Personal Growth</b>	The degree to which work helps its workers further themselves according to their personal beliefs, values, and aspirations.
<b>Technical Growth</b>	Opportunities available to workers to improve work-related knowledge, skills, and abilities that could be applied to workers' immediate work.
<b>Work Context</b>	
<b>Aesthetics</b>	Exposure to elements of beauty and creativity while performing work, possibly from the work or the work environment.
<b>Compensation</b>	All the material gains workers could obtain by performing their assigned work.
<b>Ergonomics</b>	Reflects the degree to which a job allows correct or appropriate posture and movement.
<b>Job Security</b>	The degree to which workers feel their job is secure from termination based on factors outside of their control.
<b>Regular Schedule</b>	The degree to which workers have a schedule that does not readily change.
<b>Safety</b>	The degree to which workers are protected from physical harm while performing their work within the workplace.

## Chapter 5

### 5 Investigation #2: Bibliometric Analysis of Documented Work Improvement

#### Actions

#### 5.1 Introduction

In order to design *good work*, one must consider all inputs and outputs simultaneously; while this may seem daunting at first, a comprehensive approach to the design of work may be the only way to improve work for employees. Moreover, work design practitioners must not be interested in adapting the people to the work (e.g., implement weight training workouts to improve the physical strength of the employees so they can better lift heavy objects); instead, our focus needs to be in redesigning the work so that it better suits the people. This leads to a natural question, “*where can inspiration be drawn to make improvements to the design of work?*”

While many managers and work design practitioners (e.g., engineers, psychologists, human resource personnel) care for the employees they oversee, they may not know of actions that have worked, or can reasonably be expected to work to improve characteristics of work. This research sought to help do just that - provide examples for making changes to the design of work.

Lee’s Work Improvement Process was developed to help organizations systematically redesign work based on identified mismatches in Work Characteristics (W. T. Lee, 2014). Once a mismatched characteristic is identified, design actions must be generated to address the mismatch. Unfortunately, one may not know what Work Improvement Actions (WIAs) (i.e., specific actions, or measures, taken by an organization

to improve the design of work) can be implemented to address a known deficit in the design of work (e.g., insufficient autonomy). Moreover, a manager, or other work design practitioner may not have time to comb through thousands of case studies, books, and journal articles to find relevant actions that other organizations have implemented to use as a springboard for their own improvements.

The goal of this part of the research was to take stock of the extensive corpus of research documenting WIAs. This investigation accomplished this goal by collating and coding WIAs found in the published literature onto extant Work Characteristics identified in Investigation #1, thereby answering the question: what WIAs can be identified in the scientific literature that are documented or at least reasonably believed to improve a particular characteristic of work, like autonomy? The resulting database of WIAs can then be used in Lee's Work Improvement Process as inspiration for changes addressing mismatched characteristics. Moreover, the database has value as a standalone collection of WIAs that managers can filter and query to understand what other organizations have done to improve the working conditions of their employees.

The next section of this chapter describes the methodology. Then, Section 5.3 details the resulting database and provides an overview of example WIAs. As an entire database would be difficult to present in text, key subsets are provided. Then, Section 5.4 discusses the results and provides the limitations and directions for future research. Finally, the chapter ends with a conclusion in Section 5.5.

## 5.2 Methodology

The purpose of this investigation was to systematically identify WIAs and classify them by characteristic(s) (e.g., autonomy, value) and industry/field (e.g., automotive manufacturing, healthcare). To accomplish this, a research mining methodology was implemented that facilitates the creation of matrices to classify research findings and identify key information (Beruvides & Omachonu, 2001). First, key terms were identified, and then expanded to include synonyms. Then specific articles were identified based on the inclusion criteria.

Each action was then coded as it related to one or more of the extant Work Characteristics and to the industry the WIA was implemented in. The following sections detail the process of selecting search terms, the search procedure identifying WIAs, the inclusion criteria for a WIA to be included in the database, and the coding of WIAs, respectively.

### 5.2.1 Selecting Search Terms

Key terms initially comprised of all 19 Work Characteristics combined with either, *work design*, *good work*, and/or *improvement actions*. For example, *autonomy AND work design AND improvement action*. Then, search terms were expanded to include synonyms of key terms. Synonyms were identified via the keywords present in identified articles and were expanded as new relevant terms emerged. See Table 14 for a list of synonyms.

*Table 14: Search terms and synonyms used to find WIAs.*

<b>Search Term</b>	<b>Synonyms</b>
<b>General Terms</b>	
Work design	Job design, job crafting
Good work	Healthy work, meaningful work

<b>Search Term</b>	<b>Synonyms</b>
Improvement actions	Improvement measures
<b>Work Characteristics</b>	
<i>Motivational</i>	
Accomplishment	Job satisfaction, job status
Autonomy	Job control, job decision making, self-managing
Demand	Workload, challenge, pressure
Feedback from the job	Objective performance, job feedback
Value	Meaningful work, task significance, job meaningfulness
Variety	Job complexity, task variety, job simplification
<i>Social</i>	
Feedback from others	Subjective performance, co-worker feedback, manager feedback
Mutual Trust	Cooperation, co-worker trust, manager trust
Social Interaction	Sociotechnical systems, worker socialization
Social Support	Teamwork, interdependence
<i>Growth</i>	
Career Growth	Professional development
Personal Growth	Moral development, personal goals
Technical Growth	Job skills
<i>Work Context</i>	
Aesthetics	Work conditions
Compensation	Pay, salary, benefits
Ergonomics	Comfort design, functional design

<b>Search Term</b>	<b>Synonyms</b>
Job Security	Job stability, continuous employment, employment stabilization
Regular Schedule	Work scheduling
Safety	Job safety

### 5.2.2 Search Procedures

A previously developed systematic search methodology was implemented (Beruvides & Omachonu, 2001). Using applicable key terms electronic databases were searched. Articles comprised formal studies including qualitative, quantitative, mixed-methods, and case studies; and included books and business magazines from reputable sources. Searches were limited to studies published in English. Key words were combined in each of the search databases, which included Web of Science, PsycInfo, EBSCO Host Web, and Google Scholar, and Oregon State University's Library 1Search that allowed multiple databases to be searched simultaneously.

### 5.2.3 Inclusion and Exclusion Criteria

To be included, the article had to suggest a specific action, or measure targeted to improve the design of work for employees. Additionally, articles were chosen that referenced specific organizations that implemented the actions. Moreover, articles had to be published in reputable publications, but were not required to be peer reviewed to be included. While many similar investigations of extant literature do require peer review, this study chose to include business reports, such as the Harvard Business Review, as the goal was to find real and applied examples.

### 5.2.4 Coding WIAs

WIA(s) were extracted from each article and entered into the database along with meta-data of the article, such as publication, author name, and date. Then, each WIA was associated with one or more specific characteristic and assigned a “+” if the WIA increased the characteristic or a “-” if it reduced the characteristic. This was necessary as some characteristics, particularly demand, may need to be reduced if it is identified to be in excess. However, the vast majority of WIAs were associated with an increase (+). Up to three characteristics were linked to a single WIA, if the WIA could be reasonably considered to improve more than one characteristic. The three associations were ranked, by the strength of the association. Then, the industry where the WIA was implemented in was coded, if available. This process was repeated for all WIAs.

### 5.3 Results

The resulting database comprises 292 WIAs from 22 different industries. Table 15 provides a subset of the total database. Three example WIA are provided for each of the 19 characteristics.

*Table 15: Subset of WIA database, illustrating three WIA for each of the 19 characteristics.*

<b>Characteristic</b>	<b>Work Improvement Action</b>	<b>Industry</b>
Motivational		
Accomplishment	Provide opportunities to be a team lead (Jenkins, 1996).	Manufacturing
	Provide regular interactions with end users (Wickens et al., 2004).	Multiple
	Prioritize appreciation in performance reviews (Manning, 2016).	Multiple
Autonomy	Implement the 80/20 rule - employees can spend 80% of their time working on their primary job duties and 20% working on passion projects (Connley, 2015)	Unknown

Characteristic	Work Improvement Action	Industry
	Reflect on three positive things that happened during the day before leaving. For high demand workplaces positive daily reflection can reduce the work stress caused by high psychological effort (Bono et al., 2013)	Healthcare
	Empower employees to establish baseline machine settings (Konz & Johnson, 2008).	Multiple
Demand	Maintain an eight hour work day, after 8 hours white collar workers can no longer maintain an efficient rate of information processing (Meijman, 1997).	Unknown
	Provide regular work breaks - there are 3 types of work breaks: active, deep relaxation, usual break; none are superior for all people so provide people options they would like (Scholz et al., 2018).	Manufacturing
	On average the most productive informational workers work for 52 minutes and then take an average of a 17-minute break (Gifford, 2018).	Multiple
Feedback from the job	Hire external consultants, who are not working in the company, to interview employees without manager presence and provide managers information regarding employee experiences (Barsky et al., 2004).	Service
	Update equipment to facilitate information gathering and presenting it to employees (Wickens et al., 2004).	Multiple
	Allocate time and resources to act on employee feedback; spend time interpreting results, developing and implementing action plans, and communicating results (Barsky et al., 2004).	Service
Value	Provide time to visualize the ideal care delivery system and to reflect on which aspects of providing patient care provided the most satisfaction (Aguinis et al., 2011).	Healthcare
	Assisting employees to more deliberately use their strengths can help them express their full potential, which in turn increases their sense of meaningful work and their value to the organization (Lips-Wiersma et al., 2016).	Multiple
	Connecting workers to the customers of their work enhances their experience of serving others, which in turn increases their sense of value to society (Lips-Wiersma et al., 2016).	Multiple
Variety	Rotate employees between departments (Sandberg, 1995).	Manufacturing
	Implement job enrichment, i.e., increasing the variety of tasks that required different skills (Konz & Johnson, 2008).	Multiple
	Implement job enlargement, i.e., increasing the variety of tasks that require the same skill set (Konz & Johnson, 2008).	Multiple



Characteristic	Work Improvement Action	Industry
Social		
Feedback from others	Providing examples along with feedback to deepen employees' conceptual knowledge of the task instead of simply correcting the error (Finn et al., 2018).	Education
	Provide performance assessment at regular intervals that emphasizes only those functions that are under the control of the employee (Aguinis et al., 2011).	Unknown
	Leaders and Managers should adapt feedback based on a learner's willingness and ability to take responsibility for the task in question (De Villiers, 2013).	Unknown
Mutual Trust	All for time: while not an immediate action item, time has shown to be significant towards building trusting relationships (Cullen & Johnson, 2000; Lewicki & Bunker, 1996; Lewicki & Wiethoff, 2000).	Education
	Gestalt Communication: mutual trust is undermined when employees perceive a mismatch between managers espoused values and actual practices due to a lack of transparency (Yousaf, 2017).	Unknown
	Explicitly explain expectations and agree up-front to the assigned work tasks (Lewicki & Wiethoff, 2000).	Multiple
Social Interaction	Intentionally facilitate collaboration, which leads to improvement of work outcomes such as increasing customer satisfaction and increasing employee engagement (Tims et al., 2013).	Healthcare
	Provide a one-hour, biweekly discussion group on mindfulness, reflection and shared experiences can increase social interaction while decreasing depersonalization, emotional exhaustion and burnout (West et al., 2014).	Healthcare
	Facilitate common breaks in pleasant areas (Jenkins, 1996).	Manufacturing
Social Support	Treat individuals as whole people who carry emotions into the workplace and have permeable work and life boundaries (Dutton et al., 2014).	Unknown
	Demonstrate an understanding of the value of non-work life can improve employees' sense of social support in an organization (McMullan et al., 2018)	Multiple
	Encourage solidarity between workers to improve social support and lead to better Career advancement for those workers via the mentoring that occurs (Dan et al., 2018).	Healthcare
Growth		

<b>Characteristic</b>	<b>Work Improvement Action</b>	<b>Industry</b>
Career Growth	Participate in skills competitions (for younger workers 18-23) such as the world skills competition can increase career development by encouraging a high level of expertise and presenting standard to understand what high levels of experience are (Pylväs & Nokelainen, 2017)	Construction
	Implement Mentorship Programs (Mcmahon & Pocock, 2011).	Multiple
	Allow leaders to emerge by demonstrating special knowledge, a skill and/or experience that will move the organization forward (Yang et al., 2011).	Multiple
Personal Growth	Facilitate maternity leave/ paternity leave/ personal leave (B. G. Maxwell et al., 2008).	Construction
	Facilitate a paid volunteer day (B. G. Maxwell et al., 2008).	Construction
	Allow for deferred starting dates for graduates wishing to travel (B. G. Maxwell et al., 2008).	Construction
Technical Growth	Implement paid employee training to improve knowledge, skills, and abilities (Yang et al., 2011)	Multiple
	Pay for employee professional conference attendance (Mata et al., 2010).	Multiple
	Implement mentoring programs for employees to learn from experienced ones (Mcmahon & Pocock, 2011).	Education
<b>Work Context</b>		
Aesthetics	Simulate restorative indoor and outdoor environments using artificial visual, acoustic and olfactory stimulation (Sona et al., 2019).	Healthcare
	Improve lighting and cleanliness of the workplace (Konz & Johnson, 2008).	Multiple
	Provide access to views of the outdoors (Pearson & Craig, 2014).	Multiple
Compensation	Provide annual bonuses (Bankert et al., 2000).	Software
	Provide employees profit sharing options (Lin et al., 2002).	Unknown
	Provide each employee an annual allowance for health benefits and allow employees to choose their plan; if employees do not want comprehensive coverage they can elect to take a less expensive health plan and keep the remaining allowance (Netflix, 2019).	Software

Characteristic	Work Improvement Action	Industry
Ergonomics	Use Rapid Entire Body Assessment (REBA) to systematically evaluate risk of whole body postural musculoskeletal disorders; act on areas REBA identifies as problematic (Hignett & Mcatamney, 2000).	Multiple
	Eliminate loads of more than 50 lbs. by implementing a hoist to carry the load (Konz & Johnson, 2008).	Multiple
	Implement sit/stand workstations, and active sitting, such as a stool that allows for movement (Graves et al., 2015).	Multiple
Job Security	Provide transparent employee performance (Wickens et al., 2004).	Multiple
	Increases job security with seniority (Vanderburg, 2004).	Manufacturing
	Pay for maternity/paternity leave (Mcmahon & Pocock, 2011).	Construction
Regular Schedule	Guarantee a minimum number of hours per week (Lambert & Henly, 2009).	Multiple
	If schedules must change week to week, provide workers their schedules at least three weeks in advance (Ben-ishai, 2014).	Multiple
	Allow workers to put in their availability without reducing their weekly hours (Lambert & Henly, 2009).	Multiple
Safety	Reducing indoor CO2 levels by increasing rates of air exchange in ventilation (Allen et al., 2016).	Multiple
	Facilitate participation in risk assessment and accident investigation activities while encouraging employees to support their colleagues' safety behavior (Mohammadfam et al., 2017).	Construction
	Enable employees to participate in decision making and problem resolution which in turn enhances their knowledge sharing behavior, safety participation willingness and safety compliance (Y. H. Lee et al., 2019).	Healthcare

Table 16 illustrates the variety of industries represented in the database, which varied from manufacturing, to healthcare, to retail.

*Table 16: Industries represented in the WIA database.*

Type of industry	# of WIAs
Administration Service	10
Construction	29
Consulting	1

Type of industry	# of WIAs
Defense	11
Digital Media	3
Education	11
Electronics	16
Engineering	3
Financial/Banking Services	31
Healthcare	18
Information Technology	6
Law Service	29
Manufacturing	8
Marketing Services	7
Multiple	16
Retail	15
Service	3
Software	17
Telecommunications	10
Transportation	1
Unknown	43
Vocational	4
<b>Total</b>	<b>292</b>

#### 5.4 Discussion

One of the more challenging aspects of this work was finding sources that detailed specific actions that were implemented by an organization. Many sources described the importance of Work Characteristics but did not provide examples of how to improve the work. Or, articles discussed issues in the workplace but did not include actions to address the problems. For example, many sources spoke to the importance of *mutual trust* and a lack of trust resulting in a ‘toxic’ workplace but did not suggest methods for improving the trust between co-workers and managers.

The two characteristics for which it was most difficult to find WIAs were *accomplishment* and *aesthetics*, while the two for which WIAs were most readily available

were *autonomy* and *compensation*. *Accomplishment* was challenging because most of the articles that were identified suggested improving the *feedback from the job* or *feedback from others* to provide better information to employees, which is problematic because said actions were then coded into *feedback*, rather than accomplishment. While WIAs addressing aesthetics were sparse, the ones identified typically discussed the psychological benefits of the outdoors. When substituting *aesthetics* for its synonym, *work conditions*, environmental WIAs were found, like improving the lighting.

Autonomy was highly discussed, which is not surprising as the term has been studied within the field of work design for decades (e.g., (Turner & Lawrence, 1965)) and outside of the field of work design for millennia (e.g., the Greek work *autonomos* or ‘self’ ‘law’). WIAs addressing *compensation* were common as compensation is arguably the most common motivation for performing work. Thus, providing employee decision making power and well-compensating them for their time is arguably the most common way to improve the design of work.

Interestingly, all WIAs that were coded to a reduction in *demand* (i.e., demand -), except for one, were also coded to *autonomy*. The link between *autonomy* and *demand*, a well-researched association (Karasek & Theorell, 1990), arose in the database. It seems that demand may be best addressed by increasing *autonomy*, particularly when the finances do not readily support employing more workers to reduce the workload and/or the paid overtime for current employees.

Most of the WIAs were found in literature from the field of management or industrial and organizational psychology, followed by occupational health and healthcare. The field of healthcare has a surprising number of published articles on improving the design of work

for nurses. For example, most of the WIAs addressing *feedback from others* were specifically for nurses. This

This review was subject to several limitations that could compromise the completeness and quality of the results. First, it can be safely assumed that there have been many cases where WIAs have been tried – perhaps even successfully – but never documented in the English literature. Next, is bias from the search engines used. Another limitation is the lack of equal representation of WIAs from all Work Characteristics. Some characteristics, like *autonomy*, have been extensively studied resulting in many published articles discussing WIAs, while others, like *aesthetics at work*, have not been as well studied. In addition, there was no attempt to judge the effectiveness of the action, nor the methodology used if the article described a research study.

Another limitation is the lack of inter-rater reliability statistics calculated from the coding of WIAs on characteristics and industry. Coding WIAs onto extant characteristics was a subjective evaluation that would have been improved if multiple analysts had coded subsets of the database and inter-rater reliability statistics were evaluated to understand discrepancies. Finally, the most significant limitation was time, undoubtedly more WIAs could have been mined if more time were allotted to the task.

Future research into WIAs should include sources from non-English publications. Moreover, future research should employ multiple analysts to find more WIAs and evaluate inter-rater reliability metrics to understand the accuracy of coding WIAs onto Work Characteristics. The task of identifying WIAs might be better pursued with an investigation that targets organizations directly, as opposed to a literature review. A researcher could survey organizations for their successful WIAs. This would be aided by a randomized

design that sampled organization across the world in various industries. Organizations might surprise researchers with their willingness to share what they do to design better work. Finally, this research would be improved if the database was expanded to include actions that failed to improve work or made work worse. A new field in the database could identify whether the WIA was successful or not.

## 5.5 Conclusion

The resulting database of WIAs can be used to assist a work design practitioner working in industry by providing a collated and coded set of previously implemented actions, directly applicable or useful as the seeds for brainstorming actions that provide better fit. The database can be sorted by characteristics, or by industry to facilitate its use. Important to this research, the database was used in Investigation 3a, to help organizations develop WIAs for identified mismatches between the current work and the preferred work.

## Chapter 6

### 6 Investigation #3a: Longitudinal Validation of Lee's Work Improvement Process

#### 6.1 Introduction

To improve the design of work, one must first validate a process for systematically assessing and changing the configuration of work. Yet, a validated method for doing so has not been substantiated via a longitudinal study evaluating how improvements affect actual workers in a dynamic and real organization (i.e., neither a fictitious thought experiment, nor a controlled laboratory study can do so). Since groups of workers employed at different organizations have different experiences and preferences towards their work, it was hypothesized that there is not a cookie-cutter method to design *good work* for every worker in every organization. For example, while some workers prefer autonomy, others would prefer to show up and have a specific list of what to do and how to accomplish the tasks (Hattrup et al., 2020). Therefore, a customized work improvement process that can focus on a specific group of employees is needed.

This study attempted to fill this gap by implementing Lee's Work Improvement Process, which can be seen in detail in Section 2.8, at three participating organizations. The Process was planned to be executed twice in a longitudinal investigation analyzing the effects of the Process overtime on the same groups of workers. Unfortunately, the Investigation was unable to be completed due to the COVID-19 pandemic that swept the world in the spring of 2020, thereby significantly affecting peoples' experiences at work. Roughly one week before the second round of data collection, all three organizations in consultation with the author, withdrew from the study to focus on the safety and job security of their employees.



This difficult decision was made by both the author and the managers at each of the organizations, due to the contaminating factors associated with the disruption of work from the pandemic. The goal was to implement WIAs, wait six months, and then measure their effect via a second round of data collection. If Round 2 data had been collected, it would have been unwarranted to attribute differences between the first and second round of data collection to Lee's Process as the pandemic assuredly overwhelmed the WIAs' effect. Furthermore, the data collection protocol required participants to gather together in a confined room, which would put them at undue risk since it was advised, and often required, that all people living in the USA practice social distancing. While protocol revisions might have overcome this issue, the primary concern, contaminating factors due to the pandemic, could not have been overcome. Figure 15 illustrates the study and includes dates regarding the completion of each step.

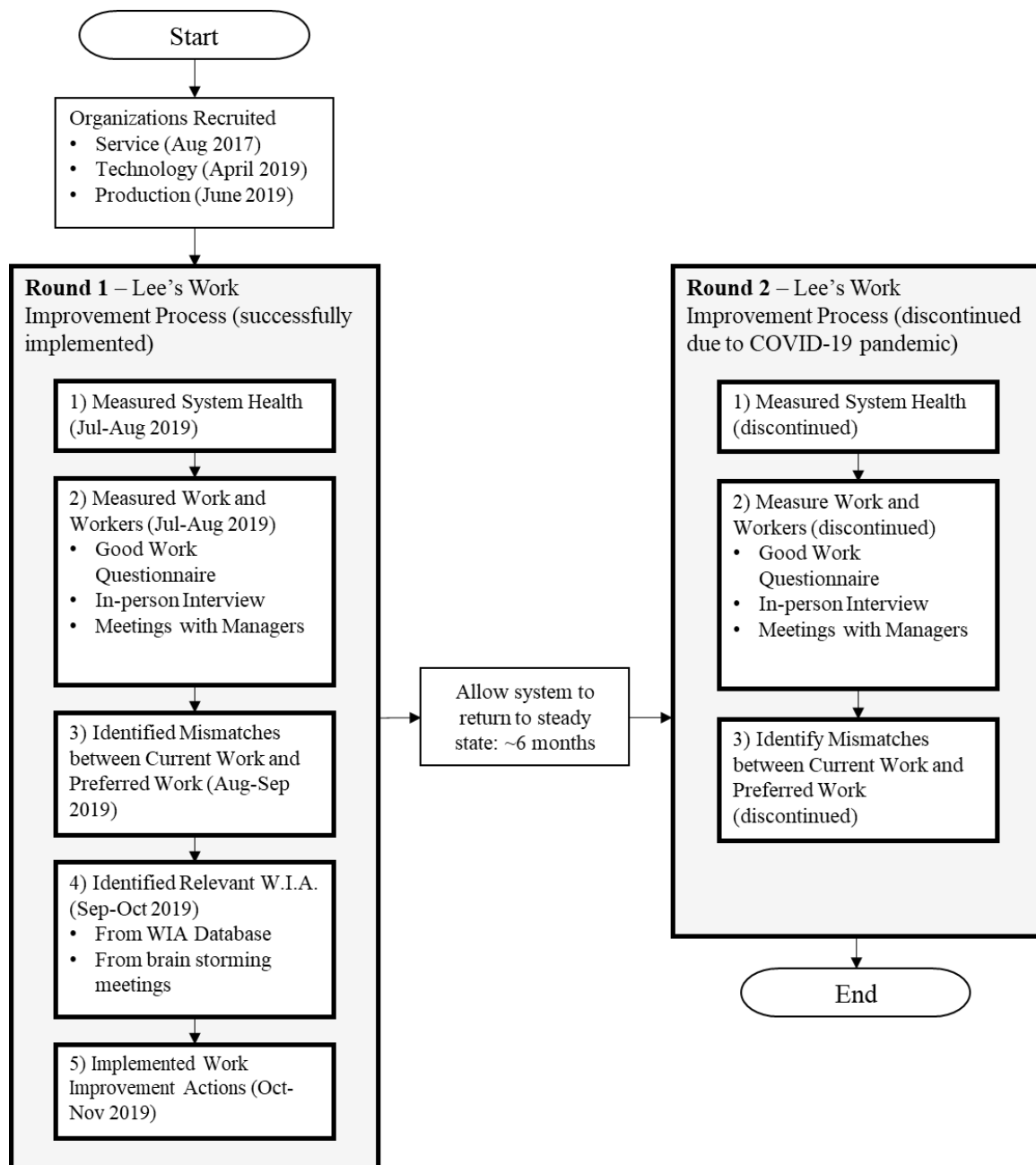


Figure 15: Implementation of Lee's Work Improvement Process (Investigation 3a).

While Lee's Process was not fully validated as planned, managers at each of the three organizations provided preliminary feedback of the WIAs and there is much to learn from what was accomplished. The following sections provide a detailed description of the

Investigation. First, the methodology is described in Section 6.2. Then, the results are detailed in Section 6.3. Finally, Section 6.4 provides a discussion of the Investigation's implementation and findings and Section 6.5 concludes the Chapter.

## 6.2 Methodology

The purpose of this investigation was to validate and understand the application of Lee's Work Improvement Process. To accomplish this, three organizations agreed to participate by implementing Lee's Process. Multiple analyses, both qualitative and quantitative, were used. The following three subsections detail the research design utilized, the collection of data, and the data analyses performed, respectively.

### 6.2.1 Research Design

The following sections describe the research design. Section 6.2.1.1 describes the type of research. Section 6.2.1.2 describes organization participation and selection. Next, in Section 6.2.1.3, WIA choice is detailed. Finally, in Section 6.2.1.4, a prudently adhered to research protocol is presented.

#### *6.2.1.1 Type of Research*

This research study used both quantitative and qualitative methods to answer Research Questions #3 and #4. A quantitative research method was implemented to evaluate the third question by analyzing the questionnaire results via the use of statistical analysis performed on collected survey data. The statistical tests established a baseline need and attempted to show the ability of Lee's Work Improvement Process to improve work, thereby validating the process. The fourth question utilized both quantitative and qualitative methods to

understand possible contexts for and reasons behind employees' preferences via the Good Work Questionnaire (GWQ) and interviews with employees.

Before data collection Lee's Work Improvement Process was improved via the following additions and changes:

- Adding additional Work Characteristics to Lee's survey, hereafter referred to as the Good Work Questionnaire (GWQ), and in-person interview (i.e., incorporating findings from Investigation #1). There were six additional characteristics added to Lee's original 12: *mutual trust, social support, career growth, ergonomics, job security, and regular schedule*. Also, *feedback* was split into two distinct characteristics, *feedback from the job* and *feedback from others*, which resulted in a total of 19 characteristics.
- Adding Work Improvement Actions to Lee's collection (i.e., incorporating findings from Investigation #2).
- Rewriting the Good Work Questionnaire (GWQ) to enhance readability and understandability of the questions.
- Adding Organizational Culture (Employee Loyalty, Management Facets, and Employee Expectations) and a Work Outcome measure (Burnout) to the end of the GWQ.
- Adding additional demographic questions to the GWQ, including time spent at the organization, total time spent working.
- Replacing the Dimensional Significance part of Lee's Survey with a component that allows participants to rate their Top Five and Bottom Five characteristics. This rating system enables participants to vote for their most important (Top Five) and

least important (Bottom Five) characteristics, which can then be used to establish the priority between multiple mismatched characteristics.

- Adding linking questions that allow participants to be matched between Round 1 and Round 2 of Lee's Work Improvement Process.
- Enhancing the in-person interview to include organizational changes and climate of work questions, such as, "*what are some examples of changes that have occurred at work that affect your experience at work?*" and "*If you could modify one or two aspects of your current work would it be and why?*"

Validation of Lee's Work Improvement Process would have been accomplished if employees' perceptions of their work improved, as measured by the characteristic mismatch between workers and the work they perform, was significantly reduced via successfully implemented improvement actions that mitigated the specific characteristic(s) that were identified.

Employee survey data, using the GWQ and in-person interview was collected to establish initial characteristic mismatches as a benchmark for the current state. Unfortunately, it was not possible to collect data for the second time, after the implementation of WIAs, and the system had returned to a steady state. The second survey was intended to show, or fail to show, that the Process improves the employees' perception of their work.

Employees provided survey data anonymously using a paper version of the GWQ. Aggregated questionnaire and interview results were presented to the organization via written reports delivered to the manager. Individual survey results and identified interview notes were not provided to the organization to ensure employee anonymity.

### *6.2.1.2 Organization Participation and Selection*

Three organizations were recruited via business contacts to participate in this research, all of which were in Oregon, USA. All organizations implemented Lee's Work Improvement Process with a collaborative effort between the author and the organizations. All three organizations were in different industries to test Lee's Process on an occupationally diverse set of organizations.

One organization, referred to as the Service Organization, is responsible for maintaining a facility. They employ blue-collar workers, such as carpenters, custodians, electricians, HVAC specialists, and plumbers. All employees work together to make sure the building is safe, clean, stocked with supplies, and fully operational (e.g., ADA compliance, internet accessibility). All workers are members of a labor union, which was consulted throughout the Process, including at the most critical time –the very beginning. Based on the author's understanding of other similar efforts to improve the design of work, it was concluded that failure to consult and obtain explicit approval from the union might have been detrimental to the Process.

The second organization recruited creates and sells technology products to businesses and individuals and is referred to as the Technology Organization. They employed white-collar workers, including programmers, sales associates, and logistic support. All employees work together to ensure their product is high quality, relevant (e.g., meets the needs of their customers), and timely (e.g., regularly updating and creating new products to meet the highly dynamic market requirements). All employees are 'at will', meaning they could have been terminated at any time for any reason that is not an illegal one. The organization was locally owned and managed by a small team of executives.

The third organization produces essential and recreational goods for both individual and government use and is referred to as the Production Organization. They employ blue-collar production workers who make the products using a large variety of modern production equipment and logistical staff who coordinated the production's logistics. All employees are 'at will.' The organization is substantial and managed by a broader suite of executives. A subset of the organization, specifically a single plant operating as a stand-alone production line, participated in the study, with approval from all levels of management (i.e., upper executives to front line supervisors).

All organizations had a critically important characteristic, which is a manager (or group of managers) committed to improving the working conditions for their employees. These individuals had both the motivation and the authority to enact changes at the organization and this investigation could not have occurred without these advocates and champions of *good work*.

Everyone in the organization who interacted with the research was considered a participant. Participants included the workers (those who are directly engaged with the final product or service), managers (managers in the traditional sense, CEOs, and owners), and anyone that participated in meetings concerning the study (e.g., human resource personnel or a labor union representative), all of whom acknowledged their respective consent form. The participants who took the GWQ and participated in in-person interviews were workers that directly interacted with the final product or service and were not managers of other people.

Participants who completed the GWQ were recruited through paper flyers distributed and displayed in general spaces, general employee meetings, and email

distribution lists (not all employees had email addresses). In-person interview participants were recruited through a one-page recruitment document provided along with the questionnaire.

#### *6.2.1.3 Improvement Action and Selection*

Improvement actions were ultimately decided upon by the organization's management, union representatives (where applicable), and team leads in a series of meetings conducted at the organization. The author's role was that of a consultant who collected and analyzed data and then provided relevant suggestions of what could be done using some subset of Work Improvement Actions identified in Investigation #2. Also, the author participated in brainstorming meetings to help decision-makers decide which improvement actions to implement. The author was informed once the action(s) had been implemented.

#### *6.2.1.4 Detailed Research Protocol*

A close protocol was followed in Investigation #3, which was approved in May of 2019 before data collection by the Institutional Review Board (IRB) at Oregon State University and fell under the "Expedited" level of review. The IRB-approved protocol was as follows:

##### Step 1: Recruit Participants

##### Step 2: Conduct the first iteration of the survey and interviews

- A. Administer a Good Work Questionnaire (GWQ) (a modified version of Lee's (2014) questionnaire) for the first iteration
- B. Conduct Follow-up Interviews

##### Step 3: Data Analysis for the first iteration



Identify statistically significant mismatches, along the 19 characteristics, between the work desired by the workers and the work provided by the organization and report aggregate GWQ and in-person interview results to the organization's management.

#### Step 4: Decide Improvement Actions

Identify WIAs from the database and discuss them with organization managers.

- A. Organization management participating in the study as managers (see above) makes the official decision on what changes are made.
- B. The researcher will only advise and provide industry and literature examples of WIAs.
- C. Observational notes, including what improvement actions are discussed and the organization's plans for implementing actions, are taken by the author. Participants are not be identified in these notes by name or by title.

#### Step 5: Implement Improvement Actions

The organization's management ultimately decides what improvement actions to take and implements them.

#### Step 6: Allow time for improvement actions to become realized

Wait six months.

#### Step 7: Conduct the second iteration of the survey and interviews

Administer the second iteration of the questionnaire and conduct the Follow-up Interviews using the same plan as for the first iteration.

### Step 8: Data Analysis for the second iteration

Analyze data to determine the effects (if any) of the implemented changes.

Present findings to the organization and publish general findings. Only aggregate questionnaire results, statistics of aggregate questionnaire results, and generalizable data collected from interviews will be presented to the organization.

### Step 9: Evaluate the effectiveness of the Work Improvement Process

Evaluate the effectiveness by comparing and interpreting the data collected during the first and second iterations of the GWQ and the system health (Step 1 in Lee's Work Improvement Process). The GWQ may show an improvement in a specific dimension after analysis. In addition, the system health metrics may also indicate an improvement. For example, if absenteeism and/or turnover are reduced, two commonly evaluated organizational health metrics, then the organizational health has improved.

As the study fell under Level-3 Data Security<sup>12</sup>, several measures were implemented to ensure participant anonymity and interview confidentiality. The measures included:

- The author and questionnaire participants were the only ones in the room while the participants took the questionnaire.
- All participants turned in a questionnaire, regardless of its state of completion, before exiting the room. This allowed an individual to not participate without his or her colleagues knowing they declined to participate.
- No questionnaires, regardless of state of completion, were left at the organization.

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<sup>12</sup> OSU Research Policies define Level 3 as, "Information that could cause harm to an individual if disclosed, including, but not limited to, risk of criminal or civil liability, psychological harm or other injury, loss of insurability or employability, or social harm to an individual or group." Link to webpage: <https://research.oregonstate.edu/irb/policies-and-guidance-investigators/guidance/data-security/level-3>

- The questionnaire and the follow-up interview recruitment sheet were turned in together into a single, slotted box near the exit of the room. This resulted in many questionnaires and recruitment papers all commingled together. The author did not attempt to match completed questionnaires with adjacent recruitment papers when unloading the box.
- Follow-up Interviews were conducted between the participant and the author only, and interview notes were identified using a numeric identifier, based on location and order (e.g., Service Organization, 01). Therefore, once the data was entered and documented, any link between participant and response was broken.
- Notes made by the author during the interviews were not left on the organizations' grounds after data collection ended and did not contain any information that could have been used to identify the participants.
- Level 3 data security, as defined by the OSU IRB ([link](#)), was provided for all electronic data for this project. Information was shared and stored in a manner that provides access only to authorized individuals. Data was not disclosed to additional parties.
- No identifying details about the organizations, such as name and specific products or services produced, were or will be included in publications.
- There were no identifying details of the people working for the organizations described.

### 6.2.2 Data Collection

Primary employee data was collected using the GWQ and confidential in-person interviews. Supplementary data were collected from notes and memos from meetings with managers (conducted throughout the Process) along with correspondence between the author and managers. The first collection of employee data established initial characteristic mismatches to benchmark the current state and were used as the basis for a deeper

understanding of the GWQ, presented in a subsequent Chapter titled ‘Investigation 3b’. The second data collection session was to occur six months after the organizations implemented Work Improvement Action(s). However, it could not be completed due to the COVID-19 pandemic.

#### 6.2.2.1 Good Work Questionnaire

The GWQ, which can be seen in Appendix C, contained six components that were all rooted in the extant literature. The first component asked participants to rate their most and least important characteristics of work from the set of 19 characteristics and is referred to as ‘Most and Least Important Characteristics’. This component replaced Lee’s Dimensional Significance survey part, which was not used in his analysis but was intended to give relative weight to the Preferred Work component. In this Investigation, participants were asked, *“if you had complete freedom of choice over your work, what would be the five most important factors you would consider in choosing your job? In addition, what would be the five least important factors?”* Employees responded by placing stickers representing the characteristics in two different boxes “Your 5 Most Important” and “Your 5 Least Important (unimportant)”. This component was useful for deciding which characteristic to address when multiple mismatches were identified.

The second and third components of the GWQ utilized a 7-point Likert Scale from 1 “Strongly Disagree” to 7 “Strongly Agree” and asked participants to rate their current level of work and their preferred level of work, respectively, along 19 characteristics: *accomplishment, aesthetics, autonomy, career growth, compensation, demand, ergonomics, feedback from the job, feedback from others, job security, mutual trust,*

*personal growth, regular schedule, safety, social interaction, social support, technical growth, variety, value.*

The Current and Preferred Work components were identical to Lee's Parts 2 and 3, but expanded to include additional characteristics identified in Investigation #1 (see Section 4.4 for details). There was one question for each of the 19 characteristics, resulting in 19 items for each component. These two components allowed for the evaluation of mismatches between the two, which was then the basis of selecting WIAs. Rather than directly asking participants to rate their general level of satisfaction with their work to make decisions on what improvements to make, the GWQ indirectly asked by obtaining the current level and preferred level along the 19 characteristics. This method allowed for higher fidelity in assessing satisfaction and dissatisfaction.

Survey design must make all attempts to avoid double-barrelled questions, i.e., items that contain multiple parts (Babbie, 2007). Asking employees, "how satisfied with your work are you" can be a difficult question to answer, as it covers many aspects and therefore contains many 'barrels.' For example, an employee could be quite satisfied with their current pay but dissatisfied with the level of feedback they received from others; making their response to the question of satisfaction challenging to provide. The GWQ avoided this problem by not directly asking an employee's satisfaction.

Then, Work Outcomes (Total Burnout, Physical Fatigue, Cognitive Weariness, and Emotional Exhaustion) were measured using the Shirom-Melamed Burnout Measure (SMBM) (see Section 2.4.1.2 for details). The SMBM uses a 7- point likert scale from 1 "Never" to 7 "Always" and asks participants how often they felt the statements provided, making each statement a question. For example the component initially asked, "*how often*

*have you felt this way at work?”* Followed by statements like, *“I feel tired”* and *“I feel I’m not thinking clearly.”*

Next, Organizational Culture was assessed using three sub-components: Employee Loyalty, Management Facets, and Employee Expectations. Employee Loyalty was included because it has been shown to have a strong link to employee behaviors such as attendance, turnover, organizational citizenship (Rene & Charissa, 1997), and employee satisfaction (Matzler & Renzl, 2006). Employee Loyalty was measured via four questions all of which utilized a 7-Point Likert-scale from 1 “Never” to 7 “Always”: *1) I feel loyalty to the organization, 2) I feel loyalty towards my immediate supervisor, 3) I feel loyalty towards my co-workers, and 4) I feel loyalty towards customers and clients.*

Management Facets were included because relations between employees and managers are known to significantly impact people’s experiences at work (Stockard & Lehman, 2004). The GWQ measured an employee’s evaluation of Management Facets via four statements. Participants were asked to rate four questions presented on a Likert-scale from 1 “Never” to 7 “Always.” The questions were based on known best practices of management (Badawy, 1995): *1) My manager understands about my family responsibilities, 2) Flexible work options are available to me if needed, 3) I trust management to look after my best interest, 4) There are good relations between managers and employees.* All questions were framed positively, where an increase in the response would reflect quality management practices. For example, an employee who always trusts management to look after their best interests would respond with a 7 “Always” to question *3) I trust management to look after my best interest.*

Employee Expectations were assessed in the GWQ by providing employees statements regarding known expectations of them while at work and then asked them to state how often they felt that way, all of which utilized a 7-point Likert scale from 1 “Never” to 7 “Always.” The responses to the statements measured known expectations, work responsibilities, clarity of orders from supervisors, and knowledge of how to obtain a promotion and/or raise. Some questions were phrased positively and others negatively to keep participants engaged in the survey, similar to a system usability survey (Brooke, 1996). For example, “*I don’t know how I will be evaluated for a raise or promotion*” could be answered from 1 “Never” to 7 “Always” and was framed negatively, where a high value (e.g., 7) would be undesirable. On the other hand, “*I know exactly what is expected of me*” was a positively framed statement. The five statements read as follows:

- i. *I don’t know what is expected of me at work (Neg.)*
- ii. *My work responsibilities are clearly defined (Pos.)*
- iii. *I don’t know how I will be evaluated for a raise or promotion (Neg.)*
- iv. *I have unclear orders from my supervisor (Neg.)*
- v. *I know exactly what is expected of me (Pos.)*

To administer the GWQ, the author gave all participants: (1) a stapled paper copy of the Good Work Questionnaire, (2) a one-page recruitment document for the follow-up interview, (3) an OSU pen that was theirs to keep, (5) and the author’s business card that she/he could keep in case he/she wanted to contact the author at a later time. All five things were presented at the same time but were not attached.

The initial information presented on the questionnaire further informed the participants of the purpose, benefits, and potential risks associated with the research study and constituted as the official consent form. The questionnaire and the separate paper recruiting for in-person interviews were dropped, regardless of completion, into a slotted box located

next to the exit of the room. They kept the OSU pen and business card. The questionnaire took about 20 minutes to complete but was not timed. Once all participants turned in the questionnaire and the recruitment paper the author collected all supplies and left the organization's site with all questionnaires and all interview recruitment papers, completed or not. No organization personnel was granted access to see individual questionnaires.

#### 6.2.2.2 *Interview*

To conduct the in-person interviews participants were recruited through a single sheet of paper that was provided along with the Good Work Questionnaire. The paper asked if they wished to participate and stated that participation was voluntary. Participants wrote down their names if they were interested in an interview on the sheet. From the sheets of paper collected, the author generated a single list of interview participants, which was given to the company representative to schedule interviews at the organization.

The interviews took place in a room located on the organization's grounds, where only the author and the interviewee were present and could not be quickly interrupted. The interviews were not video- or audio-recorded by the organization or the author and adhered to the written plan, which is attached as Appendix D.

Handwritten notes were taken during the interview and did not contain any names or specific dates. The author asked the participants not to give answers that might identify her or him or other individuals. The participant was only identified by "employee x" at "y organization" numbered in the order in which interviews are conducted (e.g., "employee 12 at the Technology Organization"). The interview took around 60 minutes, including presenting the consent form and answering any participant questions before and after the interview. It focused on identifying the most and least important factors of *good work* and



factors that their current job does and does not offer based on the 19 characteristics developed in Investigation #1.

The interviews sought to understand and document the context behind a worker's consideration of the variables of *good work*. For example:

- “What are the 3 most important characteristics in determining whether you would consider a job good? Why?”
- “What are the 3 least important characteristics in determining whether you would consider a job good? Why?”

Furthermore, the interviews attempted to understand and document other contaminating factors that may affect their experience at work. For example:

- Are there changes occurring at work that have affected your work? (e.g., management changes, company mergers)
- If so, how have these changes affected you?

#### 6.2.2.3 Meetings with Managers

All managers verbally agreed to a consent form that outlined their responsibilities and roles in the study, including where the author's position ends and where their role in the Process, implementing Work Improvement Actions, begins. The managers had time to read the consent form, ask questions, and have them answered. All attendees of meetings regarding the research who were not direct managers of the employees surveyed, such as human resource personnel and labor union representatives, also verbally agreed to a consent form. After providing verbal consent, all interactions from that point forward were documented via notes and memos by the author and were included in subsequent qualitative analysis.

#### 6.2.2.4 *Participant Demographics*

The employees who took the GWQ and participated in an in-person interview were workers at one of three participating organizations located in Oregon, USA. As in Investigation #1, all participants worked full time and were over the age of 18. This restriction was placed to target the people at the organization who may be most affected by future Work Improvement Actions. Demographic information was only collected for participants of the GWQ and in-person interviews, and no demographic information was obtained from managers or attendees of meetings. Demographic data for the Interviewees are not reported to maintain the confidentiality of the participants. Summarized participant demographics for the GWQ can be seen in Table 17.

Table 17: Investigation #3a participant demographics of the GWQ grouped by the organization (Service, Technology, and Production)

<b>Service Organization (n=11)</b>					
<b>Age</b>	<b>n</b>	<b>Years of working experience</b>		<b>Gender</b>	<b>n</b>
18 to 35	5	average	23.6	F	3
36 to 45	1	St. dev	15.1	M	8
46 to 55	2	<b>Years employed at org.</b>		No response	0
56 to 65	3	Average	7.0		
65+	0	St. dev.	7.8		
<b>Technology Organization (n=31)</b>					
<b>Age</b>	<b>n</b>	<b>Years of working experience</b>		<b>Gender</b>	<b>n</b>
18 to 35	13	average	15.2	F	12
36 to 45	15	St. dev	8.57	M	17
46 to 55	1	<b>Years employed at org.</b>		No response	2
56 to 65	1	Average	2.91		
65+	0	St. dev.	1.84		
No response	1				
<b>Production Organization (n=13)</b>					
<b>Age</b>	<b>n</b>	<b>Years of working experience</b>		<b>Gender</b>	<b>n</b>
18 to 35	7	average	16.7	F	3
36 to 45	5	St. dev	11.8	M	9
46 to 55	1	<b>Years employed at org.</b>		No response	1
56 to 65	0	Average	5.8		
65+	0	St. dev.	4.8		
<b>Total (n=55)</b>					
<b>Age</b>	<b>n</b>	<b>Years of working experience</b>		<b>Gender</b>	<b>n</b>
18 to 35	25	average	18.5	F	18
36 to 45	21	St. dev	11.8	M	34
46 to 55	4	<b>Years employed at org.</b>		No response	3
56 to 65	1	Average	5.24		
65+	4	St. Dev.	4.81		
No response	1				

### 6.2.3 Data Analysis

Each organization's data was analyzed separately. After returning from data collection, all Good Work Questionnaire (GWQ) results were manually entered into Microsoft Excel. Then de-identified data were transferred to SPSS for more sophisticated analysis. Next, a test for normality was performed in SPSS on all items in the GWQ, which was the Shapiro-Wilk (Mohd Razali & Bee Wah, 2011) test that confirmed the data was normally distributed.

Since the data proved to be normally distributed, paired t-tests were performed on the data to test for a characteristic mismatch between work offered by the organization and work preferred by the employees. A paired t-test was chosen to control for the variability between participants (Montgomery, 2009). A Microsoft Excel tool was developed to automate much of the statistical testing. The tool calculates if a characteristic difference that exists between the Current Work provided by the organization ( $\text{Characteristic}_{\text{current}}$ ) and the employee's Preferred Work ( $\text{Characteristic}_{\text{preferred}}$ ) is statistically significant, and is summarized below in Table 18.

*Table 18: Statistical analysis establishing characteristic(s) mismatch(s) between current work and preferred work*

<b>Characteristic<sub>current</sub></b>	<b>Characteristic<sub>preferred</sub></b>	<b>Characteristic Difference</b>
accomplishment <sub>current</sub>	accomplishment <sub>preferred</sub>	accomplishment $\Delta =$ accomplishment <sub>current</sub> – accomplishment <sub>preferred</sub>
...	...	...
technical Growth <sub>current</sub>	technical Growth <sub>preferred</sub>	technical growth $\Delta =$ technical growth <sub>current</sub> – technical growth <sub>preferred</sub>
...		
safety <sub>current</sub>	safety <sub>preferred</sub>	safety $\Delta =$ safety <sub>current</sub> – safety <sub>preferred</sub>

A positive mismatch that is statistically significant suggests that there exists excess in the characteristic; in other words, the work is more abundant in that characteristic than need be. For example, if *demand* showed a significantly positive difference, the work provides more *demand* than the workers would prefer. A negative mismatch that is statistically significant suggests that there exists a shortage, or the work needs to be enriched along that characteristic. For example, if *autonomy* showed a negative mismatch, then more *autonomy* is required to satisfy employee desires. If a test's p-value was less than 0.05, the mismatch was considered statistically significant. Due consideration had to be taken when analysing the mismatches, as not all positive mismatches should be regarded as meaningful characteristics to address via WIAs. For example, if *aesthetics* had a positive mismatch, it would not be recommended for an organization to address the mismatch by reducing exposure to beauty in the workplace. Therefore, it was necessary to consider the practical significance of the mismatch, which was done using data from the Interview.

For all mismatches that were identified to be statistically significant and meaningful, a list of improvement actions was generated. The list of improvement actions addressing the characteristic was a customized subset from the central database created in Investigation #2. It was critical to tailor the suggested improvement actions to the specific organization for two reasons. First, it ensured the list of actions was appropriate to the organization, and that the organization could potentially utilize the suggestion. Secondly, the customized list showed a commitment from the author to the organization that he was carefully and thoughtfully helping them improve their design of work. For example, suggesting a profit-sharing implementation to improve employee's compensation would

not be an appropriate suggestion for a governmental organization and could call to question the intension of the author.

After the first round of mismatches was calculated, the in-person interviews were conducted. In-person interviews had to be performed after the GWQ data analysis, as interview questions relied on statistically significant mismatches. For example, an interview question asked, “*The GWQ results show a great difference in respect to ‘identified characteristic’ then what they received in work. Why do you think this is so?*” Immediately after each in-person interview, the author wrote interview thoughts and impressions (memos), which were used throughout the data analysis. All memos<sup>13</sup> were referred to and created/written throughout the data collection and analysis, which aided in developing a theory about the employees’ preferences towards the characteristics (Creswell, 2013).

All interview notes and memos were used to supplement GWQ findings by providing contextualized employee experiences at work. The interview was designed to elicit influential conditions that may affect employees’ answers to the GWQ, including organizational changes and climate of work questions. For example, organizational changes were directly asked, “*What are some changes that have occurred at work that affect your experience at work?*” The climate of work was assessed in terms of work design, “*if you could modify one or two aspects of your current work, what would it be? Why?*” This question proved to be useful for evoking potential improvement actions, which arose directly from the employees; again, the role of the author as an interpreter for the employees was maintained.

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<sup>13</sup> See Section 4.2.3 for more information on research memos.

Aggregated survey statistics, statistical results from mismatches, common contextualized findings from in-person interviews, and customized WIAs were given to each organization in individual reports. Individual survey results and identifying information collected during in-person interviews were not provided to the organization to ensure worker anonymity and confidentiality, respectively.

The following hypothetical example aids in understanding the Process. After analyzing the results from the GWQ, *autonomy* was identified as a negative mismatch – the workers’ ratings of their current level of autonomy was significantly less than their preferred ratings (average difference = -1.56, p-value  $\leq 0.05$ ). During in-person interviews many employees related their lack of *autonomy* as a problematic towards their ability to balance their lives outside of work – specifically schedule *autonomy*. Based on the results of the GWQ and Interviews, the author provided the organization a list of possible WIAs to address *autonomy*. The organization decided to facilitate telecommuting in their workforce (Humble et al., 1995) one of the WIAs provided to them in the customize report by purchasing video conferencing software and the necessary hardware. Then, the organization implemented policies to manage the new system. After the WIA took effect, employees could elect to work from home if they needed to care for a sick child, or otherwise take care of important facets of life outside of work.

### 6.3 Results

Three main goals guided this research. The first objective was to measure the three organizations’ state of work based on 1) the Most and Least Important Characteristics, 2) the mismatch between Current and Preferred Work, 3) Burnout, 4) Employee Loyalty, 4)

Management Facets, and 5) Employee Expectations. The second objective was to develop context into identified mismatches and a deeper understanding of the current state of work via the in-person interviews. The third objective was to provide the organizations with relevant WIAs targeted towards significantly mismatched and meaningful characteristics, those of which were found to be statistically deficient from the view of the employees. Three data methods were implemented to meet these objectives: (1) paper surveys with employees (the Good Work Questionnaire (GWQ)), (2) in-person interviews with employees, and (3) an analysis of the relevant literature related to work improvements and critical thought into the applicability of each to the organizations. Note: WIAs were intended to be a springboard for discussion, not a sole and final recommendation.

The following three sections describe the results from implementing Lee's Process at each of the three organizations. First, in Section 6.3.1, the results of the Service Organization are described. Then, Section 6.3.2 details the results of the Technology Organization. Finally, the results of the Production Organization are provided in Section 6.3.3.

#### 6.3.1 Service Organization

To inform the strategic work design efforts of the Service Organization, the author surveyed (n=11) and interviewed (n=8) employees regarding their work in terms of Work Characteristics, i.e., attributes of the job tasks, and social and organizational environment (Morgeson & Humphrey, 2006). The following are the key findings from the application of Lee's Work Improvement Process.



### 6.3.1.1 Most and Least Important Characteristics in the Service Organization

The first section of the GWQ asked participants to rate their five most important characteristics (i.e., the top five) and their five least important characteristics (i.e., the bottom five) of their ideal job. There was no explicit attempt to rank these two sets of five (i.e., 1<sup>st</sup> ... and 5<sup>th</sup>) by the author. The most common characteristics rated in the top five and the most common in the bottom five can be seen in Table 19. *Job security* was the most common of the top five characteristics (64% of participants), followed by *compensation* (55%), *mutual trust* (55%), and *regular schedule* (55%). Interestingly, *aesthetics*, *demand*, *ergonomics*, *feedback from the job*, and *social interaction* were never rated in the top five.

*Aesthetics* (81%) was the most common characteristic in the bottom five, followed by *social support* (72%), *demand* (64%), and *social interaction* (64%). *Job security*, *career growth*, *value*, and *accomplishment* were never rated in the bottom five.

The bottom five were not completely opposite of the top five, although there was some crossover. For example, *job security*, the most common characteristic in the top five, was never rated as a least important characteristic. Taking into consideration the top five and bottom five paints a picture of the group's ideal job: a job that pays well enough (*compensation*), has trust between co-workers and managers (*mutual trust*), contributes significantly within and beyond the organization (*value*), and where employees know they cannot be fired due to factors outside of their control (*job security*).

Table 19: The most common important (Top Five) and least important (Bottom Five) characteristics for the Service Organization. The questionnaire data is based on 11 participants.

<b>Top Five</b>		<b>Bottom Five</b>	
<b>Characteristic</b>	<b># of votes (% of participants)</b>	<b>Characteristic</b>	<b># of votes (% of participants)</b>
Job Security	7 (64%)	Aesthetics	9 (81%)
Compensation	6 (55%)	Social Support	8 (72%)
Mutual Trust	6 (55%)	Demand	7 (64%)
Regular Schedule	6 (55%)	Social Interaction	7 (64%)
Autonomy	4 (36%)	Feedback from others	5 (45%)
Career Growth	4 (36%)	Ergonomics	5 (45%)
Personal Growth	4 (36%)	Regular Schedule	3 (27%)
Safety	4 (36%)	Autonomy	3 (27%)
Value	4 (36%)	Variety	2 (18%)
Variety	4 (36%)	Compensation	1 (9%)
Technical Growth	3 (27%)	Mutual Trust	1 (9%)
Accomplishment	1 (9%)	Personal Growth	1 (9%)
Feedback from others	1 (9%)	Safety	1 (9%)
Social Support	1 (9%)	Technical Growth	1 (9%)
Aesthetics	0 (0%)	Feedback from the job	1 (9%)
Demand	0 (0%)	Job Security	0 (0%)
Ergonomics	0 (0%)	Career Growth	0 (0%)
Feedback from the job	0 (0%)	Value	0 (0%)
Social Interaction	0 (0%)	Accomplishment	0 (0%)

The first two questions of the in-person interview asked participants which three characteristics of work are most and least important to them and why. If the participant stated more than three characteristics are of equal importance or unimportance, the author did not require them to narrow it down to three and allowed a more open-ended response. The aggregated results can be seen in Table 20.

*Personal growth* was the most common in the top three, with half of the participants discussing how they do not want to become stagnate, “We should always be growing at

work and bettering ourselves, and it allows doors to be opened – both professionally and personally.” *Compensation, job security, and value* were all tied for the second most common important characteristic. Participants were candid with their responses for placing *compensation* in their top three. One participant stated, “I would easily trade all others for this one,” another said, “I need to support my family,” and a third claimed, “[t]his is by far the best way for employers to say thank you.”

*Job security* was important to the participants to maintain their mental health, for which insecurity would be taxing for themselves and their families, as security was the most important characteristic for their family’s well-being. One participant elaborated that *job security* was a primary factor in choosing their current job, as the labor union provided a better sense of *security* than their previous “at-will” employment, stating that they took a significant pay cut to obtain better *security*. *Value* was important to participants because they valued their own time and did not want to spend a lifetime of work doing things that do not have *value* to society. Moreover, *value* was related to a sense of *accomplishment* at work. Interestingly, *autonomy* was placed into the top three only by participants with at least 40 years of working experience who stated they had acquired expert judgment that should be utilized.

Just as in the GWQ, *aesthetics* was the most common least important characteristic as 75% of participants categorized the characteristic as one of their least important. Participants claimed the characteristic was superficial and did not matter - “[*aesthetics*] is flowery [B.S.]; it’s the work that’s important.” However, participants often placed qualifiers on their responses discussing how the organization of their shop is very critical to executing a high level of craftsmanship. Again, just as in the GWQ, *social interaction*

was also the second most common least important characteristic. Participants spoke to how socializing was not part of their job, ensuring the building is well serviced and maintained. Moreover, they do not mind working alone and are not social people. One participant bluntly stated, “I am fairly abrasive and sometimes gruff, this can put people off, and so I often avoid social situations.” When *autonomy* was placed into the least important category, participants stated they do expect respect and consistency when being told what to do.

*Table 20: Top Three and Bottom Three characteristics for participants at the Service Organization as identified during the in-person interview. The interview data is based of 8 participants.*

<b>Top Three</b>		<b>Bottom Three</b>	
<b>Characteristic</b>	<b># of votes (% of participants)</b>	<b>Characteristic</b>	<b># of votes (% of participants)</b>
Personal Growth	4 (50%)	Aesthetics	6 (75%)
Compensation	3 (38%)	Social Interaction	5 (63%)
Job Security	3 (38%)	Accomplishment	2 (25%)
Value	3 (38%)	Autonomy	2 (25%)
Accomplishment	2 (25%)	Career Growth	2 (25%)
Autonomy	2 (25%)	Demand	2 (25%)
Career Growth	2 (25%)	Compensation	1 (13%)
Mutual Trust	2 (25%)	Feedback from others	1 (13%)
Technical Growth	2 (25%)	Personal Growth	1 (13%)
Feedback from the job	1 (13%)	Safety	1 (13%)
Variety	1 (13%)	Value	1 (13%)
Aesthetics	0 (0%)	Ergonomics	0 (0%)
Demand	0 (0%)	Feedback from the job	0 (0%)
Ergonomics	0 (0%)	Job Security	0 (0%)
Feedback from others	0 (0%)	Mutual Trust	0 (0%)
Regular Schedule	0 (0%)	Regular Schedule	0 (0%)
Safety	0 (0%)	Social Support	0 (0%)
Social Interaction	0 (0%)	Technical Growth	0 (0%)
Social Support	0 (0%)	Variety	0 (0%)

### 6.3.1.2 Current Work Characteristics in the Service Organization

In the second component of the GWQ, participants were asked their level of agreement with statements regarding each work characteristic, focusing on the work they are currently performing and based on a 7-point Likert scale from 1 “Strongly Disagree” to 7 “Strongly Agree.” For example, the current level of variety was assessed by stating, “My work consists of a variety of different types of tasks and/or activities.” If the result is a 7 (out of 7), the employee strongly agrees that their work has a *variety* of tasks and/or activities. Figure 16 shows the results.

The average and standard deviation of all responses to all 19 Current Work questions were 4.8/7 and 1.6, respectively. *Variety* was the highest-rated characteristic (6.0/7), followed by *social interaction* (5.9/7), *regular schedule* (5.7/7), *safety* (5.6/7), and *accomplishment* (5.5/7). Based on the aggregate responses, the employees of the Service Organization agree their work overall provides them with a variety of tasks, interaction with other workers, a predictable schedule, protection from harm, and a feeling of satisfaction with their work.

Values below a 4 “Neutral” indicate some level of disagreement with a characteristic being present in their current work. The lowest rated characteristic was *compensation* which was rated on average as 3.2/7 “Somewhat disagree”, which may be of concern as the question framed *compensation* in terms of, “*earning enough money to meet my, and my dependents’ needs*”, rather than in terms of “*earning a ‘high’ salary*”. Employees of the Service Organization seem to be struggling to earn enough to pay for their and their dependents’ needs, let alone financially prosper.

Two other characteristics fell below a neutral rating; *feedback from the job* was the second lowest-rated characteristic (3.5/7) and *career growth* (3.6/7) was the third lowest. While one could postulate that these are deficits in the work design, that conclusion cannot be made until a comparison with what workers' prefer is obtained; it could be that employees do not want *career growth* and therefore are satisfied with the current lack of opportunities for *career growth* and advancement; an unlikely, but possible situation depending on the peoples' preferences. Complete results can be seen in Table 22.

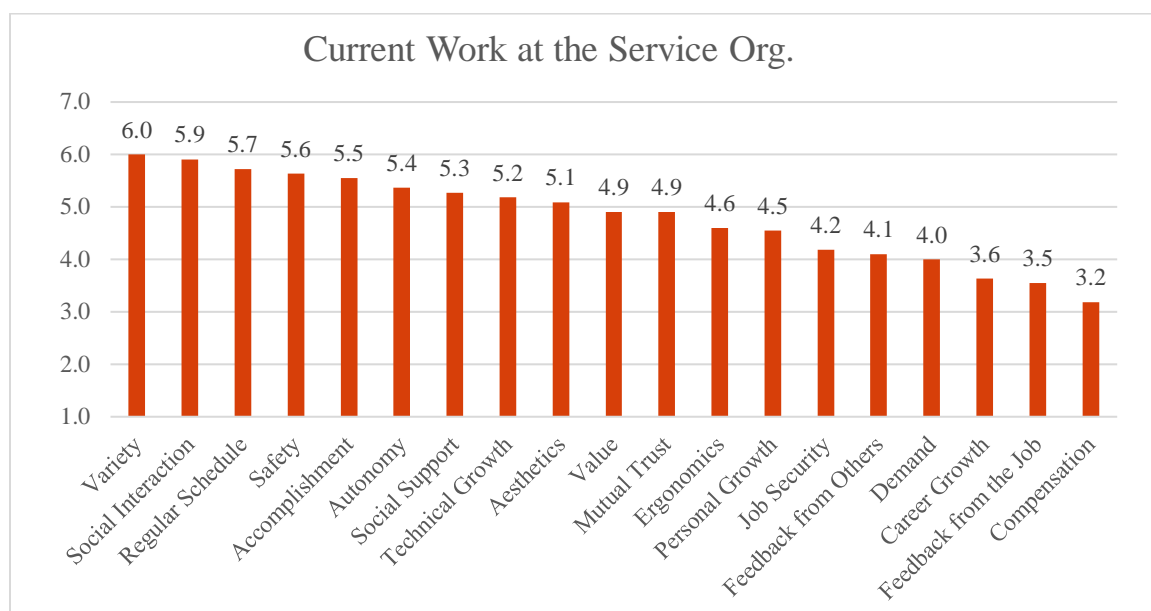


Figure 16: The Service Organization's Current Work. Likert-scale qualifiers presented next to the numbers were, 1 "Strongly Disagree", 4 "Neutral", and 7 "Strongly Agree." The questionnaire data is based on 11 participants.

The third and fourth questions of the in-person interview asked participants which three characteristics they thought were best and least satisfied in their current work. As with the entire interview, this question allowed participants to place more than three or less than three in either category if they felt strongly about their response. Aggregated results

can be seen in Table 21. *Autonomy* and *variety* were tied for the most common, best-satisfied characteristic, with 63% of participants placing them in their best-satisfied category. Participants clarified regarding *autonomy* that they are not micromanaged can freely choose their method(s) for performing their work, and, for the most part, the projects they oversee. *Variety* was selected because participants can, and do, work on several different tasks and projects in different departments. Moreover, most discussed how their work of maintaining a building, changes throughout the seasons. They often related variety to technical growth, claiming they get to fix many different systems, which provides them the ability to learn new work-related skills – “I get to fix many things in many areas. This variety gives me technical growth.”

*Career growth* and *compensation* were tied for the most common, least satisfied characteristics (50% of participants). Participants claimed the department is small and therefore does not provide many opportunities to be promoted, which is why they do not see much *career growth*. In reference to the lack of perceived *compensation*, participants explained how their pay is set by the bargaining agreement between the union and management and is based on the years of service, not the quality and quantity of their work. “It doesn’t really matter how hard I work or how high the quality of my work is, the pay is fixed, and I will only receive my next raise after [X] number of years.” Moreover, participants claimed their pay rate is substantially less than their colleagues performing similar work for other organizations. Surprisingly, one participant solely placed *compensation* in their least satisfied characteristics, claiming all others are fine. According to another participant, the same holds for *career growth*. Both responses illustrate their dissatisfaction with their opportunities for career growth and their current pay.

Table 21: Best Satisfied and Least Satisfied characteristics at the Service Organization, organized by most common to least common. The interview data is based on 8 participants.

Best Satisfied		Least Satisfied	
Characteristic	# of votes (% of participants)	Characteristic	# of votes (% of participants)
Autonomy	5 (63%)	Career Growth	4 (50%)
Variety	5 (63%)	Compensation	4 (50%)
Aesthetics	2 (25%)	Feedback from the job	3 (38%)
Job Security	2 (25%)	Feedback from others	2 (25%)
Personal Growth	2 (25%)	Mutual Trust	2 (25%)
Social Interaction	2 (25%)	Personal Growth	2 (25%)
Value	2 (25%)	Accomplishment	1 (13%)
Accomplishment	1 (13%)	Technical Growth	1 (13%)
Demand	1 (13%)	Aesthetics	0 (0%)
Feedback from others	1 (13%)	Autonomy	0 (0%)
Mutual Trust	1 (13%)	Demand	0 (0%)
Career Growth	0 (0%)	Ergonomics	0 (0%)
Compensation	0 (0%)	Job Security	0 (0%)
Ergonomics	0 (0%)	Regular Schedule	0 (0%)
Feedback from the job	0 (0%)	Safety	0 (0%)
Regular Schedule	0 (0%)	Social Interaction	0 (0%)
Safety	0 (0%)	Social Support	0 (0%)
Social Support	0 (0%)	Value	0 (0%)
Technical Growth	0 (0%)	Variety	0 (0%)

### 6.3.1.3 Preferred Work Characteristics in the Service Organization

In the third component of the GWQ, participants were asked to fill in a statement regarding what their ideal job would provide, based on a 7-point Likert scale from 1 “Never” to 7 “Often.” For example, the preferred level of *mutual trust* was assessed by stating, “A job where I \_\_\_\_\_ feel trusted by and feel trust in my co-workers.” If the result was a 7, the employee would prefer a job where they often feel trust by and in their co-workers. Figure 17 detail the results.



The average and standard deviation of all responses to the 19 Preferred Work questions was 5.3/7 and 1.3, respectively. All characteristics, except *regular schedule*, were rated as at least somewhat/sometimes (4.0/7) preferred, illustrating employees, on average, prefer a comprehensive work design that fulfills some level of all characteristics (i.e., no characteristics, on average, were undesirable). *Variety* and *mutual trust* were the most preferred characteristics (6.2/7), followed by *career growth* (6.1/7), *technical growth*, and *compensation* (6.0/7).

*Regular schedule* was rated the lowest (2.9/7), as the question was phrased so that a low rating indicates employees would not want their schedule to change week to week. This question was phrased in reverse of the other 18 question's wording. In hindsight, the question should not have been in reverse, as most people would prefer to have a consistent schedule, which allows them to better manage their family life outside of work (Beutell, 2010; Kelly et al., 2011). Once the data was re-coded by subtracting the response from 7 to capture the preferred more predictable schedule, the results indicate employees, on average, only sometimes prefer a schedule that changes week to week (4.1/7); however, due to the relatively high standard deviation (1.8), some employees would prefer to have a fluctuating schedule. Complete results can be seen in Table 22.

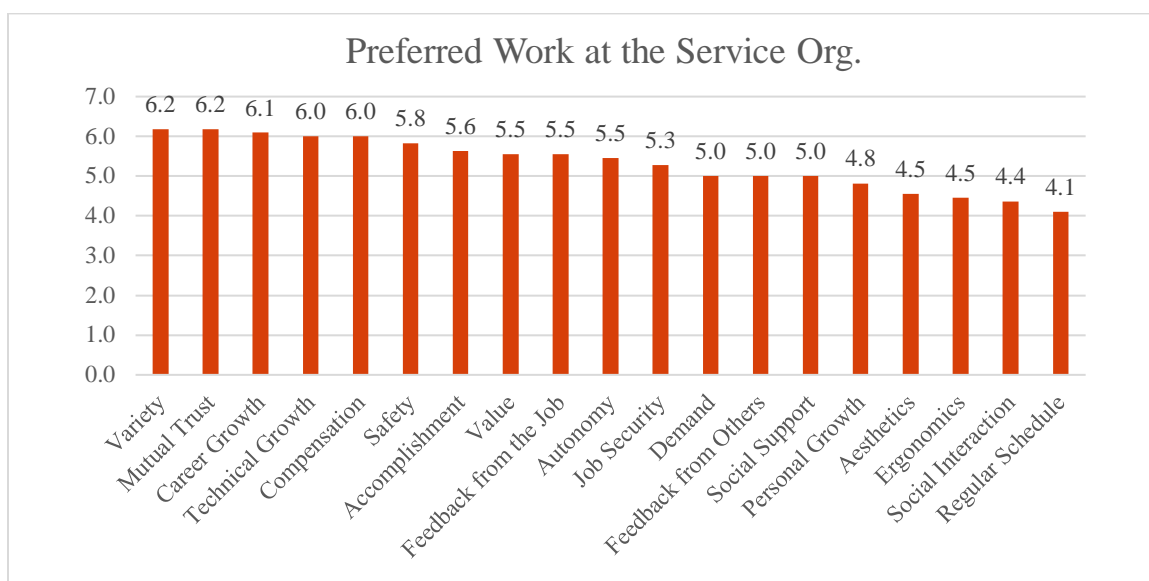


Figure 17: The Service Organization's Preferred Work. Likert-scale qualifiers presented next to the numbers were, 1 "No", 4 "Some", and 7 "Often." The questionnaire data is based on 11 participants.

#### 6.3.1.4 Comparing Current versus Preferred Work at the Service Organization

Comparing between the current state of work and the preferred state of work along each of the 19 characteristics, via paired t-tests, reveals characteristics that are statistically positive (i.e., there is evidence that the current level exceeds the preferences of the employees), statistically dissatisfied (i.e., there is evidence that the current work does not fulfill the employees' preferences and therefore may need to be addressed), and neutral (i.e., no statistical evidence for excess or insufficiency). Statistically dissatisfied characteristics create a known set of mismatches upon which to focus efforts to improve the employees' work. All statistical analyses utilized an alpha level of 0.05. Table 22 details the results.

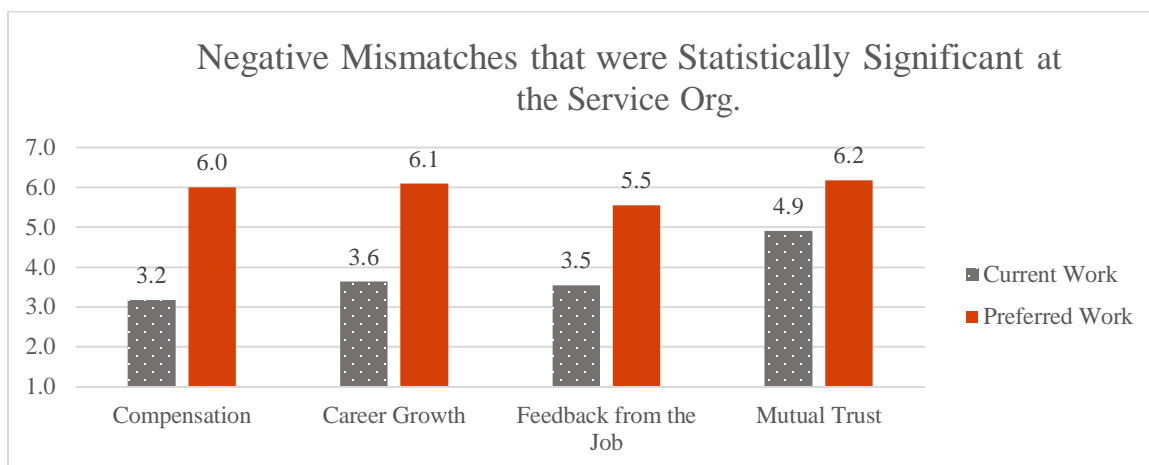
The only positive mismatch that was statistically significant was *social interaction* (average difference = 1.55, p-value = 0.015), employees at the Service Organization

received more social interaction than they would prefer. Other positive differences that are not statistically different include *aesthetics* (average difference = 0.55, p-value = 0.258), *social support* (average difference = 0.27, p-value = 0.557), and *ergonomics* (average difference = 0.19, p-value = 0.713).

Negative mismatches that were statistically significant, shown in Figure 18, include *compensation* (average difference = -2.82, p-value = 0.00002), *career growth* (average difference = -2.45, p-value = 0.006), *feedback from the job* (average difference = -2.00, p-value = 0.002), and *mutual trust* (average difference = -1.27, p-value = 0.003). Results indicate that workers may benefit from the implementation of WIAs to address one or more of these characteristics. Complete results can be seen in Table 22.

Based on the information acquired during a thoughtful examination of the Service Organization, it was the author's opinion that *compensation* and *career growth* would be the most difficult characteristics to address. *Compensation* would be difficult to address because the funds of the Service Organization are very limited (e.g., it is a not-for-profit organization), and the current management team does not have complete authority to give raises. The labor union that the employees are in bargains for the salary and benefits for an entire classification of employees (e.g., all type X custodians get paid Y).

*Career Growth* would also be difficult to address due to the limited size of the department and the nature of promotions (i.e., promotions up the ladder require a vastly different skill set than workers possess at the task level; a competent HVAC technician does not necessarily fit into a position managing other people). Therefore, focusing on improving the current perception of *feedback from the job* and/or *mutual trust* may prove to be more fruitful to the organization.



*Figure 18: Negative mismatches that were statistically at the Service Organization. The questionnaire data is based on 11 participants.*

Table 22: Current Work, Preferred Work, and Comparisons (paired t-tests) along the 19 Work Characteristics at the Service Organization. The questionnaire data is based on 11 participants.

<i>Characteristic</i>	<b>Current Work</b>		<b>Preferred Work</b>		<b>Comparison (paired t-test)</b>	
	<b>Avg</b>	<b>St dev</b>	<b>Avg</b>	<b>St dev</b>	<b>Difference</b>	<b>p-value</b>
Statistically Mismatched Characteristics						
<i>Compensation</i>	3.18	1.33	6.00	0.77	<b>-2.82**</b>	0.0002
<i>Feedback from the Job</i>	3.55	1.69	5.55	0.69	<b>-2.00**</b>	0.002
<i>Mutual Trust</i>	4.91	1.38	6.18	0.60	<b>-1.27**</b>	0.003
<i>Career Growth</i>	3.64	1.69	6.09	0.83	<b>-2.45**</b>	0.006
<i>Social Interaction</i>	5.91	1.45	4.36	1.75	<b>1.55*</b>	0.015
All Other Characteristics						
<i>Regular Schedule</i>	5.73	1.62	4.09	1.76	1.64	0.058
<i>Technical Growth</i>	5.18	0.87	6.00	1.00	-0.82	0.082
<i>Demand</i>	4.00	1.61	5.00	1.00	-1.00	0.120
<i>Job Security</i>	4.18	1.78	5.27	1.85	-1.09	0.140
<i>Feedback from Others</i>	4.10	1.60	5.00	1.00	-0.90	0.196
<i>Aesthetics</i>	5.09	1.04	4.55	1.51	0.55	0.258
<i>Value</i>	4.91	1.81	5.55	0.69	-0.64	0.341
<i>Personal Growth</i>	4.55	1.44	4.82	1.47	-0.27	0.518
<i>Social Support</i>	5.27	1.27	5.00	1.10	0.27	0.557
<i>Variety</i>	6.00	1.00	6.18	0.98	-0.18	0.690
<i>Ergonomics</i>	4.64	1.75	4.45	1.21	0.19	0.713
<i>Safety</i>	5.64	1.03	5.82	1.72	-0.18	0.779
<i>Accomplishment</i>	5.55	1.63	5.64	1.03	-0.09	0.875
<i>Autonomy</i>	5.36	1.69	5.45	0.82	-0.09	0.887
<i>Totals</i>	4.81	1.64	5.32	1.32	-0.503	0.074

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

The last questions of the in-person interview dove deeper into the context and reasons for the mismatched characteristics, which were identified from the results of the GWQ. The three characteristics that were brought into the interview were *feedback from the job*, *mutual trust*, and *career growth*. The protocol strictly allowed up to three

characteristics, requiring one of the four statistically mismatched to be neglected from the Interview. While *compensation* had the largest difference between current and preferred work, the author knew, based on prior conversations with the management team and the Union representatives, that management could not make changes to pay and/or benefits and was, therefore, not included. The questions asked participants why they thought the characteristic was mismatched (one question for each of the three mismatched characteristics).

Most participants claimed *feedback from the job* was lacking because the organization quickly moves them between projects (repairs and improvements) without informing them if their work positively or negatively affected the customers of the project. Employees do not receive information regarding the effectiveness of their work because of the quick turnaround on projects. Another typical response discussed the new employee evaluation system that has employees rate themselves, which participants claim is subject to personal bias. In the old system, the manager herself/himself performed the evaluations, which the participants preferred, as it was less ambiguous and more consistent.

Most participants attributed the deficit in *mutual trust* to a change in management, as a relatively new manager had been hired less than one year before the data collection. Their previous manager, who retired, had been their supervisor for an extended period and had built deep connections amongst them, which the participants felt could not be easily duplicated. Participants stated it will take time to establish the same level of trust and it cannot be quickly acquired. Considering the participants have spent considerable time working for the organization (average time = 7.0 yrs., max = 25 yrs.), this explanation provides significant insight into the GWQ findings. A third common explanation detailed

the lack of communication throughout the hierarchy, "...leadership needs to communicate down as well as up...we need to have more information about future changes."

As a whole, participants were not surprised the GWQ identified *career growth* as a mismatch. Similar to the findings for the 'least satisfied characteristics' question in the interview, *career growth* also found to be a least satisfied characteristic. Most participants attributed this to the lack of opportunities for a raise and/or promotion due to the Union bargaining and a small organization, respectively. "There is nowhere else for me to go since I am at the top of the pay rate and, I am not qualified to become a manager...management positions have only been given to people with university degrees," stated a participant with considerable work experience. Other participants had recently applied to a higher position and were frustrated that they were not given an interview, "...okay, so you don't want me."

#### 6.3.1.5 Work Outcomes and Organizational Culture

The following sections describe the Service Organization's results from the Work Outcomes (Total Burnout, Physical Fatigue, Cognitive Weariness, and Emotional Exhaustion) and Organizational Culture (Employee Loyalty, Management Facets, and Employee Expectations) components of the GWQ.

##### 6.3.1.5.1 Burnout at the Service Organization

Burnout was evaluated using the Shirom-Melamed Burnout Measure (SMBM) (Shirom, 2005), which has three sub-measures Physical Fatigue, Cognitive Weariness, and Emotional Exhaustion; see Section 2.4.1.2 for more detail. Normal values for average ( $\mu_0$ )

and standard deviation<sup>14</sup> are provided for comparison with the Service Organization and are based on multiple studies with many participants (6714 males, 3952 females).

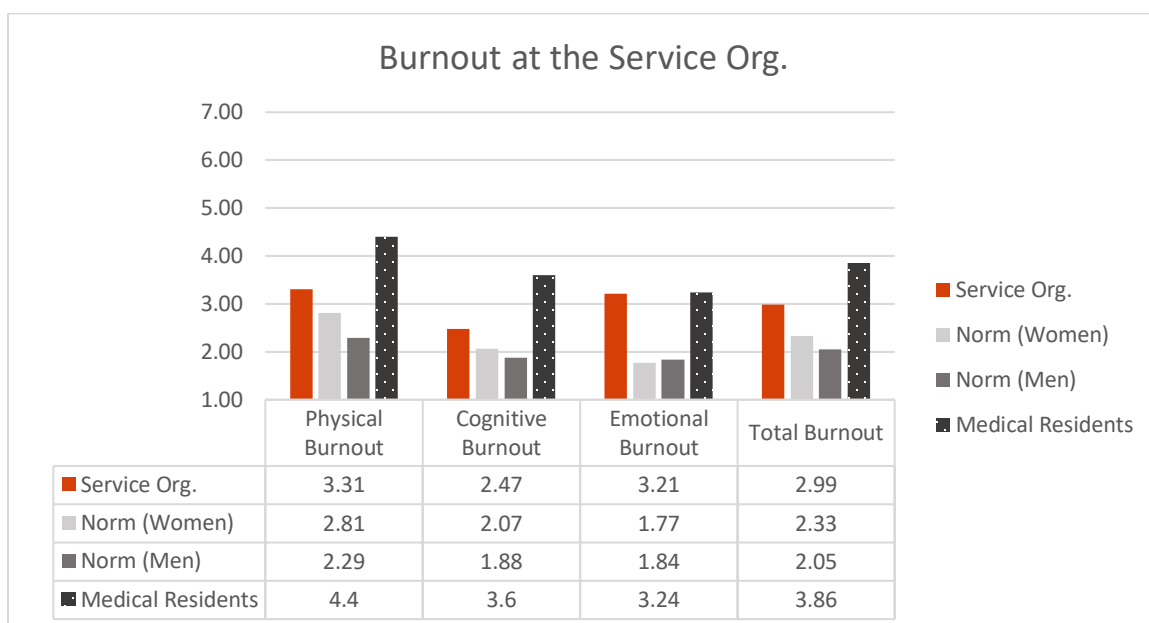
The results can be seen in Figure 19. Based on a one-sample Z-test (Montgomery, 2009), results show that on average, employees of the Service Organization who participated in the GWQ report statistically higher Burnout values than the norm provided by the authors of the SMBM [ $H_0: \mu_{\text{service}} = \mu_0$ ;  $H_1: \mu_{\text{service}} > \mu_0$ ]. Due to the low sample size, all values were compared to the average of the norm for men and women. Employees, on average, are more burned-out than the average norms provided, which holds true for Total Burnout (p-value = 0.0007), and its three sub-measures Physical Fatigue (p-value = 0.0124), Cognitive Weariness (p-value = 0.0405), and Emotional Exhaustion (p-value < 0.0000). While all burnout measures have shown to be statistically higher than the norm, it does not necessarily indicate they are at risk of physical and mental health consequences. A value of 4 or higher is a common benchmark for concern (Bilgel et al., 2012).

Comparing the measured levels of burnout among the employees of the Service Organization to medical residents (med.res.), a documented group of workers that experience some of the highest levels of burnout reported (Bilgel et al., 2012), allows for further understanding of the numerical values [ $H_0: \mu_{\text{service}} = \mu_{\text{med.res.}}$ ;  $H_1: \mu_{\text{service}} < \mu_{\text{med.res.}}$ ]. Based on a two-sample t-test (Montgomery, 2009), results show that employees of the Service Organization on average report less Total Burnout (p-value = 0.0127), Physical Fatigue (p-value = 0.0063), and Cognitive Weariness (p-value = 0.0047), but do not report less Emotional Exhaustion (p-value = 0.4754).

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<sup>14</sup> Norm values are available from the authors directly and are available from <http://www.shirom.org/arie/index.html#>.





*Figure 19: Burnout at the Service Organization. Norm values were calculated by the developers of the SMBM and are available at <http://www.shirom.org/arie/index.html#>. Medical Residents' values were obtained from (Bilgel et al., 2012). The questionnaire data is based on 11 participants.*

#### 6.3.1.5.2 Employee Loyalty at the Service Organization

Employee Loyalty was assessed via four 7-point Likert-scale questions, covering loyalty to the organization, supervisor, co-workers, and customers. Responses could have ranged from a 1 “Never” to a 4 “Sometimes” to a 7 “Always.” For example, “I feel loyalty to the organization,” could be answered with a 7, indicating the employee always feels loyalty to the organization. Total Loyalty was evaluated as the average of the four questions. The results are shown in Figure 20 and detailed in Table 23. All average loyalty results fell between 4 “Sometimes” and 5 “Quite frequently.” Loyalty to co-workers was rated highest (avg = 4.45), followed by organization (avg = 4.36), with supervisor and customers tied (avg = 4.27). Total loyalty was 4.34/7.



*Figure 20: Employee Loyalty at the Service Organization. Likert-scale ratings were 1 “Never”, 4 “Sometimes”, and 7 “Always.” The questionnaire data is based on 11 participants.*

#### 6.3.1.5.3 Management Facets at the Service Organization

Various aspects of management were evaluated to provide further information regarding how the employees feel about management. Four statements were provided, and employees were asked to what extent they felt these statements to be true. Again, the responses ranged from 1 “Never,” 4 “Sometimes,” to 7 “Always.” The results can be seen in Figure 21 and are detailed in Table 23. Results for all four questions fell around an average of 4 “Sometimes.” ‘Flexible work options’ was rated highest (average = 5.09) and ‘trust management to look after my interests’ was rated lowest (average = 3.91).

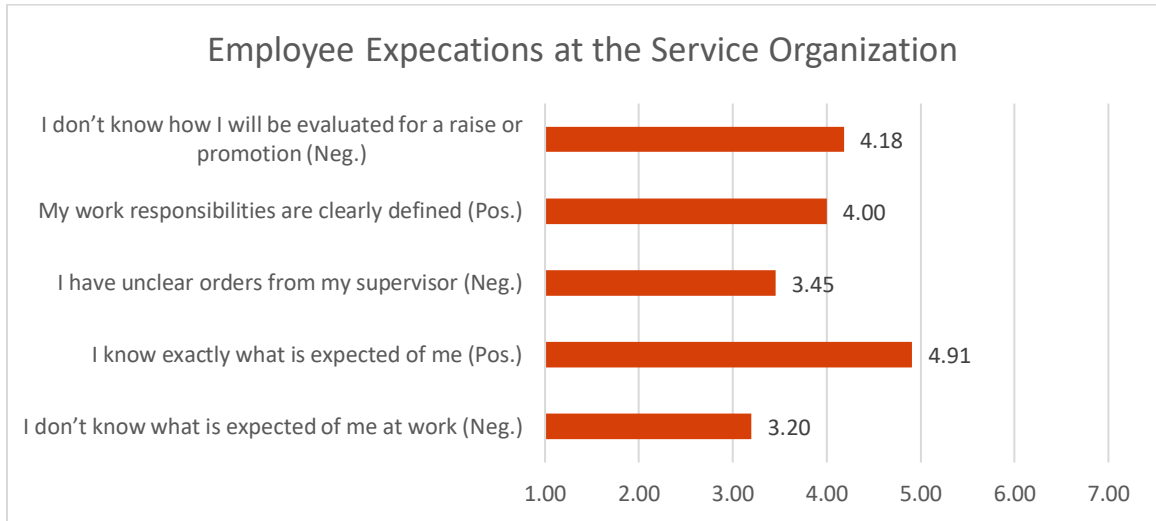


*Figure 21: Management Facets at the Service Organization. Likert-scale ratings were 1 “Never”, 4 “Sometimes”, and 7 “Always.” The questionnaire data is based on 11 participants.*

#### 6.3.1.5.4 Employee Expectations at the Service Organization

Employees were asked how they felt regarding the expectations of them while at work. These questions were written to be opposite constructs to keep the employee engaged in the GWQ. That is to say; some questions were phrased in a positive light and others in a negative light. For example, “I do not know what is expected of me” is asking the negative and the subsequent question, “My work responsibilities are clearly defined,” asks a similar question in an opposite view. If employees knew precisely what was expected, they would answer the questions with 1 “Never” and 7 “Always,” respectively. Results, shown in Figure 22 and detailed in Table 23, demonstrate employees ‘sometimes’ do not know how they will be evaluated for a raise or promotion (average = 4.18). Employees, on average, ‘sometimes’ have clearly defined work responsibilities (average = 4.0) and ‘quite infrequently’ have unclear orders from their supervisor (average = 3.45). Also, employees

‘quite frequently’ know exactly what is expected of them (average = 4.91), and ‘quite infrequently’ do not know what is expected (average = 3.20).



*Figure 22: Employee Expectations at the Service Organization. Likert-scale ratings were 1 “Never”, 4 “Sometimes”, and 7 “Always.” The questionnaire data is based on 11 participants.*

All results for the Work Outcomes and Organizational Culture components of the GWQ can be seen in Table 23.

Table 23: All results for the Work Outcomes and Organizational Culture components of the GWQ for the Service Organization. The questionnaire data is based on 11 participants.

<b>Component</b>	<b>Average</b>	<b>St. dev.</b>
<b>Burnout</b>		
<i>Total Burnout</i>	2.99	1.56
<i>Physical Fatigue</i>	3.31	1.62
<i>Cognitive Weariness</i>	2.47	1.21
<i>Emotional Exhaustion</i>	3.21	1.75
<b>Loyalty</b>		
<i>Co-workers</i>	4.45	1.57
<i>Organization</i>	4.36	1.91
<i>Supervisor</i>	4.27	2.00
<i>Customers</i>	4.27	1.90
<i>Total Employee Loyalty</i>	4.34	1.71
<b>Management Facets</b>		
<i>Flexible work options are available to me if needed</i>	5.09	1.70
<i>There are good relations between managers and employees</i>	4.73	1.19
<i>My manager understands about my family responsibilities</i>	4.27	2.10
<i>I trust management to look after my best interests</i>	3.91	1.04
<i>Total Management Facets</i>	4.50	1.58
<b>Employee Expectations</b>		
<i>I don't know how I will be evaluated for a raise or promotion (Neg.)</i>	4.18	1.83
<i>My work responsibilities are clearly defined (Pos.)</i>	4.00	1.73
<i>I have unclear orders from my supervisor (Neg.)</i>	3.45	1.75
<i>I know exactly what is expected of me (Pos.)</i>	4.91	1.87
<i>I don't know what is expected of me at work (Neg.)</i>	3.20	1.81

#### 6.3.1.6 Selection and Implementation of WIA(s) at the Service Organization

Three mismatched characteristics (*feedback from the job, mutual trust, and career growth*) were presented to management along with a customized list of potential Work Improvement Actions (WIAs) addressing each action in a report. Each WIA that was included in the report was scrutinized for its applicability within the Service Organization; it was critical to ensure every WIA on the list applied to the Service Organization. If an

action was included, that could not be applied to the specific organization, it may have been viewed by management as a lack of care from the author.

The WIAs, initially recommended for consideration in a report, were discussed through a series of meetings. The initial list of WIAs was identified by filtering the database of WIAs that had been developed in Investigation #2 and was supplemented with findings from the in-person interview. Participants were asked, “*If you could modify one or two aspects of your current work, what would it be and why?*” This question allowed participants to help brainstorm actions to improve the design of work.

Participant suggestions identified via in-person interviews for modifying work from include (listed from most to least common):

1. A raise.
2. More effective project meetings to obtain more information pre- and post-project completion.
3. More information about the future planning of the Organization.

Work Improvement Actions from the database to address *feedback from the job* include:

- i. Hire external consultants, who are not working in the organization, to interview employees without manager presence and provide managers information regarding employee experiences (Barsky et al., 2004). Interestingly, this is precisely what the Service Organization started with this research project.
- ii. Allocation of time and resources to **act on employee feedback**: spend time interpreting results, developing and implementing action plans, and communicating results (Barsky et al., 2004). Again, so long as the Service Organization acts based on the results of this investigation, this action will be implemented.

- iii. Updating equipment that will facilitate information gathering and presenting it to employees (Wickens et al., 2004). At the Service Organization, this could be a new computer system for building controls or a new system to collect and report project effectiveness.
- iv. Hold regular one on one meetings to provide information regarding what is going well and what roadblocks or issues employees are experiencing (Hess, 2014; McMahon & Pocock, 2011). While this action may be more centered on *feedback from others*, it was included.
  - i. Effective feedback is clear, specific, frequent, and relevant to important job behaviors.
  - ii. Constructive feedback attributes **poor performance** to external causes, such as situational factors beyond the subordinate's control, when the external attribution is warranted. I.e., Do not blame people for negative outcomes that are not their fault.
  - iii. Constructive feedback attributes **good performance** to internal causes, such as the subordinate's effort and ability. That is, it recognizes when an individual should be praised for positive outcomes (London, 2003).

Work Improvement Actions from the database that address *mutual trust* include:

- i. Time: while not an immediate action item, time has shown to be significant towards building trusting relationships (Cullen & Johnson, 2000; Lewicki & Bunker, 1996; Lewicki & Wiethoff, 2000).
- ii. Interestingly, *feedback from the job* has been shown to build trust, this feedback pattern builds a trust cycle (Cullen & Johnson, 2000).
- iii. Explicitly explaining expectations and agreeing up-front to the assigned work tasks (Lewicki & Wiethoff, 2000).
- iv. Having procedures in place to evaluate performance (Lewicki & Wiethoff, 2000).
- v. Ensuring consistent behavior in interactions with employees (Lewicki & Bunker, 1996).

Work Improvement Actions from the database to address *career growth* include:

- i. Implement a mentorship program (Briggs et al., 2012) that helps initiate relationships between possible mentors and those co-workers who can give instrumental advice and provide other forms of psychosocial support. These programs are particularly important when new employees are hired and when role transitions occur (Poon et al., 2015).
- ii. Continued training programs to enhance the knowledge, skills, and abilities of employees (Mcmahon & Pocock, 2011; Prince, 2003).
- iii. Increase salary over the course of an employee's career (Poon et al., 2015) and as employee's skills increase (Murray & Gerhart, 1998).
- iv. Paid membership to professional association/society (Mcmahon & Pocock, 2011).

After presenting the results to management, they decided to implement an action to address *feedback from the job*. Since they had already begun implementation of the first two WIAs (having an external consultant to interview employees and act on their feedback), they chose to create and implement a new system to collect end-user feedback regarding the effectiveness of projects. The new Project Feedback System leverages the existing project management software in use through a built-in project survey tool that must be filled out by the project initiator/customer once the project is completed. This built-in tool was a great find (it was a relatively unknown function before the meetings), as the organization has limited resources and needed to implement a tool that was not cost prohibited.

The feedback system collects key pieces of information from the customer of the project via an online survey, and a Service Organization's staff member collects and distributes the project information to fellow employees regularly (e.g., when a project is completed and as part of a weekly summary). The information is disseminated via emails



and is posted in the general project overview board, located in a common space. Survey topics were established via meetings with employees and customer and included intrusion, communication, and effectiveness /appropriateness of the project. This WIA sought to address the lack of feedback employees receive regarding the many projects they complete, which was a direct issue that arose from the in-person interview.

Another action that was implemented sought to address the high levels of Physical Fatigue that were identified in the GWQ. The Service Organization established a private space for personal health (e.g., meditation and stretching), and set aside funds for a health and wellness intern.

#### *6.3.1.7 Six-Month Check-In*

While the second round of data collection was prevented due to the COVID-19 pandemic, the author was able to hold a follow-up meeting with management to qualitatively assess the effectiveness of the actions. The Project Feedback System, as of the meeting, was running smoothly and employees told managers they appreciated the information, although there was difficulty convincing the customers of the project to fill out the survey on time. The personal space had been rarely used, although it remained in operation. The health and wellness intern had been delayed; however, management is still advocating for one in the coming months. The Service Organization stated they were willing to continue the Good Work research when the impact of the pandemic lessened.

#### 6.3.2 Technology Organization

To inform the strategic work design efforts of the Technology Organization, the author surveyed (n=31) and interviewed (n=16) employees regarding their work in terms of Work Characteristics, i.e., attributes of the job task, and social and organizational

environment (Morgeson & Humphrey, 2006). The following are the key findings from the application of Lee's Work Improvement Process.

*6.3.2.1 Most and Least Important Characteristics for the Technology Organization*

Based on the results of the GWQ, the most common characteristics rated in the top five and the most common in the bottom five can be seen in Table 24. *Personal growth* was the most common top five characteristics (55% of participants), followed by *compensation* (52%), *value* (52%), *job security* (45%), and *mutual trust* (45%). Interestingly, *ergonomics* and *safety* were never rated in the top five. *Aesthetics* (74%) was the most common characteristic in the bottom five, followed by *ergonomics* (68%), *regular schedule* (58%), and *demand* (55%). *Mutual trust* was the only characteristic that was never rated in the bottom five.

The bottom five did not inversely mirror the top five, although there was some crossover. For example, *ergonomics* was never rated in the top five and was commonly (68%) rated in the bottom five. Taking into consideration the top five and bottom five paints a picture of the group's ideal job: a job that provides opportunities for employees to further themselves (*personal growth*), pays well enough to provide for themselves and their families (*compensation*), contributes significantly within and beyond the organization (*value*), has trust between co-workers and managers (*mutual trust*), and is one where employees know they cannot be fired due to factors outside of their control (*job security*).

Table 24: Most common important (Top Five) and least important (Bottom Five) characteristics for the Technology Organization as identified in the GWQ. The questionnaire data is based on 31 participants.

Top Five		Bottom Five	
Characteristic	# of votes (% of participants)	Characteristic	# of votes (% of participants)
Personal Growth	17 (55%)	Aesthetics	23 (74%)
Compensation	16 (52%)	Ergonomics	21 (68%)
Value	16 (52%)	Regular Schedule	18 (58%)
Job Security	14 (45%)	Demand	17 (55%)
Mutual Trust	14 (45%)	Social Support	14 (45%)
Technical Growth	11 (35%)	Social Interaction	10 (32%)
Variety	10 (32%)	Feedback from the job	9 (29%)
Autonomy	10 (32%)	Technical Growth	8 (26%)
Accomplishment	10 (32%)	Variety	8 (26%)
Career Growth	8 (26%)	Autonomy	6 (19%)
Social Interaction	7 (23%)	Safety	6 (19%)
Regular Schedule	5 (16%)	Job Security	4 (13%)
Feedback from the job	5 (16%)	Career Growth	3 (10%)
Feedback from others	4 (13%)	Feedback from others	3 (10%)
Aesthetics	3 (10%)	Compensation	2 (6%)
Demand	3 (10%)	Personal Growth	1 (3%)
Social Support	2 (6%)	Value	1 (3%)
Ergonomics	0 (0%)	Accomplishment	1 (3%)
Safety	0 (0%)	Mutual Trust	0 (0%)

The first two questions of the in-person interview asked participants which three characteristics of work were most and least important when considering their ideal job and why. The aggregated results can be seen in Table 25. *Value* was the most common top three characteristics, with just over half of participants (56%) relating their satisfaction with work based on the positive impact their work provides to the organization and the customers. Participants also discussed how knowledge of their contribution makes them feel good and work harder. *Accomplishment, autonomy, compensation, and personal*

*growth* were all tied for the second most common important characteristic (38% of participants). *Accomplishment* was often described as being the participants' primary motivator for doing things at work and was some participants' way of tracking their progress, "I am very goal-oriented, and it's wonderful when I know there is an end and I know I have accomplished the task." One participant discussed how they keep a list of their accomplishments, and when completing a new project revel in adding it to the list.

*Autonomy* was often related to participants' work experience, expertise, and/or capabilities. Also, *autonomy* shows that management trusts the workers, "I have experience, and having autonomy says you [the organization] value my intelligence." Other participants discussed how they detested micro-managing, stating that management should define goals and let the workers meet them how they see fit. *Compensation* was most commonly related to a feeling of security and security for themselves and their families, "I feel more stable in my life if I have reasonable compensation and benefits," and "[compensation] is rooted in wanting to be the best for my family." *Personal growth* was often associated with a need for continuous self-improvement, "A job with stagnation would be terrible" and "it's frustrating to not grow." Interestingly, many of the participants who placed *personal growth* in their top three, discussed how they needed to be better off when they left this job, than when they started, "I want to leave having kept my growth."

*Aesthetics, feedback from the job, and safety* were the bottom three, or least important characteristics to the participants. All least important characteristics were often discussed in terms of how participants would choose others over this set. Most participants, unprompted to do so, chose their least three by comparing each one to others saying they would trade 'this characteristic' for another. *Aesthetics* was the most common, least

important characteristic (69% of participants), and the typical reason was that relationships and quality of work provided to the customer were more important. Another typical reason was that it was more important to have functional equipment, and the beauty of the environment was not as important.

*Feedback from the job* was the second most common least important characteristic (38%), and the typical reason was that *feedback from others* was more important. Another typical response discussed how they currently do not receive much feedback and are fine with that, “I do not need data to tell me how I am doing, and it doesn’t help me feel more satisfied.” *Safety* was also the second most common, least important characteristic (38%) and was always given with a caveat, “My job is not unsafe, and so I do not think about it.” Because all participants were white-collar workers who spend most of their day at a computer, they did not feel any threats of physical harm. One participant was frank, “Why safety? Because of privilege.”

*Table 25: Top Three and Bottom Three characteristics for participants at the Technology Organization as identified during the in-person interview. The interviews data is based on 16 participants.*

<b>Top Three</b>		<b>Bottom Three</b>	
<b>Characteristic</b>	<b># of votes (% of participants)</b>	<b>Characteristic</b>	<b># of votes (% of participants)</b>
Value	9 (56%)	Aesthetics	11 (69%)
Accomplishment	6 (38%)	Feedback from the job	6 (38%)
Autonomy	6 (38%)	Safety	6 (38%)
Compensation	6 (38%)	Career Growth	3 (19%)
Personal Growth	6 (38%)	Demand	3 (19%)
Mutual Trust	3 (19%)	Job Security	3 (19%)
Career Growth	2 (13%)	Social Interaction	3 (19%)
Demand	2 (13%)	Technical Growth	3 (19%)
Job Security	2 (13%)	Variety	3 (19%)
Social Interaction	2 (13%)	Autonomy	2 (13%)

Top Three		Bottom Three	
Characteristic	# of votes (% of participants)	Characteristic	# of votes (% of participants)
Variety	2 (13%)	Compensation	2 (13%)
Feedback from others	1 (6%)	Feedback from others	1 (6%)
Feedback from the job	1 (6%)	Accomplishment	0 (0%)
Technical Growth	1 (6%)	Ergonomics	0 (0%)
Aesthetics	0 (0%)	Mutual Trust	0 (0%)
Ergonomics	0 (0%)	Personal Growth	0 (0%)
Regular Schedule	0 (0%)	Regular Schedule	0 (0%)
Safety	0 (0%)	Social Support	0 (0%)
Social Support	0 (0%)	Value	0 (0%)

#### 6.3.2.2 Current Work Characteristics in the Technology Organization

Figure 23 shows the results for the Current Work component of the GWQ. The average and standard deviation of all responses to the 19 Current Work questions was 5.71/7 and 0.58, respectively. *Social interaction* was the highest-rated characteristic (average = 6.5/7), followed by *safety* (6.4/7), *ergonomics* (6.4/7), *accomplishment* (6.3/7), *aesthetics* (6.2/7), and *technical growth* (6.1/7). Based on the aggregate responses from their employees, the employees of the Technology Organization agree their work provides them with the ability to interact with co-workers, protection from physical harm, correct body posture and movement, a feeling of satisfaction with their contribution, a pleasing environment, and opportunities to learn new work-related knowledge, skills, and abilities.

Values below a 4 “Neutral” illustrate some level of disagreement with a characteristic being present in their current work. Interestingly, there was not a single characteristic that was rated below a 4, indicating that the Technology Organization has, on average, provided their employees at least some satisfactory level of all characteristics.

The three lowest-rated characteristics were *career growth* (average = 4.48/7), *feedback from others* (average = 4.89/7), and *feedback from the job* (average = 4.97/7). Complete results can be seen in Table 27.

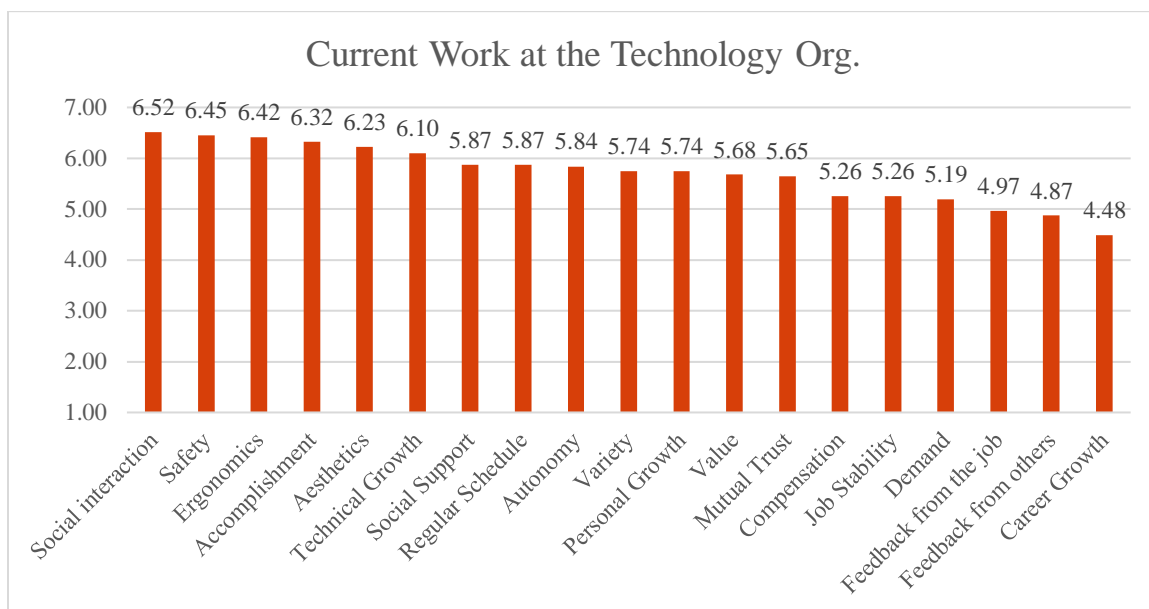


Figure 23: Current Work at the Technology Organization. Likert-scale qualifiers presented next to the numbers were, 1 “Strongly Disagree”, 4 “Neutral”, and 7 “Strongly Agree.” The questionnaire data is based on 31 participants.

The third and fourth questions in the in-person interview asked participants which three characteristics from the set of 19 were best satisfied and least satisfied by their current work. Aggregated responses can be seen in Table 26. *Autonomy* was the highest-rated characteristic (38% of participants). The typical reason provided was that management places trust in employees to complete their work and sees them as the expert, “Everything is autonomous. It’s terrifying and exciting at the same time; [management] puts trust in me to accomplish my work, and I am allowed to be the expert.”

Interestingly, the one participant who put *autonomy* in his/her least satisfied characteristic claimed he/she has too much autonomy and would like more direction; therefore, it was unsatisfied. The Technology Organization, as a whole, places the control for how tasks are accomplished into the workers' hands. The Organization's structure supports this design of work by being flat – the lowest employee on the hierarchy has a supervisor who reports to a small team of upper managers; there is no middle-management, only front-line employees, team leads, and upper managers.

*Social interaction* and *technical growth* were tied for the second most common, best-satisfied characteristic (31%). Regarding *social interaction*, participants claimed the facility design, which is open and does not have individual offices or cubicles, helps encourage conversations. Also, many participants discussed how they feel a sense of family ties with their co-workers and enjoy socializing within and outside of work. Another common reason given was the organization puts extensive effort into hiring compatible people.

Each employee is paid to complete regular and mandatory training each week and is required to log those hours, which was the main reason participants gave for placing *technical growth* into their three best-satisfied characteristics. "I have never been in such a situation where the company pays for my technical growth; for any reason I want, whether a conference or online training or certification they pay for it and pay me to put in the time."

*Career growth* was the most common, least satisfied characteristic, with 69% of participants placing it in their least satisfied category. The most common explanation for this was the flat organizational structure that does not provide many positions to move into;



participants claimed there would need to be a termination for a new position to become available. Another typical reason was the path forward was not known. Raises and promotions occur without a transparent reason; as a whole, employees do not know how they are evaluated for a raise or promotion. One participant shared that their salary was substantially increased and they still do not know the exact reason.

*Accomplishment* and *feedback from others* were tied for the second least satisfied characteristic (38%). There was not much uniformity regarding why *accomplishment* was considered a least satisfied characteristic. In all responses, participants rooted their response in the characteristic's definition, a feeling of satisfaction with their contribution, in which they did not feel a sense of satisfaction with their work. *Feedback from others* was claimed to be lacking, for the most part, due to the lack of formal performance reviews/meetings. Employees can evaluate their supervisors but are not given formal and regular feedback regarding the effectiveness of their work from their supervisors or upper management.

*Table 26: Best Satisfied and Least Satisfied characteristics at the Technology Organization, organized by most common to least. The interview data is based on 16 participants.*

Best Satisfied		Least Satisfied	
Characteristic	# of votes (% of participants)	Characteristic	# of votes (% of participants)
Autonomy	6 (38%)	Career Growth	11 (69%)
Social Interaction	5 (31%)	Accomplishment	6 (38%)
Technical Growth	5 (31%)	Feedback from others	6 (38%)
Accomplishment	4 (25%)	Demand	5 (31%)
Mutual Trust	4 (25%)	Job Security	5 (31%)
Personal Growth	4 (25%)	Variety	5 (31%)
Aesthetics	3 (19%)	Value	3 (19%)
Compensation	3 (19%)	Compensation	2 (13%)
Value	3 (19%)	Autonomy	1 (6%)

Best Satisfied		Least Satisfied	
Variety	3 (19%)	Personal Growth	1 (6%)
Demand	2 (13%)	Technical Growth	1 (6%)
Safety	2 (13%)	Aesthetics	(0%)
Career Growth	1 (6%)	Ergonomics	(0%)
Feedback from others	1 (6%)	Feedback from the job	(0%)
Feedback from the job	1 (6%)	Mutual Trust	(0%)
Job Security	1 (6%)	Regular Schedule	(0%)
Ergonomics	(0%)	Safety	(0%)
Regular Schedule	(0%)	Social Interaction	(0%)
Social Support	(0%)	Social Support	(0%)

### 6.3.2.3 Preferred Work Characteristics in the Technology Organization

Figure 24 details the results for the Preferred Work component of the GWQ. The average and standard deviation of all responses to the 19 Preferred Work questions was 5.81/7 and 0.58, respectively. All characteristics were rated as at least ‘somewhat/sometimes’ (average = 4.0/7) preferred, illustrating employees, on average, employees prefer a comprehensive work design that fulfills some level of all characteristics (i.e., no characteristics, on average, were undesirable). *Mutual trust* was the highest-rated preferred characteristic (6.71/7), followed by *job security* (6.52/7), *technical growth* (6.32/7), *accomplishment* (6.23/7), and *value* (6.16/7).

*Regular schedule*, once it was recoded, was rated the lowest (average = 4.16/7), *aesthetics* (average = 5.03/7) was the second lowest, and *social interaction* (average = 5.19/7) was the third lowest. Complete results can be seen in Table 27.

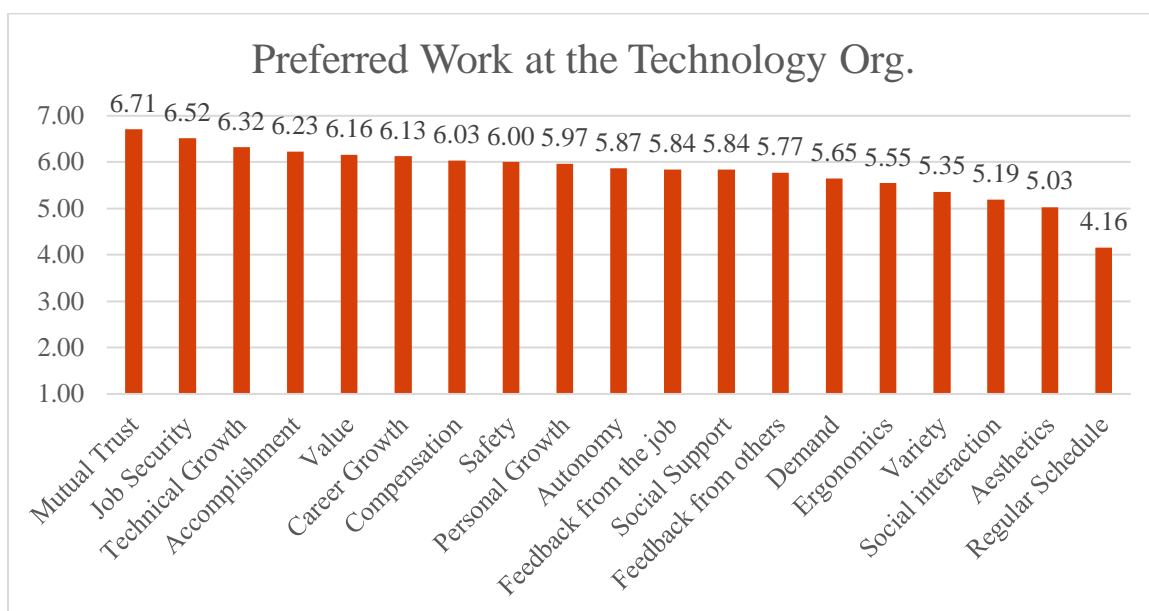


Figure 24: Preferred Work at the Technology Organization. Likert-scale qualifiers presented next to the numbers were, 1 “No”, 4 “Some”, and 7 “Often.” The questionnaire data is based on 31 participants.

#### 6.3.2.4 Comparing Current versus Preferred Work for the Technology Organization

Table 27 details the complete results comparing Current Work to Preferred Work. Statistically positive characteristics (i.e.,  $\text{Characteristic}_{\text{current}}$  is greater than  $\text{Characteristic}_{\text{preferred}}$ ) include *regular schedule* (average difference = 1.77, p-value < 0.0001), *social interaction* (average difference = 1.32, p-value < 0.0001), *aesthetics* (average difference = 1.19, p-value = 0.0001), *ergonomics* (average difference = 0.87, p-value = 0.0002), and *safety* (average difference = 0.45, p-value = 0.0324). Other positive differences that are not statistically different include *variety* (average difference = 0.39, p-value = 0.1783), *accomplishment* (average difference = 0.10, p-value = 0.6548), and *social support* (average difference = 0.03, p-value = 0.9234).

Negative mismatches that were statistically significant, shown in Figure 25, include *career growth* (average difference = -1.65, p-value < 0.0001), *job security* (average difference = -1.26, p-value = 0.0002), *mutual trust* (average difference = -1.06, p-value = 0.0001), *feedback from others* (average difference = -0.90, p-value = 0.0055), *feedback from the job* (average difference = -0.87, p-value = 0.0074), and *compensation* (average difference = -0.77, p-value = 0.0099). Results indicate that workers may benefit from implementing WIAs to address one or more of these characteristics. Complete results can be seen in Table 27.

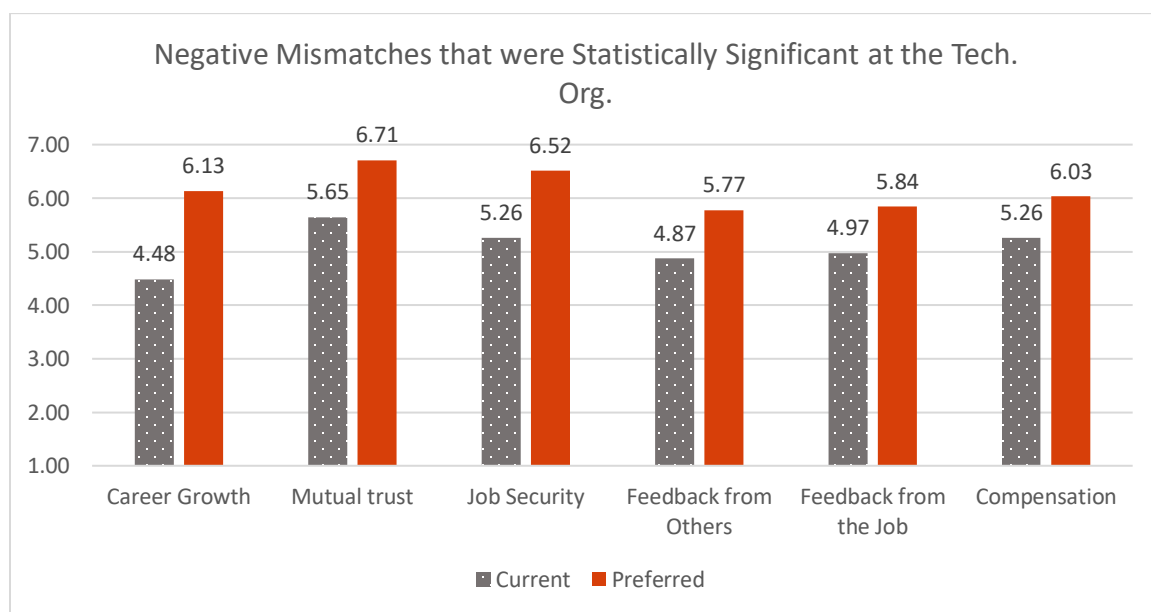


Figure 25: Negative mismatches that were statistically significant between Current and Preferred Work at the Technology Organization. Organized from the largest difference between Current and Preferred Work to the smallest difference. The questionnaire data is based on 31 participants.

Table 27: Current Work, Preferred Work, and Comparisons (paired t-tests) along the 19 Work Characteristics at the Technology Organization. The questionnaire data is based on 31 participants.

<i>Characteristic</i>	<b>Current Work</b>		<b>Preferred Work</b>		<b>Comparison (paired t-test)</b>	
	<b>Avg</b>	<b>St dev</b>	<b>Avg</b>	<b>St dev</b>	<b>Difference</b>	<b>p-value</b>
Negative Mismatches that were statistically Significant						
Career Growth	4.48	1.58	6.13	0.98	-1.65**	0.0000
Mutual Trust	5.65	1.12	6.71	0.68	-1.06**	0.0001
Job Security	5.26	1.37	6.52	0.84	-1.26**	0.0002
Feedback from others	4.87	1.45	5.77	1.07	-0.90**	0.0055
Feedback from the job	4.97	1.45	5.84	1.08	-0.87**	0.0074
Compensation	5.26	1.44	6.03	0.86	-0.77**	0.0099
Positive Mismatches that were Statistically Significant						
Regular Schedule	5.87	1.56	4.16	1.44	1.71**	0.0000
Social interaction	6.52	0.71	5.19	1.12	1.32**	0.0000
Aesthetics	6.23	0.91	5.03	1.36	1.19**	0.0001
Ergonomics	6.42	0.79	5.55	1.01	0.87**	0.0002
Safety	6.45	0.66	6.00	1.08	0.45*	0.0324
All Other Characteristics						
Demand	5.19	1.33	5.65	0.86	-0.45	0.0947
Value	5.68	1.33	6.16	0.81	-0.48	0.1046
Variety	5.74	1.32	5.35	1.21	0.39	0.1783
Technical Growth	6.10	0.82	6.32	0.82	-0.23	0.3043
Personal Growth	5.74	1.19	5.97	0.90	-0.23	0.4013
Accomplishment	6.32	0.86	6.23	0.83	0.10	0.6548
Autonomy	5.84	1.42	5.87	0.83	-0.03	0.9051
Social Support	5.87	1.29	5.84	1.08	0.03	0.9234
Totals	5.71	0.58	5.81	0.58	-0.10	0.6457

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

As only three characteristics could be brought into the in-person interview from the statically mismatched characteristics identified in the GWQ, additional data needed to be evaluated to reduce the list from six to three. To do this, the author compared the list of negatively mismatched characteristics to the responses of the ‘Most and Least Important

Characteristics' Component of the GWQ. Because *career growth*, *mutual trust*, and *job security* had the lowest p-value and were represented in the list of 'Top Five', they were selected to be the basis for questions in the in-person interview.

The most common response when participants were informed *career growth* had been identified in the GWQ as deficient was, "Not surprised", which aligned with the average response to the Current Work Component of the GWQ, which placed *career growth* as the lowest of all 19 characteristics. Most interviewees gave identical responses just as they had earlier in the interview – the organization has a flat organizational structure that does not provide many positions to move into. Also, there is an unknown path forward, and raises and promotions occur without a transparent reason, "I think that's why people leave. They cannot advance. There are no next steps forward here, and it makes people feel hopeless."

When participants were asked why they thought *mutual trust* was lacking, the most common response was that trust was lacking between upper management and the employees but did exist between employees. They went on to explain that upper management is not transparent about future directions and products, and communication down the ladder could be improved. This reasoning aligns with the average response (5.56/7) to the Current Work component of the GWQ, which established participants do 'somewhat agree' to 'agree' that *mutual trust* exists. Also, many participants related this discrepancy in trust to a lack of *feedback from others*, claiming the two characteristics are related in this situation.

The typical response when learning that the GWQ identified *job security* as underprovided was that participants do not have a formal review process and do not know

how they are evaluated. There is no clear and predictable path forward, and this lack of knowledge worries them. The GWQ supports this claim, as it asked participants directly if they, “don’t know how [they] will be evaluated for a raise and/or promotion”, which had an average response of 5.00 ‘quite frequently’. Another common reason was that, in the participants’ eyes, there was a high turnover rate and they were not informed on the specifics of why people were let go. The combination of not knowing how success is evaluated and not knowing why others are let go seems to be the largest cause of the mismatch.

### *6.3.2.5 Work Outcomes and Organizational Culture*

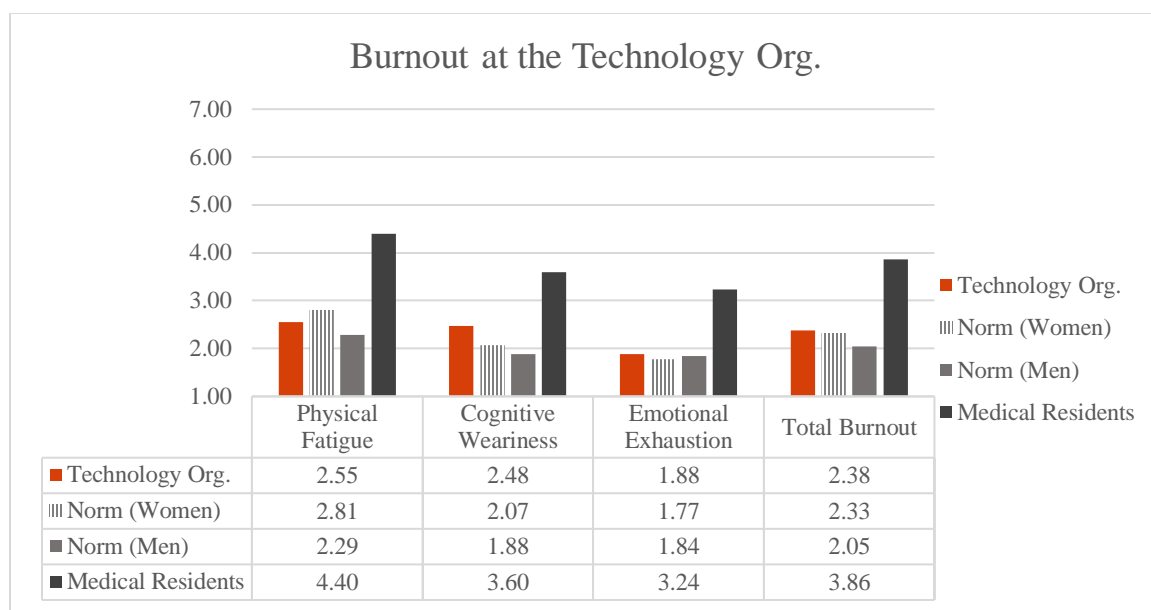
The following sections describe the Technology Organization’s results from the Work Outcomes (Total Burnout, Physical Fatigue, Cognitive Weariness, and Emotional Exhaustion) and Organizational Culture (Employee Loyalty, Management Facets, and Employee Expectations) components of the GWQ.

#### *6.3.2.5.1 Burnout at the Technology Organization*

The results of the Burnout component of the GWQ can be seen in Figure 26 and are described in detail in Table 28. Based on a one-sample Z-test (Montgomery, 2009), results show that on average, employees of the Technology Organization who participated in the GWQ do not report statistically higher values than the norm provided by the authors of the SMBM, except for Cognitive Weariness [ $H_0: \mu_{\text{Technology}} = \mu_0$ ;  $H_1: \mu_{\text{Technology}} > \mu_0$ ]. Due to the low sample size, all values were compared to the average of men and women. Employees, on average, are not more burned-out than the norms provided for Total Burnout (p-value = 0.0947), Physical Fatigue (p-value = 0.5013), and Emotional Exhaustion (p-value < 0.3275); however, employees do report higher values of Cognitive Weariness (p-

value = 0.0016). While Cognitive Weariness has shown to be statistically higher than the norm, it does not indicate they are at risk of physical and mental health consequences. A value of 4 or higher is a common benchmark for concern (Bilgel et al., 2012).

Comparing the measured levels of burnout among the employees of the Technology Organization to medical residents (med.res.), a documented group of workers that experience some of the highest levels of burnout reported (Bilgel et al., 2012), allows for further understanding of the numerical values [ $H_0: \mu_{\text{Technology}} = \mu_{\text{med.res.}}$ ;  $H_1: \mu_{\text{Technology}} < \mu_{\text{med.res.}}$ ]. Based on a two-sample t-test (Montgomery, 2009), results show that employees of the Technology Organization on average report less Total Burnout (p-value < 0.0001), Physical Fatigue (p-value < 0.0001), Cognitive Weariness (p-value < 0.0000), and Emotional Exhaustion (p-value < 0.0001).

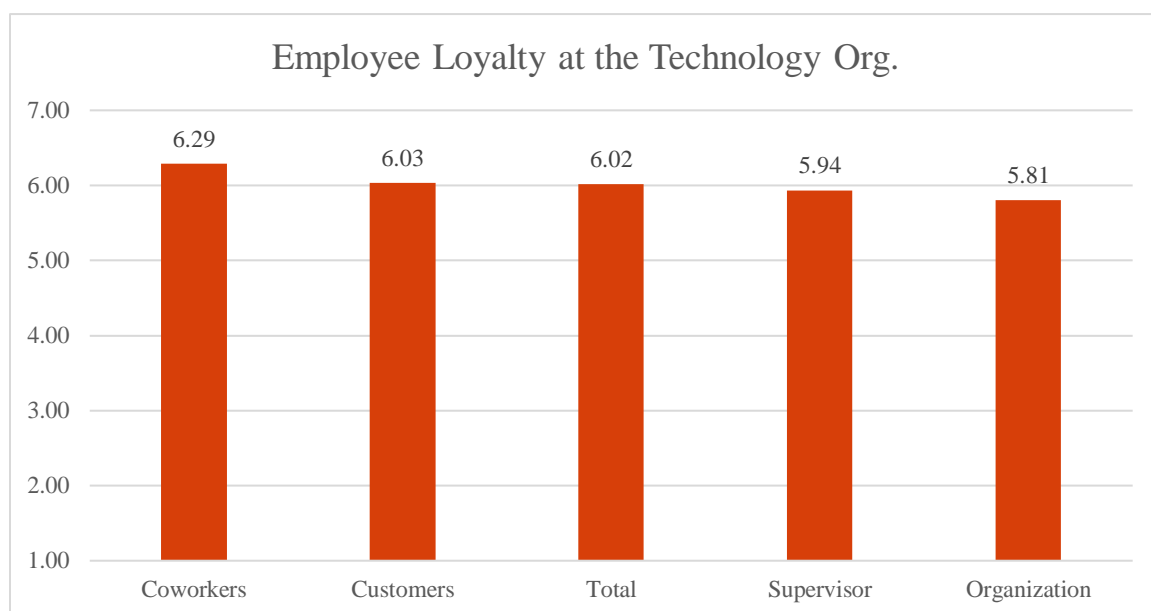


*Figure 26: Burnout at the Technology Organization. Norm values were calculated by the developers of the SMBM and are available at <http://www.shirom.org/arie/index.html#>. Medical Residents' values were obtained from (Bilgel et al., 2012). The questionnaire data is based on 31 participants.*



### 6.3.2.5.2 Employee Loyalty at the Technology Organization

The results from the Employee Loyalty component of the GWQ are shown in Figure 27 and detailed in Table 28. All loyalty results fell around a 6 “Very frequently” which is relatively high considering the maximum was a 7 “Always”; employees ‘very frequently’ feel loyalty to the organization, their supervisor, their co-workers, and their customers. Loyalty to co-workers was rated highest (average = 6.29), followed by customers (6.03), supervisor (5.94), and organization (5.81). Total loyalty, the average of the four questions, was 6.02.



*Figure 27: Employee Loyalty at the Technology Organization. Likert-scale ratings were 1 “Never”, 4 “Sometimes”, and 7 “Always.” The questionnaire data is based on 31 participants.*

### 6.3.2.5.3 Management Facets at the Technology Organization

Results can be seen in Figure 28 and are detailed in Table 28. Results varied between a 5 “Quite frequently” to a 6 “Very frequently”, with an average of the four

equaling 5.35. The highest-rated Management Facet was ‘Manager Understanding Family’ (average = 5.90), followed by ‘Available Flexible Work Options’ (5.48), ‘Good Relations Management Employees’ (5.06), and ‘Trust Management’ (4.94).

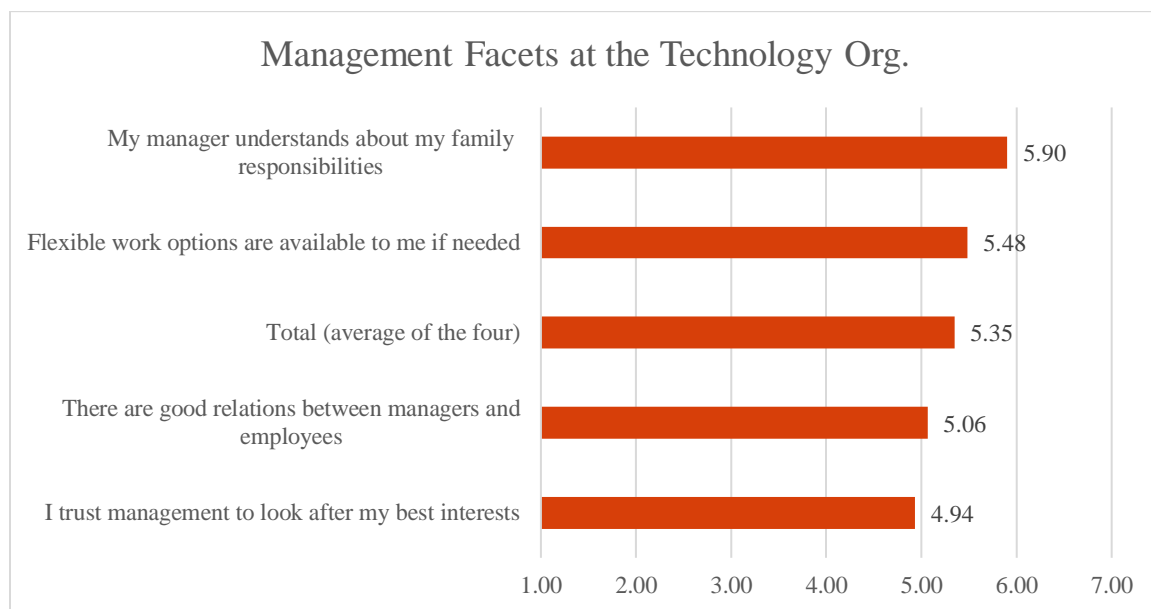
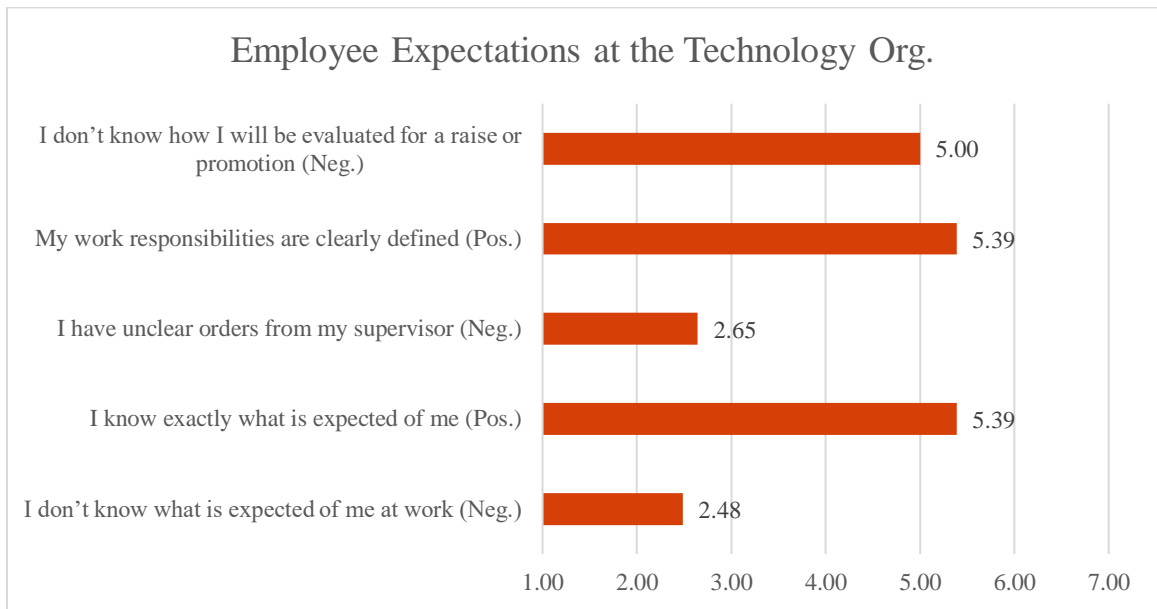


Figure 28: Management Facets at the Technology Organization. Likert-scale ratings were 1 “Never”, 4 “Sometimes”, and 7 “Always.” The questionnaire data is based on 31 participants.

#### 6.3.2.5.4 Employee Expectations at the Technology Organization

Results, shown in Figure 29 and detailed in Table 28, demonstrate employees ‘quite frequently’ do not know how they will be evaluated for a raise or promotion (average = 5.00). Employees, on average, ‘quite frequently’ have clearly defined work responsibilities (5.39) and ‘quite infrequently’ have unclear orders from their supervisor (2.65). Also, employees ‘quite frequently’ know exactly what is expected of them (5.39), and ‘quite infrequently’ do not know what is expected (3.20). The most concerning result from this section is the high rating for ‘evaluation for a raise’, which demonstrates employees on average are unsure about how they are evaluated for a raise and/or promotion.



*Figure 29: Employee Expectations at the Technology Organization. Likert-scale ratings were 1 “Never”, 4 “Sometimes”, and 7 “Always.” The questionnaire data is based on 31 participants.*

All results for the Work Outcomes and Organizational Culture components of the GWQ can be seen in Table 28.

Table 28: All results for the Work Outcomes and Organizational Culture components of the GWQ for the Technology Organization. The questionnaire data is based on 31 participants.

<b>Component</b>	<b>Average</b>	<b>St. dev.</b>
<b>Burnout</b>		
<i>Total Burnout</i>	2.38	0.77
<i>Physical Fatigue</i>	2.55	1.02
<i>Cognitive Weariness</i>	2.48	0.93
<i>Emotional Exhaustion</i>	1.88	0.96
<b>Loyalty</b>		
<i>Co-workers</i>	6.29	0.77
<i>Customers</i>	6.03	1.00
<i>Supervisor</i>	5.94	1.52
<i>Organization</i>	5.81	0.96
<i>Total Employee Loyalty</i>	6.02	1.12
<b>Management Facets</b>		
<i>My manager understands about my family responsibilities</i>	5.90	1.51
<i>Flexible work options are available to me if needed</i>	5.48	1.85
<i>There are good relations between managers and employees</i>	5.06	1.22
<i>I trust management to look after my best interests</i>	4.94	1.34
<i>Total Management Facets</i>	5.35	1.55
<b>Employee Expectations</b>		
<i>I don't know how I will be evaluated for a raise or promotion (Neg.)</i>	5.00	1.90
<i>My work responsibilities are clearly defined (Pos.)</i>	5.39	1.41
<i>I have unclear orders from my supervisor (Neg.)</i>	2.65	1.71
<i>I know exactly what is expected of me (Pos.)</i>	5.39	1.41
<i>I don't know what is expected of me at work (Neg.)</i>	2.48	1.39

#### 6.3.2.6 Selection and Implementation of WIA(s) at the Technology Organization

Four mismatched characteristics (*career growth, mutual trust, job security, and feedback from others*) were presented to management in a report along with a customized list of potential WIAs from the database addressing each characteristic. A discussion in a series of meetings then followed. While the Interview did not allow the author to directly ask participants about the mismatch in *feedback from others*, he included it in the report

along with WIAs, as the characteristic was identified as a mismatch in the GWQ and discussed in many of the interviews. The initial WIA list was identified from the database of WIAs that was developed in Investigation #2 and was then supplemented with findings from the in-person interview, which asked participants, “*If you could modify one or two aspects of your current work, what would it be and why?*” This question allowed participants to help brainstorm actions to improve the design of work.

Suggestions for modifying work from the participants of the interview, included (listed from most to least common):

1. Better communication of future changes and planning.
2. A formal job performance system, including one-on-one sit-downs with management rather than a small online survey.
3. Empower employees to understand the next steps for their career growth.

Work Improvement Actions from the database to address *career growth*:

- i. Implement a mentorship program (Briggs et al., 2012) that helps initiate relationships between possible mentors and those co-workers who can give instrumental advice and provide other forms of psychosocial support. These programs are particularly important when new employees are hired and when role transition occurs (Poon et al., 2015).
- ii. Increase salary over the course of an employee’s career (Poon et al., 2015) and as an employee’s skills increase (Murray & Gerhart, 1998).

Work Improvement Actions from the database to address *mutual trust*:

- i. Time: while not an immediate action item, time has shown to be significant towards building trusting relationships (Cullen & Johnson, 2000; Lewicki & Bunker, 1996; Lewicki & Wiethoff, 2000).
- ii. Interestingly, *feedback from the job* has been shown to build trust, this feedback pattern builds a trust cycle (Cullen & Johnson, 2000).

- iii. Explicitly explaining expectations and agreeing up-front to the assigned work tasks (Lewicki & Wiethoff, 2000).
- iv. Having procedures in place to evaluate performance (Lewicki & Wiethoff, 2000).
- v. Ensuring consistent behavior in interactions with employees (Lewicki & Bunker, 1996).

Work Improvement Actions from the database to address *job security*:

- i. Transparency of employee performance (Wickens et al., 2004)
- ii. Job security increases with seniority (Vanderburg, 2004).
- iii. Paid maternity/paternity leave (Mcmahon & Pocock, 2011).
- iv. After parental leave, an employee has an entitlement to return to the position they held before their leave (Mcmahon & Pocock, 2011).

Due to the findings of the GWQ and Interview, WIAs addressing *feedback from others* were included as they may aid in addressing *job security* and *mutual trust*.

WIAs from the database to address *feedback from the others* include:

- i. Hire external consultants, who are not working in the company, to interview employees without manager presence and provide managers information regarding employee experiences (Barsky et al., 2004). Interestingly, this is precisely what the Service Organization started with this research project.
- ii. Allocation of time and resources to **act on employee feedback**: spend time interpreting results, developing and implementing action plans, and communicating results (Barsky et al., 2004). Again, so long as the Service Organization acts based on the results of this investigation this action will be implemented.
- iii. Hold regular one on one meetings to provide information regarding what is going well and what roadblocks or issues employees are experiencing (Hess, 2014; Mcmahon & Pocock, 2011).
- iv. Effective feedback is clear, specific, frequent, and relevant to important job behaviors.

- v. Constructive feedback attributes **poor performance** to external causes, such as situational factors beyond the subordinate's control, when the external attribution is warranted. I.e., do not blame people for negative outcomes that are not their fault.
- vi. Constructive feedback attributes **good performance** to internal causes, such as the subordinate's effort and ability. That is, it recognizes when an individual should be praised for positive outcomes (London, 2003).

After presenting the results to management, and participating in meetings to discuss these results, they decided to implement two individual actions to address *career growth* and *feedback from others*, respectively. To address *career growth*, an external career coach was contracted to provide one-on-one coaching for each employee. Employees during paid time can meet with this professional to: establish paths forward, identify key skills they need to bolster, and methods to enhance those skills. All meetings are confidential between employees and the third-party coach.

To address *feedback from the job*, the organization created a new position and small autonomous department to enhance and foster employee engagement and act as a mediator and communication channel between employees and management. The new position oversees an employee engagement program where the goal is to: improve the recognition of employees, provide better and more regular communication from management, and improve *feedback from others*. The program adopts a framework, titled Motivational Landscape Framework and is modeled from the book, "Organizational Happiness" by Lars Kure Juul (Juul, 2018).

#### 6.3.2.7 *Six-Month Check-in*

While the second round of data collection was prevented due to the COVID-19 pandemic, the author was able to hold a follow-up meeting with management to qualitatively assess the effectiveness of the actions. Employees were regularly meeting with the career coach and working on acquiring the identified skills during their regular weekly training time. Not all employees were meeting with the coach, which was acceptable as it was an option for those who wanted, but not a requirement.

The new employee engagement program was in full swing and had been providing employees regular one-on-one meetings and as well as a new employee recognition survey that informed the employee engagement department of how each employee preferred to be recognized for their accomplishments. Management knew that not all employees wanted to be acknowledged the same way; the survey allows each employee to inform management how they wished to be recognized for their contributions. Management was in high spirits, excited to discuss the new changes, and hopeful the WIAs would improve upon the experiences of working for the organization, as well as increase retention and trust within the organization. They also did not withdraw completely from the Good Work research and were willing to continue once the pandemic had diminished.

#### 6.3.3 Production Organization

To inform the strategic work design efforts of the Production Organization, the author surveyed (n=14) and interviewed (n=10) employees regarding their work in terms of Work Characteristics, i.e., attributes of the job task, and social and organizational environment (Morgeson & Humphrey, 2006). The following are the key findings from the application of Lee's Work Improvement Process.



### 6.3.3.1 Most and Least Important Characteristics for the Production Organization

The most common characteristics rated in the top and bottom five can be seen in Table 29. *Job security* was the most common of the top five characteristics (86% of participants), followed by *career growth* (64%), *safety* (57%), *personal growth* (50%), and *compensation* (43%). Interestingly, *aesthetics*, *social support*, *autonomy*, and *feedback from others* were never rated in the top five. *Aesthetics* (79%) was the most common characteristic in the bottom five, followed by *social interaction* (71%), *demand* (50%), and *social support* (55%). *Job security*, *career growth*, and *safety* were never rated in the bottom five.

While the bottom five did not inversely mirror the top five, there was a noticeable crossover. The three most common characteristics in the top five, *job security*, *career growth*, and *safety*, were never included in the bottom five, indicating these three characteristics are of great importance to the participants' view of the ideal job. Also, *personal growth* and *compensation*, the fourth and fifth most commonly rated characteristics in the top five, respectively, were rarely included in the bottom five. Taking into consideration the top five and bottom five paints a picture of the group's ideal job - a job where employees know they cannot be fired due to factors outside of their control (*job security*), that provides opportunities for career growth and advancement (*career growth*), keeps them protected from harm (*safety*), allows them to further themselves (*personal growth*), and pays well enough (*compensation*).

*Table 29: Top Three and Bottom Three characteristics for participants at the Production Organization as identified during the in-person interview. The questionnaire data was based on 14 participants.*

<b>Top Five</b>		<b>Bottom Five</b>	
<b>Characteristic</b>	<b># of votes (% of participants)</b>	<b>Characteristic</b>	<b># of votes (% of participants)</b>
Job Security	12 (86%)	Aesthetics	11 (79%)
Career Growth	9 (64%)	Social Interaction	10 (71%)
Safety	8 (57%)	Demand	7 (50%)
Personal Growth	7 (50%)	Social Support	7 (50%)
Compensation	6 (43%)	Regular Schedule	6 (43%)
Regular Schedule	5 (36%)	Variety	6 (43%)
Accomplishment	5 (36%)	Autonomy	4 (29%)
Feedback from the job	4 (29%)	Feedback from others	4 (29%)
Variety	3 (21%)	Feedback from the job	3 (21%)
Mutual Trust	3 (21%)	Ergonomics	3 (21%)
Value	3 (21%)	Technical Growth	3 (21%)
Social Interaction	2 (14%)	Personal Growth	2 (14%)
Demand	1 (7%)	Compensation	1 (7%)
Ergonomics	1 (7%)	Accomplishment	1 (7%)
Technical Growth	1 (7%)	Mutual Trust	1 (7%)
Aesthetics	0 (0%)	Value	1 (7%)
Social Support	0 (0%)	Job Security	0 (0%)
Autonomy	0 (0%)	Career Growth	0 (0%)
Feedback from others	0 (0%)	Safety	0 (0%)

Due to the limited time given for each interview<sup>15</sup> at the Production Organization, the most important and least important characteristics questions were skipped to allow time to discuss mismatched characteristics.

<sup>15</sup> Unfortunately, there was miscommunication between the author and management regarding the length of time for each interview, resulting in some questions being omitted during the interview to adhere to the schedule.

### 6.3.3.2 Current Work characteristics for the Production Organization

Figure 30 shows the results for the Current Work component of the GWQ. The average and standard deviation of all responses to the 19 Current Work questions was 4.91/7 and 1.63, respectively. *Social interaction* was the highest-rated characteristic (6.43/7), followed by *regular schedule* (6.14/7), *safety* (6.0/7), *accomplishment* (5.71/7), *variety* (5.50/7), and *career growth* (5.50/7). Based on the average responses from their employees, the employees of the Production Organization agree their work provides them with the ability to interact with co-workers, a consistent/predictable work schedule, protection from physical harm, a feeling of satisfaction with their contribution, and opportunities for growth and advancement.

Values below a 4 “Neutral” demonstrate some level of disagreement with a characteristic being present in their current work. Four characteristics fell below this threshold, namely, *job security* (average = 3.36), *autonomy* (3.50), *feedback from others* (3.64), and *feedback from the job* (3.86). Complete results can be seen in Table 30.

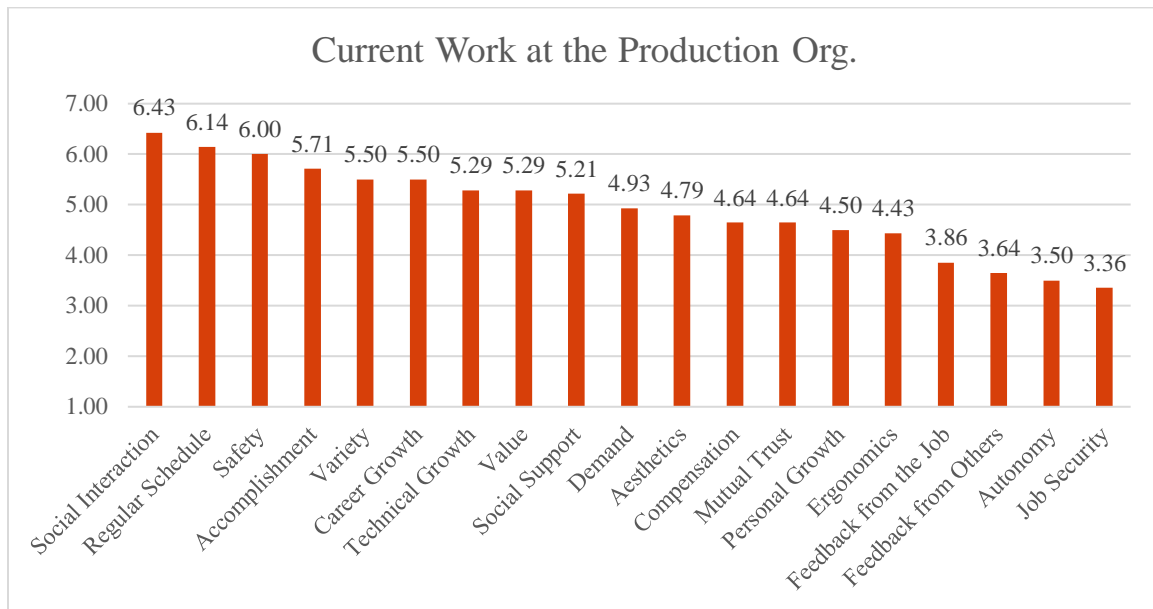


Figure 30: Current Work at the Production organization. Likert-scale qualifiers presented next to the numbers were, 1 “Strongly Disagree”, 4 “Neutral”, and 7 “Strongly Agree.” The questionnaire data is based on 14 participants.

### 6.3.3.3 Preferred Work characteristics for the Production Organization

Figure 31 details the results for the Preferred Work component of the GWQ. The average and standard deviation of all responses to the 19 Preferred Work questions were 5.70/7 and 1.50, respectively. All characteristics were rated as at least ‘somewhat/sometimes’ (4.0/7) preferred, illustrating employees, on average, prefer a comprehensive work design that fulfills some level of all characteristics (i.e., no characteristics, on average, were undesirable). *Job security* was the highest-rated preferred characteristic (6.77/7), followed by *career growth* (6.54/7), *safety* (6.32/7), *mutual trust* (6.31/7), and *feedback from others* (6.14/7).

*Regular schedule*, once it was re-coded, was rated the lowest (4.77/7), *social interaction* (4.86/7) was the second lowest, and *demand* and *aesthetics* (4.86/7) were tied for the third lowest. Complete results can be seen in Table 30.

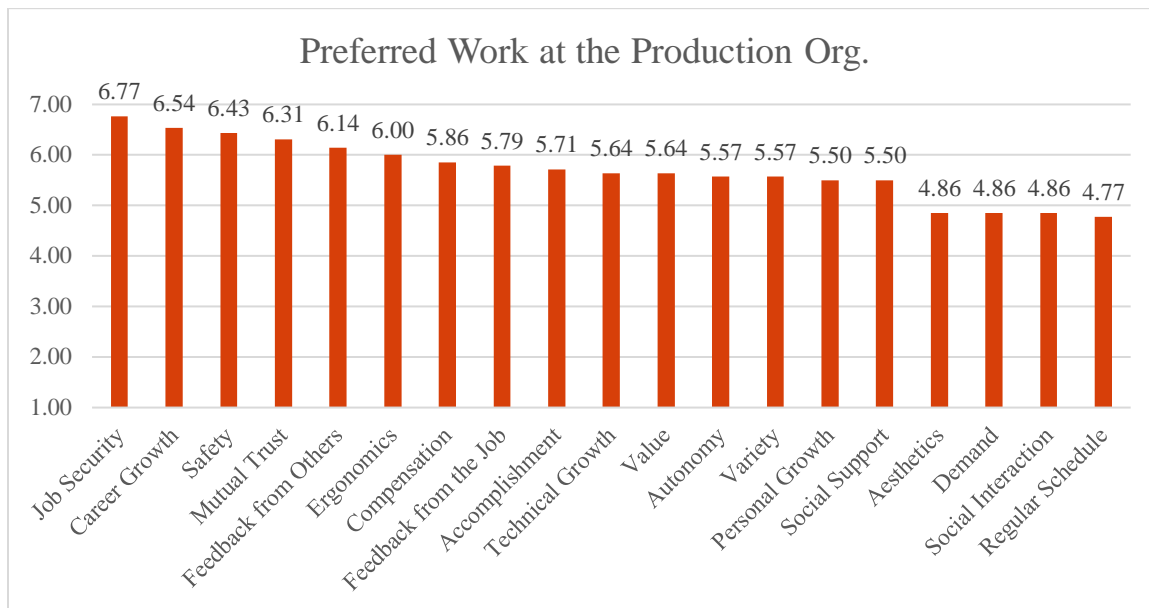


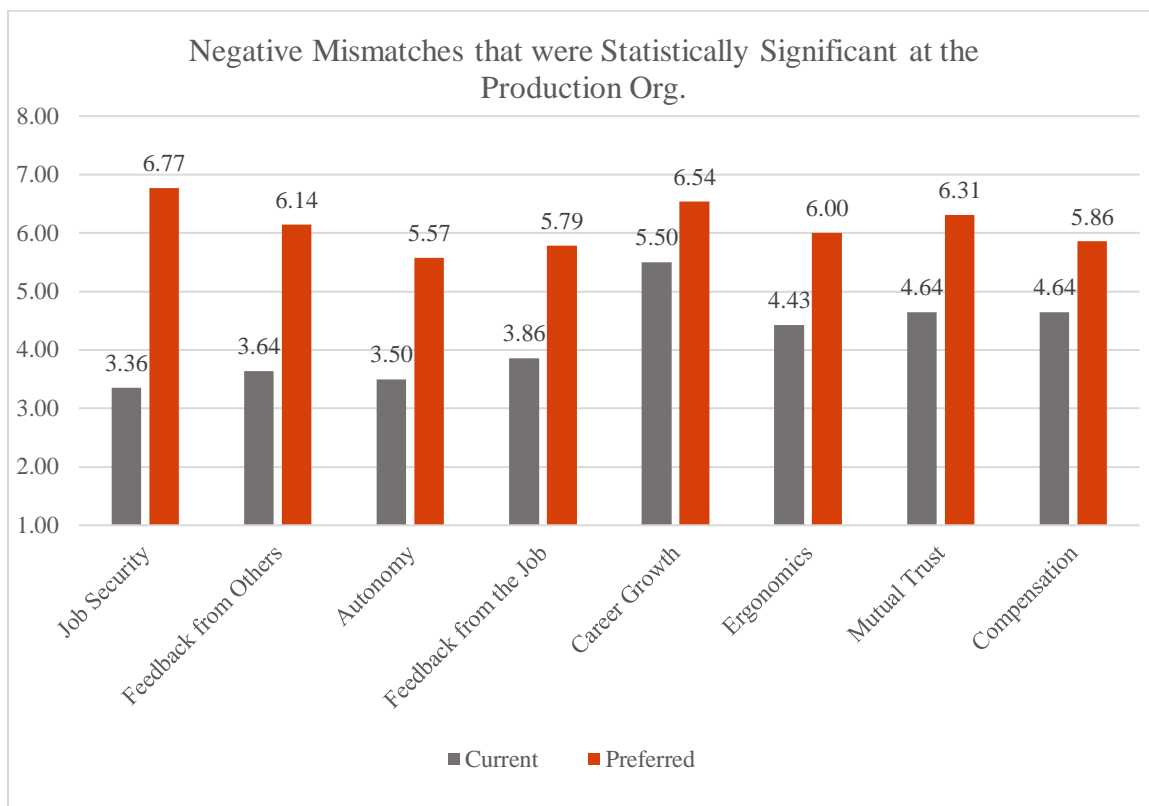
Figure 31: Preferred Work at the Production Organization. Likert-scale qualifiers presented next to the numbers were, 1 “No”, 4 “Some”, and 7 “Often.” The questionnaire data is based on 14 participants.

#### 6.3.3.4 Comparing Current versus Preferred Work for the Production Organization

Table 30 details the complete results comparing Current Work to Preferred Work. Statistically positive characteristics (i.e.,  $\text{Characteristic}_{\text{current}}$  is greater than  $\text{Characteristic}_{\text{preferred}}$ ) include *regular schedule* (average difference = 1.37, p-value < 0.0000) and *social interaction* (average difference = 1.57, p-value < 0.0014).

Negative mismatches that were statistically significant, shown in Figure 32, include *job security* (average difference = -3.41, p-value = 0.0001), *feedback from others* (-2.50,

0.0006), *autonomy* (-2.07, 0.0023), *feedback from the job* (-1.93, 0.0038), *career growth* (-1.04, 0.0067), *ergonomics* (-1.57, 0.0124), *mutual trust* (-1.66, 0.0145) and *compensation* (-0.77, 0.0099). Results indicate that workers may benefit from WIAs to address one or more of these characteristics. Complete results can be seen in Table 30.



*Figure 32: Negative mismatches that were statistically significant between Current and Preferred Work at the Production Organization. Organized from the largest difference between Current and Preferred Work to the smallest difference. The questionnaire data is based on 14 participants.*

Table 30: Current Work, Preferred Work, and Comparisons (paired t-tests) along the 19 Work Characteristics at the Production Organization. The questionnaire data is based on 14 participants.

<i>Characteristic</i>	<b>Current Work</b>		<b>Preferred Work</b>		<b>Comparison (paired t-test)</b>	
	<b>Avg</b>	<b>St dev</b>	<b>Avg</b>	<b>St dev</b>	<b>Difference</b>	<b>p-value</b>
Negative Mismatches that were Statistically Significant						
Job Security	3.36	1.74	6.77	0.60	-3.41**	0.0001
Feedback from Others	3.64	1.82	6.14	0.95	-2.50**	0.0006
Autonomy	3.50	1.61	5.57	1.09	-2.07**	0.0023
Feedback from the Job	3.86	1.46	5.79	1.12	-1.93**	0.0038
Career Growth	5.50	1.09	6.54	0.52	-1.04**	0.0067
Ergonomics	4.43	1.91	6.00	1.04	-1.57*	0.0124
Mutual Trust	4.64	1.69	6.31	1.03	-1.66*	0.0145
Compensation	4.64	1.50	5.86	1.23	-1.21*	0.0176
Personal Growth	4.50	1.70	5.50	1.65	-1.00*	0.0202
Positive Mismatches that were Statistically Significant						
Social Interaction	6.43	0.85	4.86	1.46	1.57**	0.0014
All Other Characteristics						
Safety	6.00	0.96	6.43	0.65	-0.43	0.1110
Technical Growth	5.29	1.54	5.64	1.08	-0.36	0.3356
Value	5.29	1.14	5.64	1.08	-0.36	0.4182
Social Support	5.21	1.25	5.50	1.40	-0.29	0.4533
Demand	4.93	1.27	4.86	1.46	0.07	0.8555
Aesthetics	4.79	1.25	4.86	1.70	-0.07	0.8826
Variety	5.50	1.22	5.57	1.40	-0.07	0.8853
Accomplishment	5.71	1.14	5.71	1.49	0.00	1.0000
Totals	4.91	1.63	5.70	1.50	1.50*	0.0129

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

Just as in other applications of Lee's Work Improvement Process, the author had to reduce the current set of mismatched characteristics to three. The goal of reducing the set was to keep the characteristics with the lowest p-value that were on the list of 'Top Five' most important characteristics. *Job security* remained, as did *feedback from the job* and

*career growth*. *Feedback from others* and *autonomy* were excluded because they were never rated as a most important characteristic.

The typical reason given for the mismatch in *job security* was the reduction in the demand at the plant the participants for the Production Organization worked at. Over a relatively recent time frame, the plant's production schedule had slowed down due to a reduction in demand. All participants noted that the current management team does not have control over the demand for the products. Some participants stated they did not worry about being terminated but could see how that concern would arise as there was a general sense of unease about the future of production jobs in the US overall. Some participants added the Organization puts great effort into retaining people when demand diminishes and noted that they do not know of any co-worker who was laid-off due to a reduction in demand; however, the Organization does have to move employees to a nearby plant that had different, but similar products, "No feeling from me of being fired, but I suppose I could be moved to another plant."

Interestingly, when asked why there was a mismatch in *career growth* most participants disagreed with a lack of opportunities for raises and promotions being present. One participant stated, "I do not agree" and another said "[The Production Organization] does provide a good opportunity for growth." Some explained there are many opportunities, particularly if an employee is willing to switch plants or shifts (day versus night), "most people are not willing to take a promotion if it requires a move to night shift or [another plant]." A few participants added that many people are highly interested in *career growth* because they are young and eager to move beyond their current job. The GWQ supports these claims as 85% of the participants were younger than 45 and the



average response to the current work question, “I have opportunities for career growth and advancement” was a 5.50, which falls between ‘somewhat agree’ and ‘agree’. Moreover, the average response to the preferred work question, was 6.54, which falls just below the max score of 7 – participants are eager for many opportunities for career growth and advancement.

The typical answer participants gave when asked about *feedback from the job*, was concerning *feedback from others*, which also was identified as a mismatch in the GWQ. Specifically, participants were concerned with not receiving enough feedback about good performance. Employees were always made aware when they made mistakes, but when they had many productive and error-free shifts in a row they did not receive any praise, “When you do good there is not a thank you or closure, just on to the next assignment.” Also, participants do not always know who benefits from the products they create, and therefore do not receive feedback about how their work helps people, “Feedback from end-users would be nice; I don’t really know how our product is used, or who benefits from it.” It appears from the conversations in the interview process that employees could benefit from more regular feedback from others, even though that characteristic was not selected in the ‘Top Five’. Moreover, they may benefit from information about how their product is used and how it benefits the final customers.

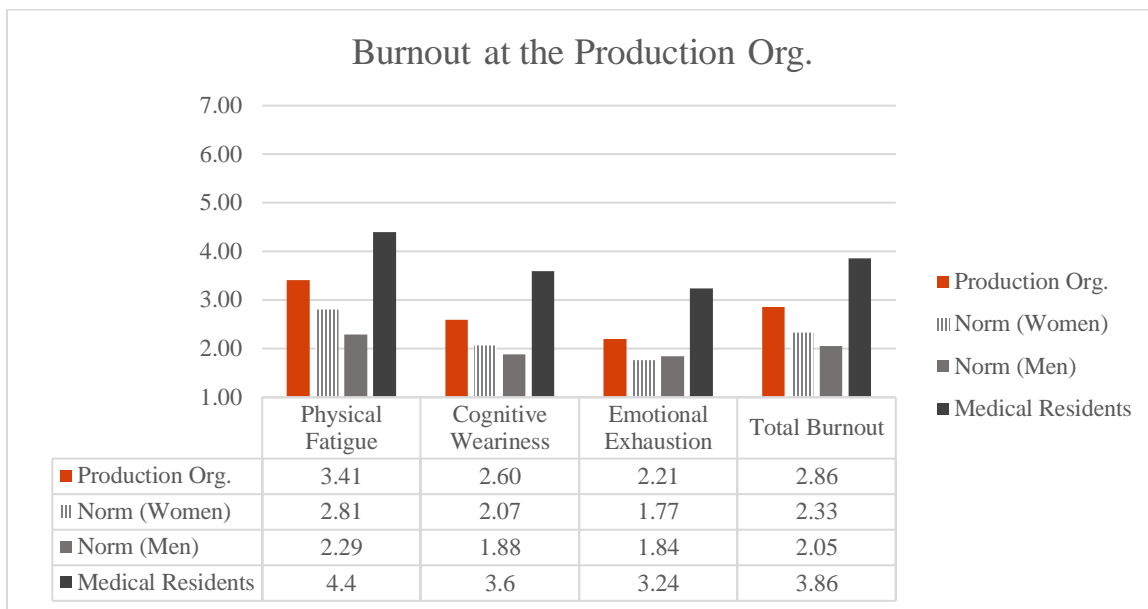
#### 6.3.3.5 Work Outcomes and Organizational Culture

The following sections describe the Production Organization’s results from the Work Outcomes (Total Burnout, Physical Fatigue, Cognitive Weariness, and Emotional Exhaustion) and Organizational Culture (Employee Loyalty, Management Facets, and Employee Expectations) components of the GWQ.

#### 6.3.3.5.1 Burnout at the Production Organization

The results of the Burnout component of the GWQ can be seen in Figure 33 and are detailed in Table 31. Based on a one-sample Z-test (Montgomery, 2009), results show that on average, employees of the Production Organization who participated in the GWQ, report statistically higher values than the norm provided by the authors of the SMBM, except for Emotional Exhaustion [ $H_0: \mu_{\text{Production}} = \mu_0$ ;  $H_1: \mu_{\text{Production}} > \mu_0$ ]. Due to the low sample size, all values were compared to the average of men and women. Employees, on average, are more burned-out than the norms provided for Total Burnout (average = 2.86, p-value = 0.0017), Physical Fatigue (3.41, 0.0025), and Cognitive Weariness (2.60, 0.0000); however, employees do not report significantly higher values of Emotional Exhaustion (2.21, 0.0584). While three of the four burnout measures were shown to be statistically higher than the norm, it does not indicate they are at risk of physical and mental health consequences. A value of 4 or higher is a common benchmark for concern (Bilgel et al., 2012).

Comparing the levels of burnout among the employees of the Production Organization to medical residents (med.res.), a documented group of workers who experience some of the highest levels of burnout reported (Bilgel et al., 2012), allows for further understanding of the numerical values [ $H_0: \mu_{\text{Production}} = \mu_{\text{med.res.}}$ ;  $H_1: \mu_{\text{Production}} < \mu_{\text{med.res.}}$ ]. Based on a two-sample t-test (Montgomery, 2009), results show that employees of the Production Organization on average report less Total Burnout (p-value = 0.0028), Physical Fatigue (p-value = 0.0076), Cognitive Weariness (p-value = 0.0061), and Emotional Exhaustion (p-value = 0.0064).



*Figure 33: Burnout at the Production Organization. Norm values were calculated by the developers of the SMBM and are available at <http://www.shirom.org/arie/index.html#>. Medical Residents' values were obtained from (Bilgel et al., 2012). The questionnaire data is based on 14 participants.*

#### 6.3.3.5.2 Employee Loyalty at the Production Organization

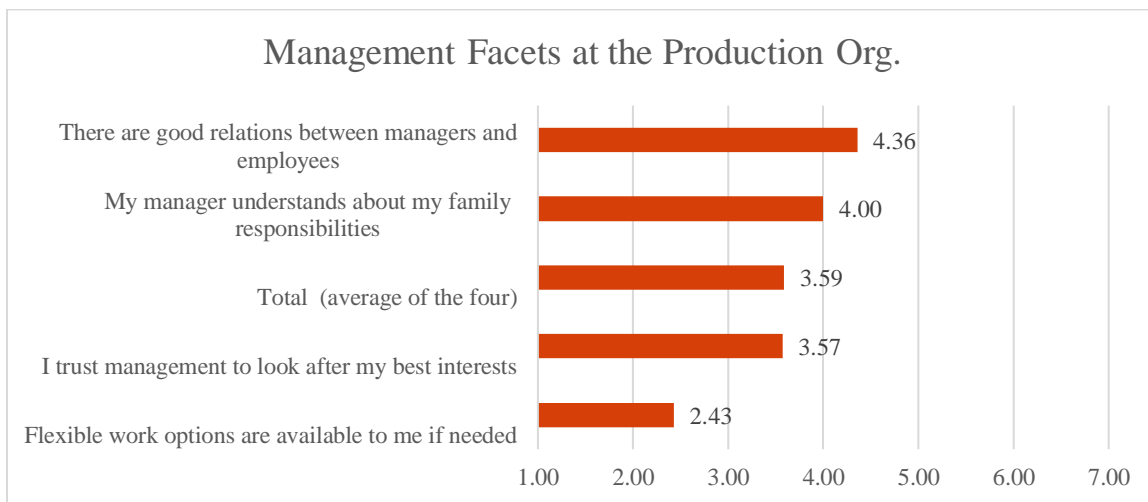
The results from the Employee Loyalty component of the GWQ are shown in Figure 32 and detailed in Table 31. All loyalty results fell around a 5 “Quite frequently”; employees ‘quite frequently’ feel loyalty to: the organization, their supervisor, co-workers, and customers. Loyalty to customers was rated highest (avg = 5.54), followed by co-workers (5.29), organization (5.00), and supervisor (4.71). Total loyalty, the average of the four questions, was 5.11.



*Figure 34: Employee Loyalty at the Production Organization. Likert-scale ratings were 1 “Never”, 4 “Sometimes”, and 7 “Always.” The questionnaire data is based on 14 participants.*

#### 6.3.3.5.3 Management Facets at the Production Organization

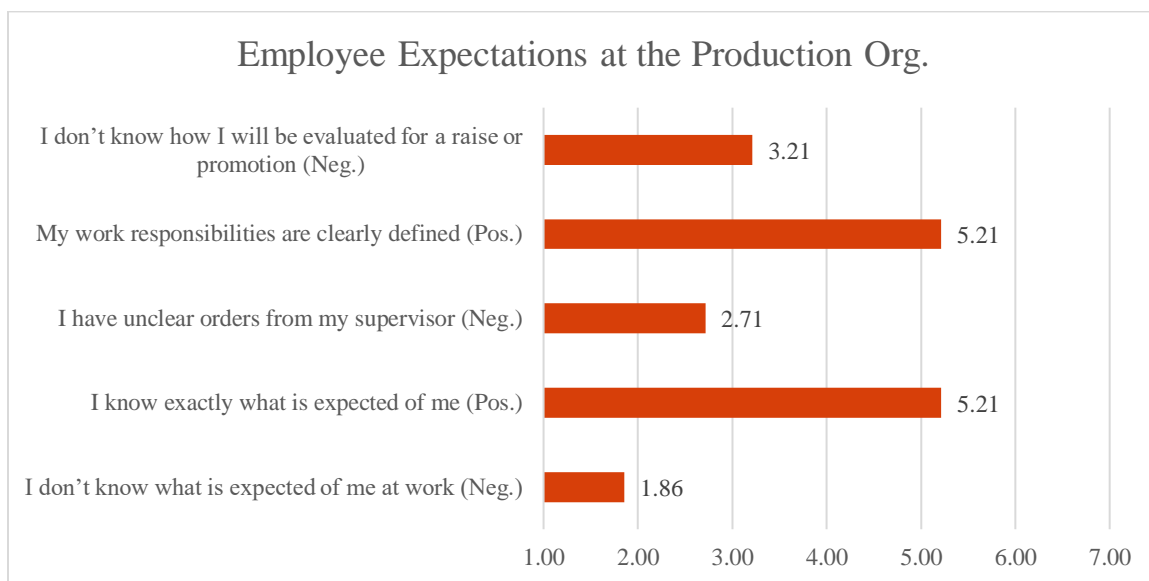
The results can be seen in Figure 35 and are detailed in Table 31. Results varied between a 3 “Quite infrequently” to a 4 “Sometimes”, with an average of the four equaling 3.59. The highest-rated Management Facet was ‘Good Relations Management Employees’ (average = 4.36), followed by ‘Manager Understanding Family’ (4.00), ‘Trust Management’ (3.57), and ‘Available Flexible Work Options’ (2.43).



*Figure 35: Management Facets at the Production Organization. Likert-scale ratings were 1 “Never”, 4 “Sometimes”, and 7 “Always.” The questionnaire data is based on 14 participants.*

#### 6.3.3.5.4 Employee Expectations at the Production Organization

Results, shown in Figure 36 and detailed in Table 31, demonstrate employees ‘quite infrequently’ do not know how they will be evaluated for a raise or promotion (average = 3.21). Employees, on average, ‘quite frequently’ have clearly defined work responsibilities (5.21) and ‘quite infrequently’ have unclear orders from their supervisor (2.71). Also, employees ‘quite frequently’ know exactly what is expected of them (5.21), and ‘very infrequently’ do not know what is expected of them (1.86). Overall, Employee Expectations at the Production Organization are well defined. For example, employees rated the statement, ‘I don’t know what is expected at me at work,’ as a 1.86, which falls between 1 “Never” and 2 “Very infrequently”.



*Figure 36: Employee Expectations at the Production Organization. Likert-scale ratings were 1 "Never", 4 "Sometimes", and 7 "Always." The questionnaire data is based on 31 participants.*

All results for the Work Outcomes and Organizational Culture components of the GWQ can be seen in Table 31.

Table 31: All results for the Work Outcomes and Organizational Culture components of the GWQ for the Production Organization. The questionnaire data is based on 31 participants.

<b>Component</b>	<b>Average</b>	<b>St. dev.</b>
<b>Burnout</b>		
<i>Total Burnout</i>	2.86	0.77
<i>Physical Fatigue</i>	3.41	1.02
<i>Cognitive Weariness</i>	2.60	0.93
<i>Emotional Exhaustion</i>	2.21	0.96
<b>Loyalty</b>		
<i>Customers</i>	5.54	1.05
<i>Co-workers</i>	5.29	1.44
<i>Organization</i>	5.00	1.30
<i>Supervisor</i>	4.71	1.44
<i>Total Employee Loyalty</i>	5.11	1.32
<b>Management Facets</b>		
<i>There are good relations between managers and employees</i>	4.36	1.69
<i>My manager understands about my family responsibilities</i>	4.00	1.88
<i>I trust management to look after my best interests</i>	3.57	1.60
<i>Flexible work options are available to me if needed</i>	2.43	1.60
<i>Total Management Facets</i>	3.59	1.81
<b>Employee Expectations</b>		
<i>I don't know how I will be evaluated for a raise or promotion (Neg.)</i>	3.21	1.72
<i>My work responsibilities are clearly defined (Pos.)</i>	5.21	1.63
<i>I have unclear orders from my supervisor (Neg.)</i>	2.71	1.64
<i>I know exactly what is expected of me (Pos.)</i>	5.21	1.85
<i>I don't know what is expected of me at work (Neg.)</i>	1.86	1.29

#### 6.3.3.6 Selection and Implementation of WIAs at the Production Organization

Four mismatched characteristics (*feedback from the job, feedback from others, job security, and career growth,*) were presented to management along with a customized list of potential Work Improvement Actions (WIAs) addressing each characteristic in a report. This report was then discussed in a series of meetings. Based on the author's consideration

of the data collected in the GWQ, in-person interviews, and meetings with managers, *feedback, from the job, and/or from others*, would be/are the most appropriate characteristics to address. The organization appeared to be putting forth substantial efforts to retain employees and provide them opportunities for promotions and raises. The initial WIA list was identified from the database of WIAs that was developed in Investigation #2 and was supplemented with findings from the in-person interview, which asked participants, “*If you could modify one or two aspects of your current work, what would it be and why?*” This question allowed participants to help brainstorm actions to improve the design of work.

Suggestions for modifying work from the participants include (listed from most to least common):

1. Provide more praise and camaraderie to build morale.
2. Eliminate unnecessary paperwork and bureaucracy.
3. Update old machinery.
4. Allow music to be played while working.

Work Improvement Actions from the database addressing *feedback from the job*:

- i. Provide employees with information regarding how end-users benefit from their work (Konz & Johnson, 2008).
  - This would be helpful for the employees of the Production Organization, who may not know how the product is being used.
  - Management could provide employees with customer reviews/comments or provide a few case study examples of how customers are using each product.
- ii. Hire external consultants, who are not working in the company, to interview employees without managers present and give managers information regarding employee experiences (Barsky et al., 2004). Interestingly, this is precisely what has resulted in this research project.



- iii. Updating equipment that will facilitate information gathering and presenting to employees (Wickens et al., 2004).

Work Improvement Actions from the database addressing *feedback from others*:

- i. While the Production Organization does have regular meetings, it may behoove employees if managers stop by when a team has done especially well just to vocalize their appreciation (Jenkins, 1996; Sandberg, 1995).
- ii. Hold regular one on one meetings to provide information regarding what is going well and what roadblocks or issues employees are experiencing (Hess, 2014; McMahon & Pocock, 2011)
  - Not only should supervisors have a chance to evaluate their employees, but employees should have a system to evaluate their supervisors.
  - Effective feedback is clear, specific, frequent, and relevant to important job behaviors.
  - Constructive feedback attributes **poor performance** to external causes, such as situational factors beyond the subordinate's control, when the external attribution is warranted. Do not blame people for negative outcomes that are not their fault.
  - Constructive feedback attributes **good performance** to internal causes, such as the subordinate's effort and ability. That is, it recognizes when an individual should be praised for positive outcomes (London, 2003).
- iii. Allocation of time and resources to **act** on employee feedback:
  - Spend time interpreting results, developing and implementing action plans, communicating results, and communicating new directions/projects regularly (Barsky et al., 2004).
  - At the Production Organization, this may be quite beneficial regarding the plans for securing more demand/new product [Interview finding].

Work Improvement Actions from the database addressing *job security*:

- i. Job security increases with seniority (Vanderburg, 2004).
- ii. Paid maternity/paternity leave (McMahon & Pocock, 2011).

- iii. After parental leave, an employee has an entitlement to return to the position they held before their leave (Mcmahon & Pocock, 2011).
- iv. Transparency of employee performance (Konz & Johnson, 2008).

Work Improvement Actions from the database to address *career growth*:

- i. Implement a mentorship program (Briggs et al., 2012) that helps initiate relationships between possible mentors and those co-workers who can give instrumental advice and provide other forms of psychosocial support. These programs are particularly important when new employees are hired and when role transition occurs (Poon et al., 2015).
- ii. Continued training programs to enhance the knowledge, skills, and abilities of employees (Mcmahon & Pocock, 2011; Prince, 2003).
- iii. Increase salary over the course of an employee's career (Poon et al., 2015) and as employee's skills increase (Murray & Gerhart, 1998).
- iv. Paid membership to professional association/society (Mcmahon & Pocock, 2011).

After a series of meetings discussing the findings, the Production Organization used a change management model, known as ADKAR (Aware, Desire, Knowledge, Ability and Reinforce) to implement actions to improve *feedback from the job* and *feedback from others*. ADKAR is designed to be a model for change in business, government, and communities, and claims all five elements must be in place for change to be realized (Hiatt, 2006).

In this context, **Awareness**, means that the need for change was identified via the Good Work Investigation. The organization was made aware that employees want feedback from customers and managers to help evaluate how successful they are in meeting expectations. Also, employees want to know how the products they make are used in the marketplace. **Desire** to support and participate in the change was felt by both management

and the employees. **Knowledge** of how to change was developed through a series of meetings, the suggested WIAs, and discussions with employees.

**Ability**, in this case refers to the implementation of change, and was realized by providing more effective feedback and changing the way the plant performs pass-down meetings to facilitate more discussion between employees and managers. Also, a manager was tasked with collecting and distributing regular customer feedback to the employees by acting as a liaison between marketing and customer support staff, who collect customer feedback and reviews, and the employees. The customer feedback was provided to employees in their general break space and was regularly updated. **Reinforcement** or sustaining the change was accomplished by making feedback a widely important goal (WIG), which managers are meant to encourage and enforce. Communication to all employees, particularly positive affirmations of successful runs, was placed at the top of their WIGs.

#### 6.3.3.7 Six-Month Check-in

During the six-month check-in, the Production Organization's management shared that the plant's production volume was back to normal levels. The new pass-down meetings were eliciting dialog between employees and management, which was facilitating *feedback from others* more effectively and frequently than before, particularly positive affirmations of successful runs. The managers reported that employees were appreciative of the meetings and the meeting format was being transferred to other plants in the Organization. The customer feedback/reviews had been regularly updated in the general break space and was frequently viewed by employees while in the space and discussed throughout the

shifts. As in the other three organizations, the Production Organization was willing to continue the Good Work research when the pandemic subsided.

## 6.4 Discussion

Investigation #3a sought to test and validate Lee's Work Improvement Process at three Organizations in Oregon, USA. This section discusses the application of Lee's Work Improvement Process at the Service, Technology, and Production organizations. First, organizational similarities and differences are discussed. Then, a discussion of the Good Work Questionnaire (GWQ) is given. Finally, a summary of the limitations of the Investigation is presented.

### 6.4.1 Comparing and Contrasting the Organizations

One significant, and important similarity to acknowledge in all three organizations is they all care about the well-being of their employees and are open for an in-depth evaluation; otherwise, they would not have agreed to participate in this Investigation. All three had managers who were willing to confront their potential weaknesses and were open for suggestions that assigned an additional workload to their already busy schedule. For example, all managers were the drivers of change, and therefore the implementation of WIAs fell on their shoulders.

There were similarities in the mismatched characteristics between all three organizations. *Feedback*, either *from the job* and/or *from others* was deficient in all three, which highlights the significance of receiving quality information regarding one's work and the commonality of a lack of information. *Mutual trust* also had a mismatch in all three organizations, as did *compensation*, which may be due to the wording of the Good Work

Questionnaire<sup>16</sup> and/or peoples' preference to have complete trust and high pay. Interestingly, both constructs, referred and defined as characteristics in this research, are often measured differently in other examinations of work.

*Compensation* is most often referred to as an outcome of work design that is dependent on the measured level of specific characteristics. For example, on average, employees with more autonomy and demand (e.g., lawyer, professor) receive higher pay for their work than those with less autonomy and demand (e.g., security guard, assembly worker); illustrating the effect of Work Characteristics on *compensation* (Humphrey et al., 2007). This research classified compensation as a characteristic of work design because it can be changed (redesigned) and participants often refer to it as a characteristic, or significant factor of work in this Investigation and Investigation #1 (Hattrup et al., 2020).

*Mutual trust* may fit better into the Organizational Culture component of work, similar to how Employee Loyalty was operationalized in this investigation. Numerous studies have investigated *mutual trust* at work, and while it appears to fit nicely into the bevy of Work Characteristics, it may be more appropriately placed into the Organizational Culture component. Particularly because most WIAs that seek to improve *trust* most often point to improving *feedback, from the job* and/or *from others* [e.g., feedback builds a trust cycle (Cullen & Johnson, 2000), explaining expectations (Lewicki & Bunker, 1996), and documented procedures for evaluating performance (Lewicki & Wiethoff, 2000)].

Another similarity was the lack of a formal review process for the Technology and Service Organizations, which many participants did not appreciate. Formal review processes, where employees are reviewed by an immediate supervisor, were eliminated at

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<sup>16</sup> A detailed discussion of the GWQ's wording is presented in Section 6.4.2.

the Service Organization [*Interview finding*] and did not occur at the Technology Organization [*Interview finding*]. It is interesting to hear from different workers (blue-collar and white-collar) at two very different organizations that they do not like the modern process, which asks them to rate the quality of their work and their supervisor's quality of work.

A mismatch in *job security* was present in the two 'at-will' organizations, but not in the Service Organization, which has a labor union that protects workers from being readily terminated. Employees of the Service Organization were aware of the protection and noted in the Interview that it comes at a cost to their compensation. During the Interview, many employees discussed that they willingly trade higher pay for better *job security*, and some spoke to the security being a primary reason for applying and accepting a position at the Service Organization. While not all labor unions result in less than average pay compared to their counterparts working in non-union positions, this was the case at the Service Organization and many employees preferred the *security* over a job with less security but more *compensation*.

The most significant difference between the organizations, concerning the application of Lee's Process, was their ability to effect change. The Technology Organization implemented the costliest and most significant changes in the shortest time, which involved creating a new department and a position to oversee the department and paying for an external career coach. These actions resulted in many reoccurring line items in their operational budget. The Production Organization enacted the second most costly and time-intensive action items, and the Service Organization the least costly and least time-intensive.

The ability to enact change is proportional to the budget each organization has and the timeliness is inversely proportional to the level of bureaucracy. While the moral duty to improve the design of work can be assumed to exist equally among all managers, their capability to improve the design of work appears to be limited by the money they must spend and the bureaucracy they must overcome. Since the Technology Organization has liquid assets to invest, and little bureaucracy to stop them from quickly making changes, it can rapidly and substantially redesign the work to better their employees.

The Production Organization does have assets to make changes and did change a significant amount in their new meeting structure, but it took more time. The manager the author interacted with was one of many middle managers overseeing one of many production plants. Before making any changes, he/she needed to obtain approval from stakeholders, such as the Upper Management team and Human Resource personnel. This is starkly different from the Technology Organization's change management system, which created a new department in short order without the need to consult middle managers as there were none because of the flat structure.

Interestingly, the application of Lee's Process was briefly delayed at the Production Organization when a high ranking Human Resource (HR) personnel was informed of the study and put a temporary stop to the study before data collection due to a concern that it conflicted with their own employee surveys. The HR personnel was unwilling to meet and discuss their concern with the author. The manager and the author had to wait for a higher-ranking Upper Manager, who originally approved the study, to come back from vacation to override the HR personnel's halting of the study. This speed bump illustrates how difficult it is to improve the design of work for employees in large organizations with

extensive infrastructure and hierarchy. While the immediate HR personnel for the plant was consulted and provided their approval, better care should have been taken to inform all HR personnel throughout the hierarchy.

The Service Organization, the only organization of the three that does not create a profit but instead operates on a known and fixed yearly budget, had subjectively the most difficult time enacting change. They took the longest and made the smallest changes, which was not because the manager cared less; rather it was because they cannot afford to add additional costs or use pre-assigned funds for a new project. They had to use what was already purchased and could not place an additional workload on their employees beyond the agreed-upon position description. Also, they have an extensive change control process that involved Upper Management, Human Resource protocol, and union approval. In the end, they had to make do with the systems currently in place and augment or extend them without adding costs.

Another notable difference was the organizational structure, which has been briefly described prior. Organizational structures, also referred to as hierarchies, distribute control between upper and lower-ranking employees, and affect many attributes of work, including the level of autonomy employees, have (Tannenbaum & Kahn, 1970). The Technology Organization has the flattest structure, the Production Organization the most vertical, and the Service Organization somewhere in the middle. A flat structure provides a higher level of autonomy to employees when compared to a vertical structure, which has benefits including quicker decision making (Byrne, 1993) and reduced health consequences of employees (Karasek & Theorell, 1990). On the other hand, a vertical organization provides



more opportunities for *career growth* as there are more supervisor and managerial positions to move into.

The theoretical relationship between *autonomy* and Total Burnout<sup>17</sup>, a common measurement of the negative health consequences of work (Shirom & Melamed, 2006), can be seen in actuality in the three organizations. The Technology Organization reported the highest average value of *autonomy* in the Current Work component of the GWQ (Service = 5.36, Technology = 5.84, Production = 3.50). Moreover, the Technology Organization showed the lowest levels of Total Burnout (Service = 2.99, Technology = 2.38, Production = 2.86), even though participants reported higher levels of *demand* (Service = 4.00, Technology = 5.19, Production = 4.93). Here the relationship between *autonomy*, *demand*, and Total Burnout is illustrated; specifically, the more *autonomy* employees have the more *demand* they can handle without being negatively impacted by the work.

The participants at the Production Organization rated their current level of *career growth* higher than did the Service and Technology Organizations (Service = 3.64, Technology = 4.48, Production = 5.50), which may be attributed to the vertical structure that provides more opportunities to be promoted up the hierarchy.

Inquiry into the current level of *compensation* yields substantial differences between the three organizations. As shown in Table 32, the Service Organization had the least amount of agreement with the Current Work statement, “I earn enough money from this job to meet my, and my dependents’ needs”, as only 9.1% of participants agreed with the statement. Contrasting to an 80.6% agreement from the Technology Organization and

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<sup>17</sup> More autonomy will result in less burnout, with demand held constant.

a 69.2% agreement in the Production Organization, it is clear that the participants at the Service Organization do not have the same attitudes towards their pay.

Table 32: Cross-tabulation of differences in Compensation between the three organizations.

Compensation Cross-tabulation					
		Current Compensation			Total
		Agree (5, 6, and 7)	Disagree (1, 2, and 3)	Neutral (4)	
ORG	Service	9.1%	45.5%	45.5%	100.0%
	Technology	80.6%	12.9%	6.5%	100.0%
	Production	69.2%	23.1%	7.7%	100.0%
Total		63.6%	21.8%	14.5%	100.0%

Comparing<sup>18</sup> the differences between the Current and Preferred Work based the aggregate level (i.e., the average of all 19 characteristic's average) yields additional insights. As seen in Figure 37 and Table 33, the aggregate value of the Current Work component was statistically lower in the Service Organization than the aggregate value in the Technology Organization (p-value < 0.0001), but was not statistically different from the aggregate value at the Production Organization (p-value = 0.5563). The aggregate value of the Technology Organization was statistically higher than that of the Production Organization (p-value = 0.0004). In other words, the currently provided 'level' of all Work Characteristics is statistically higher in the Technology Organization than the Service and Production Organizations, but not statistically different between the Production Organization than the Service Organization.

<sup>18</sup> Comparison were made using a two-tailed, paired t-tests (Montgomery, 2009).

H<sub>0</sub>: Aggregate Current<sub>org1</sub> = Aggregate Current<sub>Org2</sub>; H<sub>1</sub>: Aggregate Current<sub>org1</sub> ≠ Aggregate Current<sub>Org2</sub>

H<sub>0</sub>: Aggregate Preferred<sub>org1</sub> = Aggregate Preferred<sub>Org2</sub>; H<sub>1</sub>: Aggregate Preferred<sub>org1</sub> ≠ Aggregate Preferred<sub>Org2</sub>

Interestingly, the aggregate value of the Preferred Work component was statistically lower for the participants at the Service Organization than that of the participants at the Technology (p-value = 0.0005) and Production (p-value = 0.0304) Organizations. There was not a statistical difference between the aggregate values of Preferred Work between the Technology and Production Organizations. In other words, the participants were more reserved in their ratings of characteristic preferences at the Service Organization compared to both the Technology and Production Organizations.

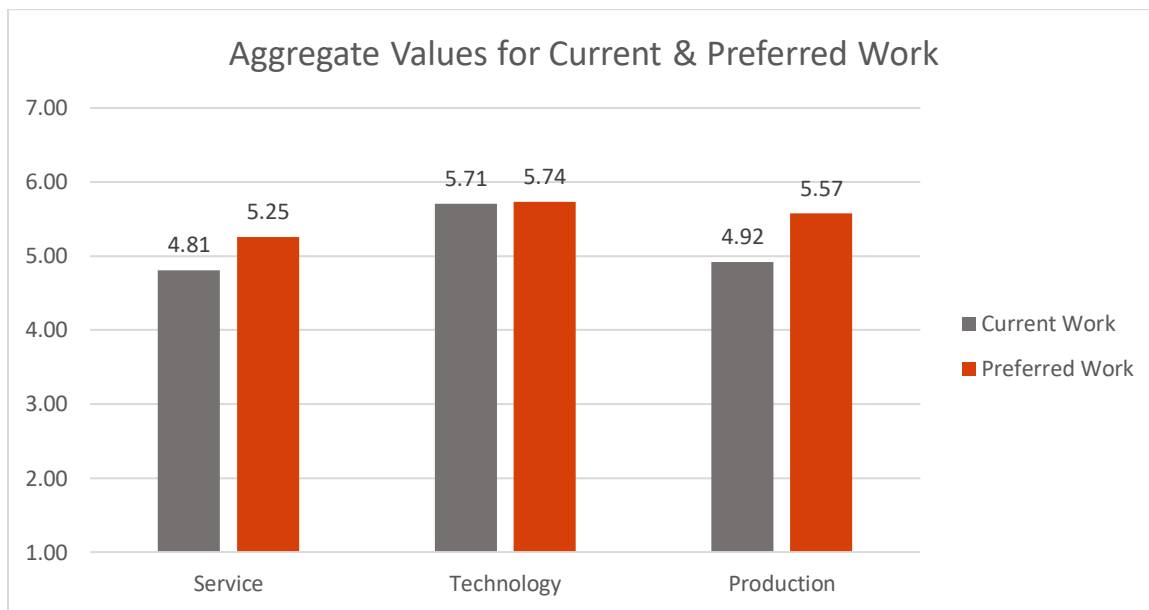


Figure 37: Aggregate values for Current and Preferred Work at the three Organizations based GWQ data.

Table 33: Statistical comparisons between the three organizations.

	Current Work	Preferred Work
Alternative Hypothesis: $H_1$	p-values	p-values
$Service \neq Technology$	0.0000	0.0005

<i>Service ≠ Production</i>	0.5563	0.0304
<i>Technology ≠ Production</i>	0.0004	0.1071

#### 6.4.2 Good Work Questionnaire

One problem that arose in the Preferred Work component of the GWQ was the tendency to rate all characteristics with a value of 7 out of 7, which results in many characteristic mismatches that may not be significant issues in the eyes of the participant. The component may benefit from some limitations on how many characteristics can be rated high. In the Interviews, and the first component of the GWQ (Top and Bottom Five), employees demonstrated an ability to rank the characteristics and did not consider them to all be equally important, yet when one views the results of the Preferred Work component alone it would seem most are all of equal importance. Potential changes may include limiting the total score of the component to a fixed number, forcing participants to carefully allot points to each characteristic, and not place a value of 6 or 7 for all characteristics. Or, limiting the number of 7s and 6s to a fixed number.

Another change that may help this issue is changing the anchoring words that are associated with a 7. For example, the questions for *career growth* and *mutual trust* used the word ‘often’ to define the value of a 7. When reading the statement, it seems most probable that participants would place a 7, because they often want to feel trust and often want opportunities for promotions and raises. Future versions of the GWQ should investigate the effect of placing different words as anchors to see how the anchors impact the responses. For example, replacing ‘often’ with ‘always’.

While the author was concerned about the length of the questionnaire and limited further additions that may have been useful to assess additional work outcomes (e.g., vigor and engagement, see Section 2.5.1.1 for detail), the participants did not seem overwhelmed by the multitude of questions and all completed the survey in under the 20 minutes, which the consent form noted it would take. Future versions of the questionnaire may benefit from adding work outcome measurements or splitting the questionnaire into two with an intermission between them. An appropriated split may be between the Preferred Work Component and the Work Outcome component.

The GWQ was administered on paper because not all participants had access to a computer at work and may not have felt comfortable with being honest on a computer; particularly the participants at the Production Organization. The GWQ may benefit from being administered electronically so that the responses do not have to be manually entered, which is prone to human error. Also, an electronic version may allow for more sophisticated ranking techniques to establish the relative importance of each characteristic. However, those benefits may come at a cost of honesty and accessibility for people who do not use a computer at work.

#### 6.4.3 Limitations

Several limitations of this investigation must be addressed in interpreting these findings. First and foremost is the impossibility of follow-up data collection as was intended in the longitudinal design. It is difficult to recruit organizations to volunteer for an investigation of their work, let alone agree to take some action based on findings, which makes the circumstance of incompleteness difficult. It was not due to an incompatibility between the author and the organizations, nor the management of the organizations

deciding the findings was not valid or useful – the stoppage was due the COVID-19 pandemic. The organizations and the author decided the extreme situation took precedence over this Investigation and therefore was discontinued. It was determined that the second round of data collection would have measured the pandemic's effect on work more so than the effect of the WIAs that were implemented prior. While the WIAs were hypothesized to affect the design of work, it would have been negligible compared to the pandemic that threatened the world.

Another limitation was the lack of secondary coding by another analyst for the qualitative findings – the qualitative analysis might have been improved if another analyst besides the author would have coded the interview findings. Moreover, additional connections or insights may have been identified with another set of eyes.

A third limitation concerns the Employee Expectations Component of the GWQ that included negatively worded items. This wording choice was made to decrease the probability of survey fatigue as they were the last questions in the GWQ. Unfortunately, the opposite wording resulted in an inability to evaluate reliability, or internal consistency, metric (Cronbach's alpha). Moreover, an ad-hoc inquiry into negatively worded items used in a work assessment survey found negatively worded items may be more difficult for participants with lower reading comprehension and may result in responding incorrectly to the question (Idaszak & Drasgow, 1987). Thus, future versions of the GWQ must not include negatively worded questions. The same can be said about the Preferred Work question that asked participants how preferred *regular schedule* is to them; this question should have been worded so a high response is associated with a more predictable schedule.

A fourth limitation, similar to a noted limitation in Investigation #1, is regarding the candor of the participants during the in-person interview. The employees were speaking one-on-one to the author and were potentially influenced by responding to questions with answers they thought he wanted to hear, as opposed to what they believed (e.g., responding to questions regarding the importance of compensation may have been downplayed to seem less “greedy”). Also, participants may have not been as honest regarding problems at the workplace due to the fear of admonishment from management, if they happen to overhear the conversation.

Finally, a limitation exists in collecting data from individuals to infer group preferences. The GWQ and in-person interview collected individual level data, then all responses were aggregated together to infer group preferences. Due to this, implemented WIAs are unlikely to benefit everyone that participated in the survey and/or interview, let alone everyone that works for the organization. While this limitation needs to be noted, it does not completely nullify Lee’s Process because of the statistical analysis performed that considered the standard deviations, which represent group differences.

If participants largely disagreed with one another the standard deviation would have been relatively high, which would have caused the statistical test to fail to reject the null hypothesis (there is no difference between the current and preferred work). If average differences were compared between Current and Preferred work without the use of comparison statistics, then resulting mismatched characteristics would not have been valid because they would have failed to consider group dynamics. Paired t-tests, the comparison statistical tests used in Lee’s Process, were used to account for individual differences and

overcome the problem of making group inferences from aggregated individual responses (Montgomery, 2009; Sirkin, 2006).

## 6.5 Conclusion

Overall, the application of Lee's Process was productive in the eyes of the managers at each organization. All treatments are prone to the placebo effect, which biases participants to believe the treatment will accomplish the touted goal (Kirsch, 2005). Due to this, the application may have subjectively felt more effective than it was. Regardless, there is real hope for improving the design of work at different organizations, and while the second round of data collection was discontinued due to the COVID-19 pandemic, the Process has shown to be a valid measurement tool to assess the current and preferred design of work which aligns with participants' experiences as described in the in-person interviews.

Table 34 provides a summary of the mismatched characteristics, the context for the mismatch, selected mismatches to make improvements to, WIAs addressing the mismatch, and managerial reports during a six-month check-in. While the mismatches were quite similar, the reasons for the mismatch and the improvement actions implemented to address the mismatch were quite different. All organizations made changes to the design of work based on the data collected and were committed to the Process from recruitment to the end. Going forward, further work should be done to complete the longitudinal application of the Process, with possible improvements to the Preferred Work component and additions to the Organizational Culture component of the Good Work Questionnaire. Other future research on the Process is an investigation into the wording of the questionnaire's



anchoring words – what effect does changing the wording from ‘often’ to ‘always’ have? Also, future work should investigate what effect working from home has on the *goodness* of work; as that is bound to be more common after the COVID-19 pandemic subsides.

Table 34: Summary of Lee's Process at the three organizations.

Service Org.			Technology Org.				Production Org.		
Mismatched Characteristics from the GWQ									
<i>Feedback from the job</i>	<i>Mutual trust</i>	<i>Career growth</i>	<i>Mutual trust</i>	<i>Job security</i>	<i>Career growth</i>	<i>Feedback from others</i>	<i>Feedback from the job</i>	<i>Feedback from others</i>	<i>Job security</i>
Context from Interview									
Employees need information about completed projects.	A new manager has replaced a long-term one.	The small size of the organization.	Lack of communication down the hierarchy and a lack of feedback from managers.	Lack of formal review process and ambiguity on how employees are evaluated.	A flat organizational structure and unknown reasons for raises, promotions, and terminations.	Lack of information from managers about employee's performance.	Lack of knowledge about how the product is used and benefits customers.	Lack of feedback regarding quality, or well performed performance.	Production demand had recently slowed down.
Selection of Addressing Mismatch (YES = organization choose to address; NO = did not address)									
YES	NO	NO	NO	NO	YES	YES	YES	YES	NO
Work Improvement Action(s)									
Utilizing current software to collect end-user feedback and regularly report it back to the staff. Creating physical exercise space to help reduce Physical Fatigue			Hiring an external career coach that employees can meet with during paid time. Creation of a new, "Employee Engagement" department to act as mediator and communicator throughout the organization and position to oversee the department.				Altering the regular pass-down meetings to allow for more discussion between employees and managers. Collecting and presenting customer reviews and experiences to employees.		
Six-month Check-in									
Employees were appreciative of the project completion feedback as it helped them know what worked and what can be improved in a future project. Employees occasionally used the exercise/meditation space.			Regular meetings between most employees and the career coach were occurring. The new employee engagement program was providing employees regular on-on-one meetings and recognizing them for their accomplishments.				Pass-down meetings were eliciting <i>feedback from others</i> , including more affirmations of successful runs. Employees regularly viewed and discussed customer feedback. Product demand had been restored.		

## Chapter 7

### 7 Investigation #3b: Towards a Better Understanding of *Good Work*: A Deeper Analysis of the GWQ Results

#### 7.1 Introduction

The use of employee surveys to assess and understand the design of work is common across a wide range of industries. Surveys, or questionnaires, are created and used for many reasons, but in general, they are used to increase organization well-being and effectiveness systematically. Moreover, regular surveys are used to track progress over time. Looking at how individual survey questions relate to Work Outcomes and Organizational Culture provides a clearer understanding of how organizations are performing. Thus, the importance of increasing an organization's knowledge of their workforce through surveys is paramount to the organizational development goals of improving employee health and effectiveness (Muchinsky & Howes, 2019).

It is critical to establish how reliable survey components are if an organization intends to use the survey regularly. Moreover, it is essential to understand how survey components relate to one another to improve the organizations' health and effectiveness systematically. The Good Work Questionnaire (GWQ) was designed to evaluate the current and preferred design of work, Work Outcomes that measure the impact of the work on the employees, and Organizational Culture that results from the system of employers and employees.

To evaluate the current and preferred design of work, the GWQ asked participants to report their level of agreement with the current state of 19 Work Characteristics in their

ongoing work (Current Work) and their preferred level (Preferred Work). To measure the negative impact of the work on the employees a vetted set of questions assessing Physical Fatigue (PF), Cognitive Weariness (CW), Emotional Exhaustion (EE), and Total Burnout (the combination of the PF, CW, and EE) was used (Work Outcomes component). To evaluate Organizational Culture, Employee Loyalty, Management Facets, and Employee Expectations were measured (Organizational Culture component). These components, and their operationalized variables, are summarized in Table 35.

*Table 35: Good Work Questionnaire Components*

Current Work Characteristics
<ul style="list-style-type: none"> <li>• Motivational: <i>accomplishment, autonomy, demand, feedback from the job, value, and variety</i></li> <li>• Social: <i>feedback from others, mutual trust, social interaction, and social support</i></li> <li>• Growth: <i>career growth, personal growth, and technical growth</i></li> <li>• Work Context: <i>aesthetics, compensation, ergonomics, job security, safety</i></li> </ul>
Work Outcomes
<ul style="list-style-type: none"> <li>• Physical Fatigue</li> <li>• Cognitive Weariness</li> <li>• Emotional Exhaustion</li> <li>• Total Burnout</li> </ul>
Organizational Culture
<ul style="list-style-type: none"> <li>• Employee Loyalty: organization, supervisor, co-workers, and customers</li> <li>• Management Facets: family responsibilities, flexible work options, management looking after best interests, and relations between managers and employees</li> <li>• Employee Expectations: clear work responsibilities, known expectations, known evaluation for raise or promotion</li> </ul>

The subsequent investigation accomplished two goals. The first goal was to develop an understanding of the Good Work Questionnaire's (GWQ) reliability to assess the design of work, and the second goal was to develop a deeper understanding of the relationships between Work Characteristics, Work Outcomes, and Organizational Culture. These goals address three related research questions. The first was, *"how reliable, as assessed by a scale reliability analysis, is the GWQ?"* The second was, *"how do Work Characteristics relate to each other, and how do they relate to Work Outcomes and Organizational Culture, evaluated by significant bivariate correlations?"* Finally, *"what are the relationships between GWQ components when they are considered as independent, mediating, and dependent variables?"*

Understanding how to foster an environment at work in which organizations can be successful in providing *good work* will be increased by moving from the realm of localized knowledge, presented in Investigation 3a found in Chapter 6, towards a more comprehensive understanding of how GWQ components interact. It makes sense to study employees within actual organizations to understand the relationships between Work Characteristics, Work Outcomes, and Organizational Culture. As a result, this investigation examined the relationships between said components. Research of this type necessitates making trade-offs, most notably – the difficulty with over-generalizing the results. The other side of the compromise is that the results are more ecologically valid for the organizations studied.

The following sections provide answers to the research questions. Section 7.2 describes the methodology. Then, the results are detailed in Section 7.3. Next, in Section 7.4, a discussion is presented. Finally, the investigation is concluded in Section 7.5.

## 7.2 Methodology

### 7.2.1 Data Collection

The Good Work Questionnaire (GWQ), described in detail in 6.2.2.1, contained five components, all of which were rooted in the extant literature. The first component of the GWQ used in this investigation measured Work Characteristics and asked participants to rate their current level of work along the 19 Work Characteristics presented in Table 13, located in Section 4.4. The second component asked participants to rate their preferred level of work along the 19 Work Characteristics. These two components are identical to Lee's (2014) Parts 2 and 3, only expanded to include additional characteristics. There was one question for each of the 19 characteristics, resulting in 19 items for each component.

Then, Work Outcomes (Total Burnout, Physical Fatigue, Cognitive Weariness, and Emotional Exhaustion) were measured using the Shirom-Melamed Burnout Measure (see Section 2.4.1.2 for details). Next, Organizational Culture was assessed using three sub-components: Employee Loyalty, Management Facets, and Employee Expectations.

Participants' recruitment and demographics can be found in Section 6.2.2.4. Fifty-five workers agreed to take the GWQ, which took around 20 minutes to complete, including a brief overview of the research presented by the author.

### 7.2.2 Data Analysis

To understand the relationships between the components of the GWQ data collected from 55 employees currently employed full time at three organizations were studied. Three different analytical techniques were used: scale reliability analysis, bivariate correlation, and path analysis.

### 7.2.2.1 *Scale Reliability Analysis*

GWQ items were grouped into question sets based on the theoretical development of the questionnaire, which consisted of Current Work, Preferred Work, Burnout, Employee Loyalty, Management Facets, and Employee Expectations. The reliabilities of each of the scales were calculated using a Cronbach's alpha (Cronbach, 1951) before any additional analyses were performed (i.e., bivariate and path). Here, reliability refers to the internal consistency of grouped items. In other words, alpha measures the proportion of the variability in the responses to a grouping of questions that is the result of differences in respondents, as opposed to differences due to the items grouped into a set. High alpha values indicate the variation in the data is from differences in respondents, rather than differences between questions. Much debate has occurred regarding acceptable levels of internal consistency (K. S. Taber, 2018); however, an alpha greater than 0.7 is often reported as adequate, and an alpha greater than 0.8 should be the minimum for applied research (Lance et al., 2006). Questionnaire components can be grouped together and subsequently analyzed as a group if alpha values are higher than 0.8. For example, all four Employee Loyalty questions were grouped into a Total Loyalty metric because the internal reliability of the four questions was greater than 0.8. Individual questions were still used even if the question's component does not have adequate internal consistency.

### 7.2.2.2 *Bivariate Analysis*

Bivariate correlation was used to identify significant linear correlational relationships (i.e., the strength of a bond) within and between Work Characteristics, Work Outcomes, and Organizational Culture. Within correlations refer to inter-correlations (i.e., correlations within the components, for example, *autonomy* and *variety*), while between

correlations refer to correlations between components (e.g., Total Burnout and Employee Loyalty). All correlations were evaluated using a Spearman Rho ( $\rho$ ) coefficient, which is more robust to outliers than a Pearson's (Mukaka, 2012) and allows for comparison with seminal research findings (for example, Humphrey et al. (2007)), which used a Spearman Rho, instead of a Pearson's or Kendall's Tau. The closer Rho is to 1.0, the stronger the relationship - when one variable changes, so too do the other. A coefficient of zero indicates that no linear relationship exists. When coefficients are positive the connection is direct (i.e., when one goes up so does the other, and when one goes down so does the other); the opposite holds for negative coefficients (when one decreases the other will increase) (Mukaka, 2012; Sirkin, 2006).

In addition, p-values were evaluated to determine whether the correlations were significant. P-values gauge how consistent the sample statistics are with the null hypothesis ( $H_0$  = there is not a significant correlation). If the null hypothesis is true, the p-value informs the probability of obtaining an effect at least as large as the one in this sample. High p-values ( $>0.05$ ) indicate the sample results are consistent with the null hypothesis (there is not a significant correlation between variables), while low p-values ( $\leq 0.05$ ) show the sample results are not compatible with a correct null hypothesis. Small p-values lead us to reject the null hypothesis and conclude that a significant relationship exists between variables (Sirkin, 2006).

#### 7.2.2.3 *Path Analysis*

Path analysis was implemented to understand the relationships between GWQ items when they are considered as independent, mediating, and dependent variables. A mediating variable is a variable that is located causally between independent and dependent



variables; that is, variation in the independent variable causes variation in the mediating variable, which in turn causes variation in the dependent variable (Hayes, 2017). If the correlation coefficient measured in the prior analysis (bivariate analysis) was large and significant enough to demonstrate a meaningful relationship ( $p\text{-value} \leq 0.05$ ), then a linear regression analyses was conducted to test whether a Work Characteristic can predict Total Burnout, thus moving from measuring the strength of a relationship into the realm of making predictions. Path analysis enables the study of both direct and indirect effects between independent, mediating, and dependent variables.

Employee Loyalty was tested as a possible mediator variable between a Work Characteristic (independent variable) and Total Burnout (dependent variable), see Figure 38 for conceptual model illustrating this hypothesized relationship. This analysis sought to understand the question, “does Employee Loyalty mediate the relationship between a Work Characteristic and Total Burnout for Work Characteristics that significantly predict Total Burnout?” And, “if so, to what extent?” Could it be that *autonomy*, for example, does not directly reduce Total Burnout, but instead improves Employee Loyalty, which in turn reduces burnout?

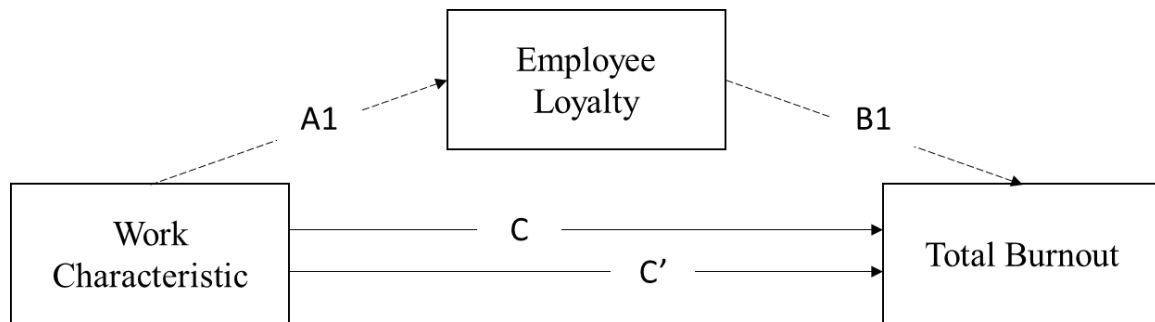


Figure 38: Conceptual model testing Employee Loyalty as a mediator of the hypothesized association between Work Characteristics and Total Burnout. Path A1 shows the relation between Work Characteristics and Employee Loyalty. Path B1 shows the relation between Employee Loyalty and Total Burnout. Path C shows the direct relation between Work Characteristics and Total Burnout without the mediator, while C' shows the relation between Work Characteristics and Total Burnout when Employee Loyalty is entered into the analysis.

Conducting a mediation analysis is recommended if there exists a relation between a predictor (Work Characteristic) and mediator (Employee Loyalty), shown as path A1 in the conceptual model (Figure 38), as well as a relation between a mediator (Employee Loyalty) and an outcome (Total Burnout) shown as B1 in the conceptual model. Employee Loyalty was considered a mediator when the strength of the direct relation between predictor (Work Characteristic) and outcome (Total Burnout), shown as path C in the conceptual model, was significantly reduced (MacKinnon et al., 2002). The mediator was tested by calculating bias corrected 95% confidence intervals using bootstrapping<sup>19</sup> with

<sup>19</sup> “A bootstrap confidence interval for the indirect effect is constructed by randomly resampling  $n$  cases from the data with replacement, where  $n$  is the original sample size in the study, and estimating the model and resulting indirect effect  $ab$  in this bootstrap sample. Repeated thousands of times, an empirical representation of the sampling distribution of  $ab$  is built and a confidence interval for the indirect effects constructed using various percentiles of the bootstrap distribution. For example, the 2.5 and 97.5 percentiles of the bootstrap distribution of  $ab$  define the upper and lower bounds of a 95% bootstrap confidence interval for the indirect effect. If the interval is entirely above or below zero, this supports a claim of mediation, whereas a confidence interval straddling zero does not provide definitive evidence that X's effect on Y operates through M” (Hayes & Rockwood, 2017, p. 44).

5,000 resamples<sup>20</sup> via the PROCESS procedure for SPSS (Hayes, 2017; Hayes & Rockwood, 2017). Residual plots were analyzed to check for homogeneity of variance, patterns, and normality.

### 7.3 Results

The GWQ was proven to be a valid measurement tool to assess the design of work via Work Characteristics, Work Outcomes (Total Burnout, Physical Fatigue, Cognitive Weariness, and Emotional Exhaustion), and Organizational Culture (Employee Loyalty, Management Facets, and Employee Expectations) components via three analyses: a scale reliability analysis, a bivariate correlation analysis, and a path analysis. The following three sub-sections detail the findings, respectively. Where possible, results are compared to the extant literature.

#### 7.3.1 Scale Reliability Analysis

The internal reliabilities for the GWQ components were evaluated using a Cronbach's alpha. Table 36 summarizes the reliability coefficients for all components and includes how many questions each component contained. The GWQ components include Current Work, Preferred Work, Burnout, Employee Loyalty, Management Facets, and Employee Expectations. Then the Shirom-Melamed Burnout Measure was further analyzed to evaluate reliability coefficients for the three sub-scales: Physical Fatigue, Cognitive Weariness, and Emotional Exhaustion. Reliabilities were determined based on the entire set of respondents from all three organizations (N=55).

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<sup>20</sup> 'Resampling' refers to a simulation that takes the sample as a miniature representation of the population; observations are then resampled using a simulation code implemented in SPSS, thousands of times, and this empirical representation is used for the inference at hand (Hayes, 2017).

The analysis revealed that five of the six components have a Cronbach alpha value greater than 0.8, a cited<sup>21</sup> standard cutoff for basic and applied research (Lance et al., 2006), indicating adequate internal consistency reliabilities within five of the six GWQ components. The Burnout measure showed high reliability (Cronbach's alpha = 0.903), which is expected as the test was developed and validated in previous studies (Melamed et al., 2006; Shirom, 2005; Shirom & Melamed, 2006). The five reliable components that can be aggregated in future analyses are Current Work, Preferred Work, Burnout, Employee Loyalty, and Management Facets.

*Table 36: Summary of the Good Work Questionnaire's internal reliabilities (Cronbach's alpha) for each component. The Employee Expectations component failed to meet an assumption required for a Cronbach's alpha reliability analysis (positive covariance among the items); therefore, was unable to be calculated correctly.*

<i>Questionnaire Components</i>	<i># of questions in component</i>	<i>Mean of component</i>	<i>SD of component</i>	<i>Cronbach's Alpha</i>
<i>Current Work</i>	19	5.34	0.595	0.879
<i>Preferred Work</i>	19	5.60	0.794	0.828
<i>Burnout</i>	14	2.61	0.471	0.903
<i>Employee Loyalty</i>	4	5.50	0.133	0.844
<i>Management Facets</i>	4	4.76	0.242	0.829
<i>Employee Expectations</i>	6	3.91	1.063	N/A

The one GWQ component that did not have adequate internal consistency was the last one, which evaluated employee's understanding regarding their expectations at work. A Cronbach alpha could not be appropriately calculated as this component has a negative average covariance among the six items, which violates the reliability model's assumptions (Cronbach, 1951; Taber, 2018). The employee expectations component contained six

<sup>21</sup> Debate has occurred around Cronbach's alpha reliability cutoff points. Many studies cite a value of 0.7 as adequate, however, further investigation has shown 0.8 as a more appropriate cutoff point for basic and applied studies (Lance et al., 2006).

questions, four of which were negatively framed, while all other questions in the section were positively framed. For example, one question asked employees to rate how often, "*I know exactly what is expected of me at work,*" and another asked, "*I don't know what is expected of me at work.*" Both questions attempt to measure how often employees know what is expected. The lack of internal consistency can be attributed to the difference in how the questions were framed. The Employee Expectations section did not illustrate acceptable reliability, and therefore cannot be aggregated into a single measure; however, specific questions are still useful to understand further context into the design of work for employees and will be discussed further.

The measure of Burnout (SMBM) utilized in the GWQ consists of three sub-measures: Physical Fatigue, Cognitive Weariness, and Emotional Exhaustion. It was of interest to understand the reliability of each of the sub measures, as each was the basis for further analysis. Results show acceptable reliability, a Cronbach's alpha greater than 0.800, for each of the three sub-measures, see Table 37 for details.

*Table 37: Cronbach's alpha for each of the three Burnout sub-measures.*

<i>Burnout Sub-measures</i>	<i># of questions in component</i>	<i>Mean of component</i>	<i>SD of component</i>	<i>Cronbach's Alpha</i>
<i>Physical Fatigue</i>	6	2.91	0.533	0.879
<i>Cognitive Weariness</i>	5	2.50	0.194	0.910
<i>Emotional Exhaustion</i>	3	2.22	0.202	0.923

### 7.3.2 Bivariate Analysis

The following sub-sections detail the results from the bivariate correlations performed. All correlations were evaluated using a Spearman Rho ( $\rho$ ) coefficient to allow for comparison with seminal research findings (for example, Humphrey et al. (2007)) that

used a Spearman Rho, instead of a Pearson's or Kendall's Tau. First, correlations within Work Characteristics are detailed. Next, correlations within Work Outcomes are discussed. Then, correlations between Work Characteristics and Work Outcomes are detailed.

### *7.3.2.1 Correlations within Current Work Characteristics*

The relationships or associations within work design characteristics were investigated and then compared to a seminal meta-analytic investigation, by Humphrey et al. (2007). As seen in Table 38, the correlations within Work Characteristics, as measured by the Current Work<sup>22</sup> component of the questionnaire, were positive in sign (with the exception of three work context characteristics, namely: safety, regular schedule, and job security) and generally moderate in magnitude (mean  $\rho = 0.267$ ). This suggests that the characteristics were interrelated, but not measures of the same characteristics. In other words, all characteristics relate to one another but are unique constructs, which is similar to Humphrey et al.'s investigation that identified a mean correlation coefficient of  $\rho = 0.25$ . Correlation values below 0.10 are considered negligible and values greater than 0.70 strong (Schober & Schwarte, 2018).

There were several interesting correlations to note. First was evidence to support the claim that there exist four different groupings of characteristics, as reported in Investigation #1. The six Motivational Characteristics were more highly correlated with one another ( $\rho = 0.370$ ), than with either the four Social ( $\rho = 0.294$ ), three Growth ( $\rho = 0.338$ ), or six Work Context ( $\rho = 0.187$ ) Characteristics. Similarly, the Work Context

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<sup>22</sup> All other studies that have directly informed this work (see Section XX) investigated Work Characteristics affect in work design by measuring the current work performed by employees. For example, “to what extent does your work require you to do many different things?” (measured on a Likert-Scale), is a common question format to measure Variety, as used in (Hackman & Oldham, 1975).

characteristics correlate more highly with one another ( $\rho = 0.278$ ), than with the Motivational ( $\rho = 0.187$ ), Social ( $\rho = 0.213$ ), and Growth ( $\rho = 0.239$ ). These two findings align with Humphrey et al.'s (2007) meta-analytic summary findings, which provides evidence that the Good Work Questionnaire measures Work Characteristics similar to many other work design studies (Humphrey et al.'s (2007) meta-analytic summary included 259 studies and 219,625 participants).

In addition, the three Growth Characteristics correlate more highly with each other ( $\rho = 0.363$ ) than with any of the other three groups, Motivational ( $\rho = 0.338$ ), Social ( $\rho = 0.326$ ), and Work Context ( $\rho = 0.239$ ), providing evidence that growth is a unique group. The establishment of Growth characteristics as a group is not supported directly by prior investigations (i.e., studies that claim there exists a group of work design characteristics that all measure how much growth potential exists). Growth Characteristics as a grouping is unique to this research; however, it is tangentially supported by the Growth Need Strength concept that proposes individuals' needs for growth at work differs (see Figure 3 in Section 2.4.3 for more information). Thus, it is expected that the three growth characteristics correlate more highly with one another than with other groups.

The only unexpected finding identified when analyzing inter-characteristic correlations is in regards the Social Characteristics group, which did not correlate as highly with one another ( $\rho = 0.263$ ), as they did with the growth ( $\rho = 0.326$ ) and Motivational ( $\rho = 0.294$ ) characteristics; however, the group was more correlated when compared to the Work Context ( $\rho = 0.213$ ).

In addition, there is evidence for splitting feedback into two characteristics (some studies state only one type exists), due to their correlation of ( $\rho = 0.623$ ), which illustrates a relationship between the two, but not a direct measure of the same construct.



Table 38: Correlations within Current Work Characteristics. All correlations are calculated via a Spearman's Rho.

Characteristic	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<b>Motivational Characteristics</b>																		
1: Accomplishment																		
2: Autonomy	.380**	–																
3: Demand	.433**	.335*	–															
4: Feedback from the Job	.407**	.464**	0.208	–														
5: Value	.466**	.431**	.517**	.522**	–													
6: Variety	0.26	.298*	.584**	0.017	0.234	–												
<b>Social Characteristics</b>																		
7: Feedback from Others	.425**	.479**	.268*	.623**	.590**	0.153	–											
8: Mutual Trust	.351**	.469**	0.206	.270*	0.142	0.237	.315*	–										
9: Social Interaction	0.127	0.144	.307*	0.195	0.067	.410**	0.186	0.116	–									
10: Social Support	.280*	0.236	0.237	.344*	.342*	0.145	.434**	0.248	.277*	–								
<b>Growth Characteristics</b>																		
11: Career Growth	.308*	0.122	.328*	.396**	0.26	0.21	.457**	0.25	.317*	0.167	–							
12: Personal Growth	.525**	.456**	.372**	.565**	.571**	0.105	.557**	0.187	0.125	.360**	.287*	–						
13: Technical Growth	.365**	.338*	.372**	.338*	0.141	.309*	.320*	0.26	.419**	.495**	.383**	.419**	–					
<b>Work Context Characteristics</b>																		
14: Aesthetics	.471**	.509**	0.165	.385**	.357**	0.035	.558**	.330*	0.162	0.224	.300*	.524**	.284*	–				
15: Compensation	0.165	0.222	.450**	0.257	0.124	.340*	0.142	0.171	.427**	0.198	.370**	0.258	.336*	.362**	–			
16: Ergonomics	.290*	.522**	0.178	.313*	.270*	0.243	.378**	.303*	0.141	.391**	0.075	.346*	.417**	.585**	.269*	–		
17: Job Security	0.226	.505**	0.028	.347**	.331*	-0.078	.511**	.486**	-0.177	0.252	0.12	.352**	0.149	.453**	0.111	.481**	–	
18: Regular Schedule	0.17	-0.081	-0.003	-0.11	-0.076	-0.039	0.042	0.044	0.025	-0.062	0.141	-0.052	0.054	0.082	0.246	0.06	0.124	–
19: Safety	0.208	0.11	-0.028	0.115	0.039	-0.23	0.037	0.189	0.134	0.201	0.113	.339*	0.183	.486**	.283*	.358**	.268*	0.007

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

### 7.3.2.2 *Correlations Within and Between Work Outcomes*

The following sub-section describes the correlations within and between the variables measured in the Work Outcomes component of the GWQ. Within correlations refer to inter-correlations (i.e., correlations within the components), while between correlations refer to correlations between components (e.g., Burnout and Management Expectations). First, Burnout correlations are discussed. Then, Employee Loyalty correlations are detailed. Next, Management Facets' correlations are described. Finally, Employee Expectations' correlations are summarized.

#### 7.3.2.2.1 Burnout

Burnout was measured via the Shirom-Melamed Burnout Measure (SMBM), which consisted of 14, 7-point Likert-scale questions measuring three sub-measures: Physical Fatigue (six items), Cognitive Weariness (five items), and Emotional Exhaustion (three items). The average of the Physical Fatigue questions results in the Physical Fatigue measure, similarly, does the average of the Cognitive Weariness and Emotional Exhaustion questions result in Cognitive and Emotional measures. The average of all 14 questions constitutes the Total Burnout measure (Melamed et al., 2006).

As expected, all 14 questions positively correlate with one another ( $\rho_{avg} = 0.372$ ), which suggests that the burnout questions were interrelated, but were not identical questions. In addition, all three sub-measures correlated more highly with one another than with the other sub-measures, providing supporting evidence for the SMBM theory, which postulates Burnout is comprised of the three sub-measures that are unique (Shirom & Melamed, 2006). All six Physical Fatigue questions ( $\rho = 0.535$ ) correlate more highly than with the five Cognitive Weariness ( $\rho = 0.309$ ) and three Emotional Exhaustion ( $\rho = 0.270$ ).

All five Cognitive Weariness questions ( $\rho = 0.647$ ) correlated more highly with one another than with the Physical ( $\rho = 0.309$ ) and Emotional ( $\rho = 0.202$ ). As well, all three Emotional Exhaustion questions ( $\rho = 0.733$ ) correlated more highly with one another than with the six Physical ( $\rho = 0.270$ ) and five Cognitive ( $\rho = 0.202$ ). See Table 39 for details.

Table 39: Inter-correlations between Burnout questions and sub-measures.

SMBM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
<b>Physical Fatigue</b>																			
1: I feel tired	1	.615**	.732**	.368**	.458**	.408**	.367**	.484**	.323*	.312*	0.197	0.164	0.236	0.186	.770**	.394**	0.223	.678**	
2: I have no energy for work	.615**	1	.653**	.463**	.537**	.592**	.306*	0.228	0.244	.271*	0.202	0.187	.303*	0.195	.808**	.276*	.268*	.651**	
3: I feel physically drained	.732**	.653**	1	.410**	.580**	.484**	.392**	.335*	.269*	0.24	0.239	.320*	.403**	.393**	.813**	.330*	.426**	.740**	
4: I feel fed up	.368**	.463**	.410**	1	.442**	.601**	.499**	.355**	.463**	.321*	.274*	.271*	.323*	.272*	.687**	.438**	.315*	.668**	
5: I feel like my "batteries" are "dead"	.458**	.537**	.580**	.442**	1	.683**	.364**	0.223	.325*	0.221	.343*	.333*	.309*	.277*	.769**	.345**	.324*	.664**	
6: I feel burned out	.408**	.592**	.484**	.601**	.683**	1	.511**	0.231	.411**	0.264	.285*	0.255	0.215	0.209	.787**	.405**	0.239	.675**	
<b>Cognitive Weariness</b>																			
7: My thinking process is slow	.367**	.306*	.392**	.499**	.364**	.511**	1	.678**	.748**	.697**	.479**	.408**	0.266	.355**	.521**	.859**	.337*	.751**	
8: I have difficulty concentrating	.484**	0.228	.335*	.355**	0.223	0.231	.678**	1	.706**	.610**	.526**	.316*	0.064	0.14	.413**	.823**	0.158	.620**	
9: I feel I'm not thinking clearly	.323*	0.244	.269*	.463**	.325*	.411**	.748**	.706**	1	.769**	.591**	0.235	0.151	0.192	.455**	.899**	0.19	.669**	
10: I feel I'm not focused in my thinking	.312*	.271*	0.24	.321*	0.221	0.264	.697**	.610**	.769**	1	.669**	0.224	0.209	0.211	.350**	.868**	0.218	.619**	
11: I have difficulty thinking about complex things	0.197	0.202	0.239	.274*	.343*	.285*	.479**	.526**	.591**	.669**	1	0.208	0.034	0.148	.316*	.748**	0.102	.528**	
<b>Emotional Exhaustion</b>																			
12: I feel I am unable to be sensitive to the needs of co-workers and customers	0.164	0.187	.320*	.271*	.333*	0.255	.408**	.316*	0.235	0.224	0.208	1	.622**	.725**	.304*	.320*	.802**	.549**	
13: I feel I'm not capable of investing emotionally in co-workers and customers	0.236	.303*	.403**	.323*	.309*	0.215	0.266	0.064	0.151	0.209	0.034	.622**	1	.853**	.382**	0.174	.941**	.554**	
14: I feel I'm not capable of being sympathetic to coworkers and customers	0.186	0.195	.393**	.272*	.277*	0.209	.355**	0.14	0.192	0.211	0.148	.725**	.853**	1	.316*	0.258	.947**	.563**	
15: Physical Burnout	.770**	.808**	.813**	.687**	.769**	.787**	.521**	.413**	.455**	.350**	.316*	.304*	.382**	.316*	1	.478**	.375**	.871**	
16: Cognitive Burnout	.394**	.276*	.330*	.438**	.345**	.405**	.859**	.823**	.899**	.868**	.748**	.320*	0.174	0.258	.478**	1	0.241	.752**	
17: Emotional Burnout	0.223	.268*	.426**	.315*	.324*	0.239	.337*	0.158	0.19	0.218	0.102	.802**	.941**	.947**	.375**	0.241	1	.596**	
18: Total Burnout	.678**	.651**	.740**	.668**	.664**	.675**	.751**	.620**	.669**	.619**	.528**	.549**	.554**	.563**	.871**	.752**	.596**	1	

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

### 7.3.2.2.2 Employee Loyalty

Employee Loyalty was measured via four questions all of which utilized a 7-Point Likert-scale from 1 "Never" to 7 "Always": 1) *I feel loyalty to the organization*, 2) *I feel loyalty towards my immediate supervisor*, 3) *I feel loyalty towards my fellow co-workers*, and 4) *I feel loyalty towards customers and clients*. A Total Loyalty metric was evaluated as the average of the four questions. Support for combining the four questions into a single measure can be found in Section 7.3.1, which illustrated a high (0.844) Cronbach's alpha within the group. As expected, all loyalty questions positively and significantly ( $p\text{-value} \leq 0.01$ ) correlated with one another at a moderately high level ( $\rho_{\text{avg}} = 0.652$ ), as summarized in Table 40.

Table 40: Correlations within Employee Loyalty questions.

	1	2	3	4	5
1: Loyalty to the organization	–	.742**	.418**	.610**	.827**
2: Loyalty towards supervisor		–	.608**	.484**	.910**
3: Loyalty towards co-worker			–	.458**	.747**
4: Loyalty towards customers				–	.717**
5: Total Loyalty					–

\*\* Correlation is significant at the 0.01 level (2-tailed).

It was hypothesized that high ratings of Employee Loyalty would negatively correlate with Burnout. Employees who feel loyal are less likely to experience burnout because they have a strong feeling of allegiance, thereby partially alleviating the negative effect of the work on the employees. Or, employees who are not burned out due to their work feel more loyal to the organization; since correlations do not illustrate causation, either case could be true. All statistically significant ( $p\text{-value} \leq 0.01$ ) correlations between

Employee Loyalty and Total Burnout are negative and moderate ( $\rho_{avg} = -0.433$ ), supporting the hypothesis. Moreover, the Total Loyalty metric and the Total Burnout metric negatively and moderately correlate ( $\rho = -0.526$ ,  $p\text{-value} \leq 0.01$ ). Interestingly, no significant correlations were identified between the Cognitive Weariness and any of the Loyalty variables. Table 41 detail the findings.

*Table 41: Correlations between Employee Loyalty and Burnout. Statistically significant correlations are identified in bold text.*

	<i>Physical Fatigue</i>	<i>Cognitive Weariness</i>	<i>Emotional Exhaustion</i>	<i>Total Burnout</i>
<i>Loyalty to the organization</i>	<b>-0.435**</b>	-0.108	<b>-0.356**</b>	<b>-0.413**</b>
<i>Loyalty towards supervisor</i>	<b>-0.497**</b>	-0.109	<b>-0.462**</b>	<b>-0.478**</b>
<i>Loyalty towards co-worker</i>	<b>-0.343*</b>	-0.165	<b>-0.442**</b>	<b>-0.390**</b>
<i>Loyalty towards customers</i>	<b>-0.325*</b>	-0.101	<b>-0.341*</b>	<b>-0.356**</b>
<i>Total Loyalty</i>	<b>-0.522**</b>	-0.153	<b>-0.514**</b>	<b>-0.526**</b>

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

It was hypothesized that Total Employee Loyalty and all individual loyalty questions would correlate positively with Total Management (the aggregate of all four questions) and all individual Management Facets questions. The hypothesis was confirmed, except for two correlations. The analysis revealed 1) a lack of significant correlation between Good Relations Management Employees and Loyalty to Co-workers and 2) a lack of significant correlation between Available Flexible Work Options and Loyalty to Customers. The former can be understood because employees' relations with one another can be independent of their relations with management; employees may feel a strong connection between one another, while not feeling the same connection with their

manager(s). The latter can be explained in a similar way; employees can have loyalty to their customers while not having flexible work options.

The strongest correlations were found between Loyalty to Supervisor, and Total Management and its variable Manager Understands Family, which seems reasonable as employees who have managers who understand their family responsibilities are bound to feel more loyal to their supervisor. Table 42 details the results.

*Table 42: Correlations between Employee Loyalty and Management Facets. Statistically significant correlations are identified in bold text.*

	<i>Manager Understand- ing Family</i>	<i>Available Flexible Work Options</i>	<i>Trust Management</i>	<i>Good Relations Management Employees</i>	<i>Total Management</i>
<i>Organization</i>	<b>0.522**</b>	<b>0.456**</b>	<b>0.510**</b>	<b>0.498**</b>	<b>0.603**</b>
<i>Supervisor</i>	<b>0.681**</b>	<b>0.454**</b>	<b>0.558**</b>	<b>0.608**</b>	<b>0.685**</b>
<i>Co-worker</i>	<b>0.370**</b>	<b>0.352**</b>	<b>0.434**</b>	0.241	<b>0.421**</b>
<i>Customers</i>	<b>0.311*</b>	0.177	<b>0.274*</b>	<b>0.276*</b>	<b>0.310*</b>
<i>Total Loyalty</i>	<b>0.632**</b>	<b>0.497**</b>	<b>0.574**</b>	<b>0.546**</b>	<b>0.682**</b>

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

#### 7.3.2.2.3 Management Facets

As shown in Table 43, all questions significantly ( $p\text{-value} \leq 0.01$ ) and positively correlated with one another, illustrating quality Management Facets coincide with one another. A Total Management metric was evaluated as the average of the four questions. Support for combining the four items into a single measure can be found in Section 7.3.1, which illustrated a high (0.829) Cronbach's alpha within the group. In addition, the correlation values are not so high as to show the variables are measuring the same construct - there is a difference between the four facets of management.

Table 43: Inter-correlations between Management Facets.

<i>Management Facets</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>1: Manager Understanding Family</i>	-	0.662**	0.505**	0.527**	0.830**
<i>2: Available Flexible Work Options</i>		-	0.550**	0.416**	0.858**
<i>3: Trust Management</i>			-	0.698**	0.804**
<i>4: Good Relations Management Employees</i>				-	0.722**
<i>5: Total Management</i>					-

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

It was hypothesized that high ratings of Management Facets would be negatively correlated with Burnout (i.e., between correlations). Employees who have quality management are less likely to experience burnout because they are supported by their managers, thereby partially alleviating the negative effect of the work on the employees. Except for Cognitive Weariness, all statistically significant (p-value  $\leq 0.05$ ) correlations between Management Facets and burnout are negative, partially supporting the hypothesis. Table 44 provides details.

The results align with an intuitive sense of the relationship between burnout and quality Management Facets; specifically, burnout will be lower when employees perceive that 1) management understands their family obligations, 2) available flexible work options, 3) there is trust between managers and employees, and/or 4) there are good relations between managers and employees. On the other hand, one can readily see how impactful poor management can be on employees' Physical Fatigue, Emotional Exhaustion, and Total Burnout.



Table 44: Correlations between Management Facets and Burnout. Statistically significant correlations are identified in bold text.

	<i>Physical Fatigue</i>	<i>Cognitive Weariness</i>	<i>Emotional Exhaustion</i>	<i>Total Burnout</i>
<i>Manager Understanding Family</i>	<b>-0.626**</b>	-0.086	<b>-0.364**</b>	<b>-0.479**</b>
<i>Available Flexible Work Options</i>	<b>-0.584**</b>	-0.130	-0.198	<b>-0.442**</b>
<i>Trust Management</i>	<b>-0.500**</b>	0.002	<b>-0.433**</b>	<b>-0.384**</b>
<i>Good Relations Management Employees</i>	<b>-0.318*</b>	0.049	-0.238	-0.220
<i>Total Management</i>	<b>-0.670**</b>	-0.102	<b>-0.362**</b>	<b>-0.514**</b>

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

#### 7.3.2.2.4 Employee Expectations

Results show that all Employee Expectations questions significantly correlated with one another, except for *iii: I don't know how I will be evaluated for a raise or promotion*. As expected, positively framed questions correlate positively with one another (e.g., *i* and *iv*), and negatively framed constructs negatively correlate with positively framed constructs (e.g., *i* and *ii*), see Table 45 for details.

Table 45: Correlations within Employee Expectations. Statistically significant correlations are identified in bold text.

	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>
<i>i: I don't know what is expected of me at work</i>	–	<b>-0.750**</b>	0.184	<b>0.576**</b>	<b>-0.673**</b>
<i>ii: My work responsibilities are clearly defined</i>		–	-0.085	<b>-0.639**</b>	<b>0.733**</b>
<i>iii: I don't know how I will be evaluated for a raise or promotion</i>			–	0.230	-0.162
<i>iv: I have unclear orders from my supervisor</i>				–	<b>-0.687**</b>
<i>v: I know exactly what is expected of me</i>					–

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

It was hypothesized that a lack of knowledge of expectations at work would negatively affect peoples' experience at work, and therefore lead to burnout. Results, detailed in Table 46, show that all employee expectation constructs significantly ( $p\text{-value} \leq 0.05$ ) correlate with Total Burnout, except for *iii*. The positively framed questions (*ii and v*) all negatively correlate with Total Burnout, while the negatively framed question positively correlates with Burnout (*i, iii, and iv*), which means - knowing what one should do while at work, coincide with reduced levels of burnout.

Table 46: Correlations between Employee Expectations and Burnout. Statistically significant correlations are identified in bold text.

	Physical Fatigue	Cognitive Weariness	Emotional Exhaustio n	Total Burnout
<i>i: I don't know what is expected of me at work</i>	0.233	<b>0.270*</b>	<b>0.352**</b>	<b>0.334*</b>
<i>ii: My work responsibilities are clearly defined</i>	<b>-0.340*</b>	-0.11	<b>-.305*</b>	<b>-0.320*</b>
<i>iii: I don't know how I will be evaluated for a raise or promotion</i>	0.035	0.05	0.107	0.031
<i>iv: I have unclear orders from my supervisor</i>	<b>0.383**</b>	0.235	<b>0.432**</b>	<b>0.440**</b>
<i>v: I know exactly what is expected of me</i>	<b>-0.366**</b>	-0.165	<b>-0.318*</b>	<b>-0.368**</b>

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

It was hypothesized that positively worded questions in the Employee Expectations component would positively correlate with Management Facets, and negatively worded questions would negatively correlate with Management Facets, as management is responsible for issuing expectations. The hypothesis was confirmed, except for *i* and *iii*. The most prevalent correlations exist between *v: I know what is expected of me* and the Management Facets component, as all four Management questions significantly correlated with this Expectation question. Table 47 details the results.

Table 47: Correlations between Employee Expectations and Management Facets. Statistically significant correlations are identified in bold text.

	<i>Manager Understanding Family</i>	<i>Available Flexible Work Options</i>	<i>Trust Management</i>	<i>Good Relations Management Employees</i>	<i>Total Management</i>
<i>i: I don't know what is expected of me at work</i>	-0.235	0.063	-0.158	-0.257	-0.093
<i>ii: My work responsibilities are clearly defined</i>	<b>-0.429**</b>	0.215	<b>0.419**</b>	<b>0.409**</b>	<b>0.374**</b>
<i>iii: I don't know how I will be evaluated for a raise or promotion</i>	0.070	0.063	0.045	-0.040	0.060
<i>iv: I have unclear orders from my supervisor</i>	<b>-0.446**</b>	-0.256	<b>-0.396**</b>	<b>-0.459**</b>	<b>-0.398**</b>
<i>v: I know exactly what is expected of me</i>	<b>0.542**</b>	<b>0.287*</b>	<b>0.418**</b>	<b>0.479**</b>	<b>0.477**</b>

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

### 7.3.2.3 Correlations between Work Characteristics and Work Outcomes

The following section describes the correlations between Work Characteristics, Work Outcomes, and Organizational Culture. First, relationships between Characteristics and Burnout are described. Then, correlations between Characteristics and Employee Loyalty are detailed. Then, correlations between Characteristics and Management Expectations are summarized. Finally, correlations between Characteristics and Employee Expectations are provided.

#### 7.3.2.3.1 Work Characteristics and Burnout

Knowing what characteristics significantly (p-value  $\leq 0.05$ ) correlate with burnout is of great value to understand how to reduce burnout (a common goal in the pursuit of work design). Negative and significant (p-value  $\leq 0.05$ ) correlations (Spearman Rho) mark the characteristics that are most strongly associated with a decrease in burnout, while

positive correlations indicate the opposite. It is of great importance to note that an increase in negatively correlated characteristics or a reduction in positively correlated characteristics may not actually coincide with reduced burnout, as the people will affect the relationship between work inputs and outcomes; however, it can be reasonably expected that it will. Further evidence for combining the 14 questions into a single measure can be found in Section 7.3.1, which illustrated the high reliability of the Total Burnout measure (0.903) Cronbach's alpha. Similarly, evidence for combining the questions for the sub-measures of Physical Fatigue (Cronbach's alpha = 0.879), Cognitive Weariness (Cronbach's alpha = 0.910), and Emotional Exhaustion (Cronbach's alpha = 0.923) can be found in Section 7.3.1.

On average, all characteristics are negatively correlated with Total Burnout ( $\rho_{avg} = -0.238$ ), illustrating that organizations that design and provide comprehensive work (i.e., work that is broadly designed to provide some level of all characteristics) can reasonably expect to reduce burnout. On the other hand, organizations that focus on simplifying the work by removing/reducing different characteristics are likely to burn out their employees. For example, simplifying work to remove job complexities is likely to cause burnout (referring to Foxconn, and other large industrial manufacturing organizations who extensively reduce Work Characteristics, like autonomy and variety, in the pursuit of exemplary efficacy). On average, Growth characteristics were more highly correlated ( $\rho = -0.312$ ) with Total Burnout, than Motivational ( $\rho = -0.249$ ), Social ( $\rho = -0.183$ ), and Work Context ( $\rho = -0.228$ ) characteristics, illustrating how important opportunities for growth are.

When considering statistical significance, ten characteristics were identified to be significantly negatively correlated with Total Burnout, at a p-value less than or equal to 0.05, namely: *accomplishment* ( $\rho = -0.293$ ), *autonomy* ( $\rho = -0.435$ ), *feedback from the job* ( $\rho = -0.334$ ), *feedback from others* ( $\rho = -0.270$ ), *mutual trust* ( $\rho = -0.332$ ), *personal growth* ( $\rho = -0.331$ ), *technical growth* ( $\rho = -0.415$ ), *aesthetics* ( $\rho = -0.360$ ), *ergonomics* ( $\rho = -0.350$ ), and *job security* ( $\rho = -0.294$ ). There were not any positive correlations that were found to be statistically significant. See Table 48 for details and Figure 39 for a bar chart of the significant correlations organized from the strongest correlation to the weakest.

This subset of the total characteristics was shown to be more reliably correlated with Total Burnout than the other nine, indicating organizations may more readily reduce burnout by focusing on these characteristics over the others. It is important to note, however, that while some characteristics are more highly correlated with Total Burnout than others (e.g., *autonomy*,  $\rho = -0.435$  versus *feedback from others*,  $\rho = -0.270$ ) it does not necessarily imply that increasing *autonomy* would always be more effective at reducing Total Burnout compared to *feedback from others*, as the context of the job and the preferences of the employees are predicted to play a significant mediating role in the relationship.

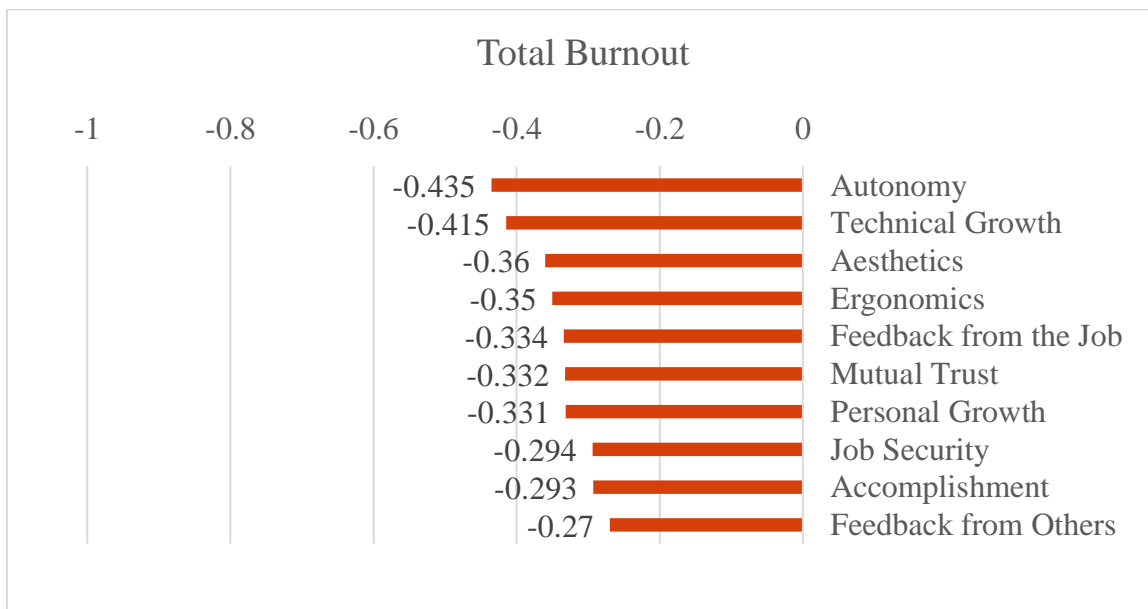


Figure 39: Significant ( $p$ -value  $\leq 0.05$ ) correlations between Work Characteristics and Total Burnout.

Table 48: Correlations between Current Work Characteristics and Burnout

	<i>Physical Burnout</i>	<i>Cognitive Burnout</i>	<i>Emotional Burnout</i>	<i>Total Burnout</i>
<b><i>Motivational Characteristics</i></b>				
<i>Accomplishment</i>	<b>-0.409**</b>	-0.041	-0.211	<b>-0.293*</b>
<i>Autonomy</i>	<b>-0.526**</b>	-0.206	-0.124	<b>-0.435**</b>
<i>Demand</i>	-0.237	0.017	-0.25	-0.186
<i>Feedback from the Job</i>	<b>-0.447**</b>	-0.131	-0.141	<b>-0.334*</b>
<i>Value</i>	<b>-0.326*</b>	0.095	-0.101	-0.153
<i>Variety</i>	-0.067	-0.057	-0.206	-0.093
<b><i>Social Characteristics</i></b>				
<i>Feedback from Others</i>	<b>-0.379**</b>	-0.026	-0.147	<b>-0.270*</b>
<i>Mutual Trust</i>	<b>-.329*</b>	-0.111	<b>-0.436**</b>	<b>-0.332*</b>
<i>Social Interaction</i>	0.053	0.126	-0.163	0.052
<i>Social Support</i>	<b>-0.267*</b>	0.03	-0.166	-0.181
<b><i>Growth Characteristics</i></b>				
<i>Career Growth</i>	-0.234	-0.07	-0.138	-0.19
<i>Personal Growth</i>	<b>-0.410**</b>	-0.072	-0.191	<b>-.331*</b>
<i>Technical Growth</i>	<b>-0.340*</b>	-0.263	<b>-0.386**</b>	<b>-0.415**</b>
<b><i>Work Context Characteristics</i></b>				
<i>Aesthetics</i>	<b>-0.486**</b>	0.05	<b>-0.280*</b>	<b>-0.360**</b>
<i>Compensation</i>	-0.14	0.129	<b>-0.299*</b>	-0.117
<i>Ergonomics</i>	<b>-0.344*</b>	-0.092	<b>-0.369**</b>	<b>-0.350**</b>
<i>Job Security</i>	<b>-0.384**</b>	-0.094	-0.175	<b>-.294*</b>
<i>Regular Schedule</i>	-0.066	0.132	-0.16	-0.014
<i>Safety</i>	<b>-0.297*</b>	-0.016	-0.178	-0.232
<b><i>Total Work Characteristics</i></b>	<b>-0.543**</b>	-0.088	<b>-0.353**</b>	<b>-0.432**</b>

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

### 7.3.2.3.2 Work Characteristics and Loyalty

All characteristics, except for *regular schedule*, were positively correlated with Total Loyalty, suggesting that organizations that provide comprehensively designed work

are likely to foster Employee Loyalty. Sixteen of the nineteen correlations were found to be statistically significant and positive, with a p-value less than or equal to 0.05. The significant correlations exist between Total Loyalty and the Motivational Characteristics of *accomplishment* ( $\rho = 0.283$ ), *autonomy* ( $\rho = 0.473$ ), *demand* ( $\rho = 0.341$ ), *feedback from the job* ( $\rho = 0.418$ ), and *value* ( $\rho = 0.366$ ), the Social Characteristics of *feedback from others* ( $\rho = 0.378$ ), *mutual trust* ( $\rho = 0.370$ ), *social interaction* ( $\rho = 0.318$ ), and *social support* ( $\rho = 0.334$ ), the Growth Characteristics of *personal growth* ( $\rho = 0.477$ ), and *technical growth* ( $\rho = 0.357$ ), and the Work Context Characteristics of *aesthetics* ( $\rho = 0.560$ ), *compensation* ( $\rho = 0.331$ ), *ergonomics* ( $\rho = 0.450$ ), *job security* ( $\rho = 0.281$ ), and *safety* ( $\rho = 0.424$ ). Table 49 details the findings, and Figure 40 provides a bar chart of the significant correlations organized from the strongest correlation to the weakest.



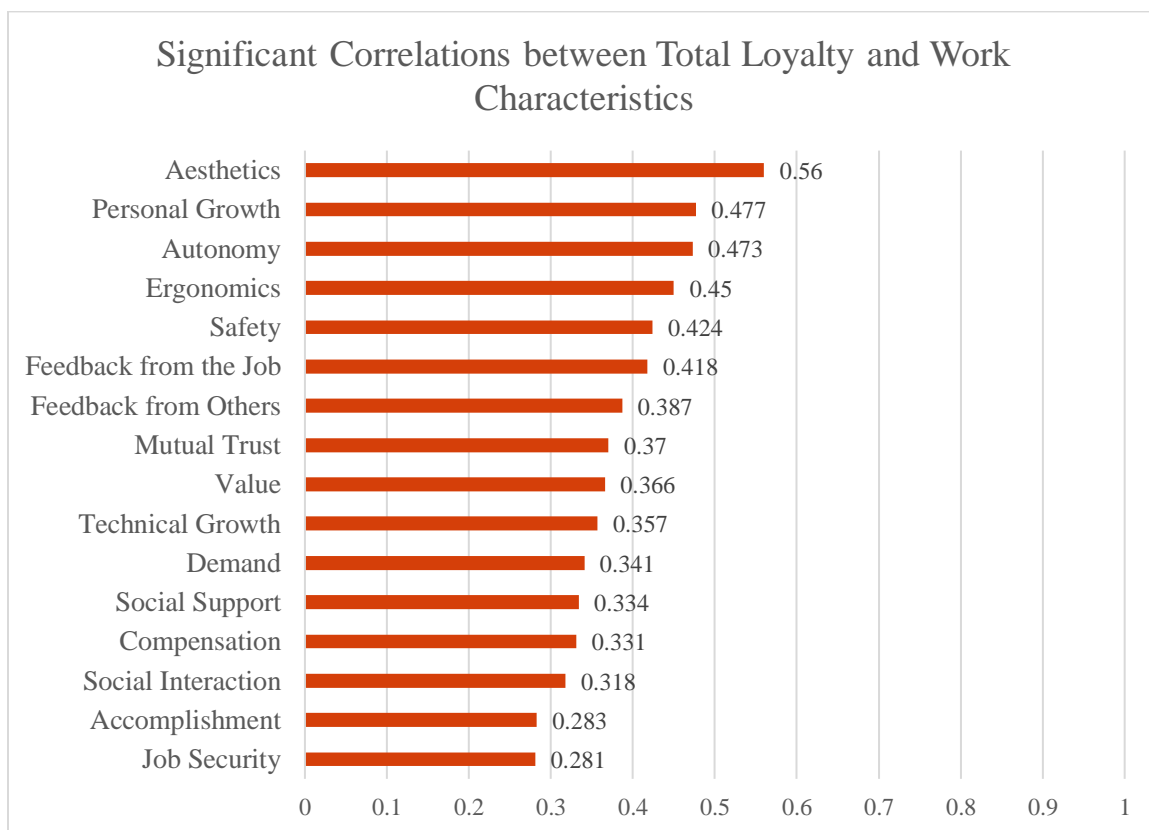


Figure 40: Significant ( $p$ -value  $\leq 0.05$ ) correlations between Work Characteristics and Total Loyalty

Table 49: Correlations between Work Characteristics and Employee Loyalty.

	Organization	Supervisor	Co-worker	Customers & Clients	Total
<b>Motivational Characteristics</b>					
<i>Accomplishment</i>	0.246	0.264	0.174	0.246	<b>0.283*</b>
<i>Autonomy</i>	<b>0.367**</b>	<b>0.478**</b>	<b>0.416**</b>	0.044	<b>0.473**</b>
<i>Demand</i>	<b>0.323*</b>	<b>0.372**</b>	0.254	0.154	<b>0.341*</b>
<i>Feedback from the Job</i>	0.244	<b>0.362**</b>	<b>0.340*</b>	<b>0.276*</b>	<b>0.418**</b>
<i>Value</i>	<b>0.290*</b>	<b>0.459**</b>	0.113	0.212	<b>0.366**</b>
<i>Variety</i>	0.137	0.173	0.09	-0.096	0.136
<b>Social Characteristics</b>					
<i>Feedback from Others</i>	<b>0.278*</b>	<b>0.409**</b>	0.193	0.221	<b>0.387**</b>
<i>Mutual Trust</i>	0.194	<b>0.367**</b>	<b>0.430**</b>	0.042	<b>0.370**</b>
<i>Social Interaction</i>	0.252	<b>0.308*</b>	<b>0.335*</b>	0.2	<b>0.318*</b>

	<i>Organizational</i>	<i>Supervisor</i>	<i>Co-worker</i>	<i>Customers &amp; Clients</i>	<i>Total</i>
<i>Social Support</i>	<b>0.275*</b>	<b>0.418**</b>	0.193	0.149	<b>0.334*</b>
<b>Growth Characteristics</b>					
<i>Career Growth</i>	0.112	0.212	0.146	0.144	0.207
<i>Personal Growth</i>	<b>0.534**</b>	<b>0.415**</b>	0.205	<b>0.410**</b>	<b>0.477**</b>
<i>Technical Growth</i>	0.249	<b>0.313*</b>	<b>0.419**</b>	0.228	<b>0.357**</b>
<b>Work Context Characteristics</b>					
<i>Aesthetics</i>	<b>0.505**</b>	<b>0.507**</b>	<b>0.441**</b>	<b>0.372**</b>	<b>0.560**</b>
<i>Compensation</i>	0.22	<b>0.385**</b>	<b>0.308*</b>	0.131	<b>0.331*</b>
<i>Ergonomics</i>	<b>0.422**</b>	<b>0.434**</b>	<b>0.342*</b>	0.185	<b>0.450**</b>
<i>Job Security</i>	0.191	0.252	0.211	0.074	<b>0.281*</b>
<i>Regular Schedule</i>	-0.111	0.000	-0.065	-0.056	-0.091
<i>Safety</i>	<b>0.459**</b>	<b>0.427**</b>	<b>0.283*</b>	<b>0.322*</b>	<b>0.424**</b>
<b>Total Work Characteristics</b>	<b>0.407**</b>	<b>0.566**</b>	<b>0.439**</b>	0.250	<b>0.559**</b>

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

### 7.3.2.3.3 Work Characteristics and Management Facets

All characteristics, apart from *career growth*, *regular schedule*, *social interaction*, and *variety* were positively correlated with Total Management, suggesting that organizations that provide work that is designed to consider many Work Characteristics (i.e., compressively designed work) also manage their employees well. Several specific findings are notable. First, *autonomy* strongly correlated with *available flexible work options* ( $\rho = 0.740$ ;  $p\text{-value} \leq 0.001$ ). Flexible work options have regularly been touted as methods to improve work-life balance (Kelliher & Anderson, 2010; Perlow & Kelly, 2014) and the lack of *autonomy* at work has been linked to negative outcomes for workers (Lyness et al., 2012; Thompson et al., 1999). Employees who recognize they have high levels of *autonomy* at work also perceive they have flexible work options, illustrating the importance of employee *autonomy* in the design of work. Table 50 details the results, and Figure 41

provides a bar chart of the significant correlations organized from the strongest correlation to the weakest.

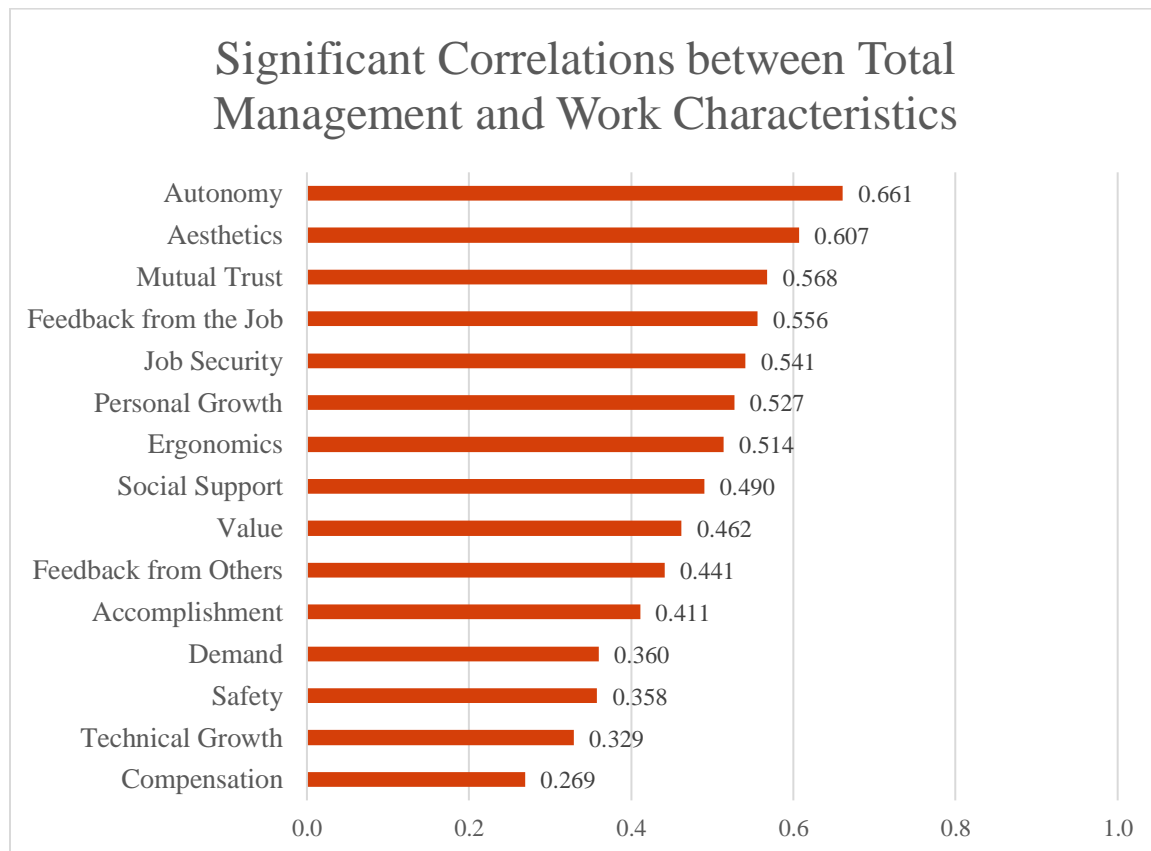


Figure 41: Significant ( $p$ -value  $\leq 0.05$ ) correlations between Work Characteristics and Total Management

Table 50: Correlations between Work Characteristics and Total Management.

	<i>Manager Understanding Family</i>	<i>Available Flexible Work Options</i>	<i>Trust Management</i>	<i>Good Relations Management Employees</i>	<i>Total Management</i>
<b>Motivational Characteristics</b>					
<i>Accomplishment</i>	<b>0.462**</b>	<b>0.352**</b>	<b>0.329*</b>	<b>0.286*</b>	<b>0.411**</b>
<i>Autonomy</i>	<b>0.517**</b>	<b>0.740**</b>	<b>0.469**</b>	<b>0.353**</b>	<b>0.607**</b>
<i>Demand</i>	<b>0.459**</b>	0.248	<b>0.294*</b>	0.187	<b>0.360**</b>
<i>Feedback from the Job</i>	<b>0.478**</b>	<b>0.342*</b>	<b>0.344*</b>	<b>0.348**</b>	<b>0.566**</b>
<i>Value</i>	<b>0.599**</b>	<b>0.321*</b>	<b>0.345**</b>	<b>0.347**</b>	<b>0.462**</b>
<i>Variety</i>	0.262	0.209	0.157	0.04	0.238

	<i>Manager Understanding Family</i>	<i>Available Flexible Work Options</i>	<i>Trust Management</i>	<i>Good Relations Management Employees</i>	<i>Total Management</i>
<b>Social Characteristics</b>					
<i>Feedback from Others</i>	<b>0.581**</b>	<b>0.479**</b>	<b>0.376**</b>	<b>0.524**</b>	<b>0.411**</b>
<i>Mutual Trust</i>	<b>0.391**</b>	<b>0.432**</b>	<b>0.563**</b>	<b>0.497**</b>	<b>0.568**</b>
<i>Social Interaction</i>	0.215	0.176	0.096	0.188	0.199
<i>Social Support</i>	<b>0.554**</b>	<b>0.331*</b>	<b>0.361**</b>	<b>0.465**</b>	<b>0.490**</b>
<b>Growth Characteristics</b>					
<i>Career Growth</i>	0.166	-0.011	0.224	0.262	0.145
<i>Personal Growth</i>	<b>0.485**</b>	<b>0.381**</b>	<b>0.514**</b>	<b>0.405**</b>	<b>0.527**</b>
<i>Technical Growth</i>	<b>0.372**</b>	<b>0.229</b>	<b>0.265</b>	<b>0.287*</b>	<b>0.329*</b>
<b>Work Context Characteristics</b>					
<i>Aesthetics</i>	<b>0.489**</b>	<b>0.549**</b>	<b>0.465**</b>	<b>0.456**</b>	<b>0.607**</b>
<i>Compensation</i>	0.203	0.151	<b>0.325*</b>	<b>0.274*</b>	<b>0.269*</b>
<i>Ergonomics</i>	<b>0.497**</b>	<b>0.472**</b>	<b>0.399**</b>	<b>0.280*</b>	<b>0.514**</b>
<i>Job Security</i>	<b>0.434**</b>	<b>0.495**</b>	<b>0.471**</b>	<b>0.435**</b>	<b>0.541**</b>
<i>Regular Schedule</i>	0.037	-0.15	0.113	0.056	-0.061
<i>Safety</i>	<b>0.282*</b>	0.258	<b>0.274*</b>	<b>0.313*</b>	<b>0.358**</b>
<b>Total Work Characteristics</b>	<b>0.692**</b>	<b>0.572**</b>	<b>0.597**</b>	<b>0.516**</b>	<b>0.708**</b>

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

#### 7.3.2.3.4 Work Characteristics and Employee Expectations

The five questions contained in the Employee Expectations component of the GWQ were as follows (abbreviation used in subsequent tables is provided in parentheses):

- i. *I don't know what is expected of me at work (Don't know expectations)*
- ii. *My work responsibilities are clearly defined (Clearly defined work responsibilities)*
- iii. *I don't know how I will be evaluated for a raise or promotion (Don't know raise or promotion)*
- iv. *I have unclear orders from my supervisor (Unclear orders from supervisor)*
- v. *I know exactly what is expected of me (Know expectations)*

It was hypothesized that high levels of feedback, both from the job and from others (e.g., supervisors), would negatively correlate with *Don't know expectations (i)*, and positively correlate with *Clearly defined work responsibilities (ii)* and *Know expectations (v)*. This hypothesis is supported by the results. Moreover, it was hypothesized that *feedback from others* would negatively correlate with *Unclear orders from supervisor (iv)* and *Don't know raise or promotion (iii)*. Results support the former, but not the latter, which was unexpected. Interestingly, the only characteristic that was significantly correlated ( $\rho = -0.382$ ;  $p\text{-value} = 0.004$ ) with *Don't know raise or promotion (iii)* was Career Growth, which asked participant's their level of agreement with the following statement, "I have opportunities for career growth and advancement," all other characteristics were not correlated with *iii*. It was expected that *career growth* would be negatively correlated with *don't know raise or promotion* as the more ambiguous the promotion and raise process is, the less one would feel they have opportunities for career growth.

If an employee does not understand how the quality of their work is measured, then they may also feel restricted from desired opportunities for *career growth*. What is unexpected is that there were no other characteristics that correlated with *Don't Know Raise or Promotion*. This finding provides support for including *career growth* as an essential work characteristic, as it uniquely relates to opportunities for raises and promotions, a critical dimension of *good work*. In other words, work that does not provide advancement for those who desire and work for it, would not be *good work*.

Investigation performed in Section 7.3.2.2.4, revealed that two expectation constructs, *unclear orders from supervisor (ii)* and *don't know raise or promotion (iii)* do

not significantly correlate with one another (p-value = 0.09). It seems that employees can receive clear orders from their supervisors via enough *feedback from others*, while at the same time not know how they are evaluated for a raise and promotion. This finding could be the result of having a higher management team (e.g., COO and CEO) decide promotions and raises, while a different person/team supervises and gives direct orders. In which case, one could have an excellent supervisor that is very clear in their orders/expectations but has no control over the raises and promotions decided by upper management. The opposite could also be the case – one could be given opportunities for advancement and raises from the owner of the company but have unclear orders from their direct supervisor. Table 51 details the correlation analyses results between Work Characteristics and Employee Expectations.

Table 51: Correlations between Work Characteristics and Employee Expectations.

	<i>Don't know expectations</i>	<i>Clearly defined work responsibil- ities</i>	<i>Don't know raise or promotion</i>	<i>Unclear orders from supervisor</i>	<i>Know expectations</i>
<b>Motivational Characteristics</b>					
<i>Accomplishment</i>	<b>-0.287*</b>	<b>0.445**</b>	0.096	<b>-0.273*</b>	<b>0.272*</b>
<i>Autonomy</i>	-0.122	0.259	0.192	-0.203	<b>0.342*</b>
<i>Demand</i>	-0.247	<b>0.364**</b>	0.108	-0.223	<b>0.274*</b>
<i>Feedback from the Job Value</i>	<b>-0.392**</b>	<b>0.563**</b>	-0.065	-0.252	<b>0.513**</b>
<i>Variety</i>	-0.048	0.032	-0.087	0.028	0.04
<b>Social Characteristics</b>					
<i>Feedback from Others</i>	<b>-0.276*</b>	<b>0.483**</b>	-0.026	<b>-0.363**</b>	<b>0.443**</b>
<i>Mutual Trust</i>	-0.048	0.125	-0.104	-0.241	<b>0.273*</b>
<i>Social Interaction</i>	-0.243	0.191	-0.119	-0.103	0.166
<i>Social Support</i>	-0.139	<b>0.341*</b>	0.199	-0.258	<b>0.296*</b>
<b>Growth Characteristics</b>					
<i>Career Growth</i>	<b>-0.350**</b>	<b>0.397**</b>	<b>-0.382**</b>	<b>-0.356**</b>	<b>0.269*</b>
<i>Personal Growth</i>	<b>-0.380**</b>	<b>0.552**</b>	0.211	<b>-0.363**</b>	<b>0.407**</b>
<i>Technical Growth</i>	<b>-0.443**</b>	<b>0.455**</b>	0.002	<b>-0.283*</b>	<b>0.285*</b>
<b>Work Context Characteristics</b>					
<i>Aesthetics</i>	-0.03	<b>0.273*</b>	0.089	-0.206	0.172
<i>Compensation</i>	-0.078	0.214	0.039	-0.194	0.145
<i>Ergonomics</i>	-0.057	<b>0.325*</b>	0.122	-0.149	0.156
<i>Job Security</i>	-0.098	<b>0.351**</b>	-0.01	<b>-0.345**</b>	<b>0.289*</b>
<i>Regular Schedule</i>	-0.089	0.069	-0.006	-0.238	0.126
<i>Safety</i>	-0.031	0.229	-0.034	-0.249	0.128
<b>Total Work Characteristics</b>	<b>-0.325*</b>	<b>0.567**</b>	0.018	<b>-0.437**</b>	<b>0.465**</b>

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

### 7.3.3 Path Analysis

For analysis of Work Characteristic's effect on Total Burnout, *time at the organization*, measured in years, was included as a covariate for all regression analysis,

and subsequent mediation analysis, to control for the effect of time spent at the organization. Each characteristic's effect on Total Burnout was analyzed independently. The  $R^2_{\text{adjusted}}$  for each model, as well as the unstandardized regression coefficient ( $B$ ), standard error ( $SE$ ), and standardized regression coefficient ( $\beta$ ), are reported in Table 52. Eight of the 19 models (one model for each characteristic), were shown to be statistically significant ( $p\text{-value} \leq 0.05$ ) negative predictors of Total Burnout (path C in the conceptual model). The eight significant negative predictors were: *accomplishment* ( $R^2_{\text{adjusted}} = 0.170$ ,  $B = -0.338$ ), *autonomy* ( $R^2_{\text{adjusted}} = 0.104$ ,  $B = -0.179$ ), *demand* ( $R^2_{\text{adjusted}} = 0.080$ ,  $B = -0.206$ ), *feedback from the job* ( $R^2_{\text{adjusted}} = 0.152$ ,  $B = -0.227$ ), *personal growth* ( $R^2_{\text{adjusted}} = 0.111$ ,  $B = -0.221$ ), *technical growth* ( $R^2_{\text{adjusted}} = 0.113$ ,  $B = -0.301$ ), *aesthetics* ( $R^2_{\text{adjusted}} = 0.142$ ,  $B = -0.311$ ), and *ergonomics* ( $R^2_{\text{adjusted}} = 0.101$ ,  $B = -0.218$ ).

Table 52: Work Characteristics predicting Total Burnout. One model for each Work Characteristic is presented.

Model	Constructs	$R^2_{\text{adjusted}}$	$B$	$SE$	$\beta$
<b>1</b>		<b>0.170**</b>			
	Constant (Y-intercept)		4.643**	0.605	
	Time at org.		0.01	0.023	0.008
	<b>Accomplishment</b>		<b>-0.338**</b>	0.96	-0.448
<b>2</b>		<b>0.104*</b>			
	Constant (Y-intercept)		3.464**	0.352	
	Time at org.		0.16	0.24	0.87
	<b>Autonomy</b>		<b>-0.179**</b>	0.64	-0.371
<b>3</b>		<b>0.080*</b>			
	Constant (Y-intercept)		3.523**	0.407	
	Time at org.		0.021	0.025	0.112
	<b>Demand</b>		<b>-0.206*</b>	0.082	-0.341
<b>4</b>		<b>0.152**</b>			
	Constant (Y-intercept)		3.604**	0.343	
	Time at org.		0.006	0.024	0.032
	<b>Feedback from the Job</b>		<b>-0.227**</b>	0.068	-0.427
<b>5</b>		0.043			
	Constant (Y-intercept)		3.462**	0.463	
	Time at org.		0.019	0.026	0.104



<b>Model</b>	<b>Constructs</b>	<b>R<sup>2</sup> adjusted</b>	<b>B</b>	<b>SE</b>	<b>β</b>
	<b>Value</b>		<b>-0.173*</b>	0.085	-0.282
<b>6</b>		<b>0.003</b>			
	Constant (Y-intercept)		3.341**	0.566	
	Time at org.		0.021	0.027	0.133
	<b>Variety</b>		-0.142	0.101	-0.205
<b>7</b>		<b>0.071</b>			
	Constant (Y-intercept)		3.306**	0.342	
	Time at org.		0.013	0.025	0.069
	<b>Feedback from Others</b>		<b>-0.168*</b>	0.070	-0.323
<b>8</b>		<b>0.071</b>			
	Constant (Y-intercept)		3.602**	0.423	
	Time at org.		0.018	0.025	0.098
	<b>Mutual Trust</b>		<b>-0.202*</b>	0.084	-0.326
<b>9</b>		<b>-0.007</b>			
	Constant (Y-intercept)		3.546**	0.816	
	Time at org.		0.013	0.026	0.068
	<b>Social Interaction</b>		-0.154	0.127	-0.170
<b>10</b>		<b>0.007</b>			
	Constant (Y-intercept)		3.393**	0.569	
	Time at org.		0.001	0.026	0.005
	<b>Social Support</b>		-0.139	0.093	-0.212
<b>11</b>		<b>0.043</b>			
	Constant (Y-intercept)		3.227**	0.357	
	Time at org.		0.015	0.025	0.079
	<b>Career Growth</b>		-0.149*	0.073	-0.279
<b>12</b>		<b>0.111*</b>			
	Constant (Y-intercept)		3.785**	0.447	
	Time at org.		-0.004	0.025	-0.020
	<b>Personal Growth</b>		<b>-0.221**</b>	0.077	-0.384
<b>13</b>		<b>0.113*</b>			
	Constant (Y-intercept)		4.381**	0.639	
	Time at org.		-0.009	0.025	-0.047
	<b>Technical Growth</b>		<b>-0.301**</b>	0.103	-0.393
<b>14</b>		<b>0.142**</b>			
	Constant (Y-intercept)		4.368**	0.575	
	Time at org.		0.003	0.024	0.014
	<b>Aesthetics</b>		<b>-0.311**</b>	0.096	-0.417
<b>15</b>		<b>0.017</b>			
	Constant (Y-intercept)		3.153**	0.383	
	Time at org.		0.008	0.025	0.043
	<b>Compensation</b>		-0.121	0.073	-0.299
<b>16</b>		<b>0.101**</b>			
	Constant (Y-intercept)		3.926**	0.510	

<b>Model</b>	<b>Constructs</b>	<b>R<sup>2</sup> adjusted</b>	<b>B</b>	<b>SE</b>	<b>β</b>
	Time at org.		-0.019	0.026	-0.102
	<b>Ergonomics</b>		<b>-0.218**</b>	0.078	-0.396
<b>17</b>		0.044			
	Constant (Y-intercept)		3.199**	0.343	
	Time at org.		0.010	0.025	0.056
	<b>Job Security</b>		<b>-0.137*</b>	0.067	-0.279
<b>18</b>		-0.037			
	Constant (Y-intercept)		2.579	0.496	
	Time at org.		0.010	0.026	0.053
	<b>Regular Schedule</b>		0.000	0.079	-0.001
<b>19</b>		-0.013			
	Constant (Y-intercept)		3.721**	1.067	
	Time at org.		-0.004	0.029	-0.021
	<b>Safety</b>		-0.174	0.161	-0.168

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

The analysis described above established significant relationships between eight Work Characteristics and Total Burnout. It was hypothesized that there would be indirect (mediated) effects via Employee Loyalty. Figure 38, located in Section 7.2.2.3, provides a conceptual model of the mediation analysis performed. First, the relationship between the predictor (Work Characteristic) and the potential mediator (Employee Loyalty) was established. Then the relationship between the mediator and outcome was inspected and, when significant, whether the mediator reduced the direct effect of a Work Characteristic on Total Burnout.

Regression analysis confirmed that the eight Work Characteristics (*accomplishment, autonomy, demand, feedback from the job, personal growth, technical growth, aesthetics, and ergonomics*) that were found to be significant negative predictors of Total Burnout were also found to be significant and positive predictors of Employee Loyalty (path A1 in the conceptual model,  $p\text{-value} \leq 0.05$  in all models), see Table 53 for

details. In addition, regression analysis confirmed Employee Loyalty significantly and negatively predicted Burnout (Path B1 in the conceptual model,  $p$ -value  $\leq 0.001$ ), see Table 54 for details.

*Table 53: Work Characteristics predicting Employee Loyalty. One model for each of the eight significant Work Characteristics is presented.*

<b>Model</b>	<b>Constructs</b>	<b>R<sup>2</sup> adjusted</b>	<b>B</b>	<b>SE</b>	<b><math>\beta</math></b>
<b>1</b>		<b>0.154**</b>			
	Constant (Y-intercept)		3.025**	0.863	
	Time at org.		-0.031	0.033	-0.121
	<b>Accomplishment</b>		<b>0.430**</b>	0.137	0.403
<b>2</b>		<b>0.192**</b>			
	Constant (Y-intercept)		4.142**	0.473	
	Time at org.		-0.053	0.033	-0.203
	<b>Autonomy</b>		<b>0.303**</b>	0.085	0.446
<b>3</b>		<b>0.174**</b>			
	Constant (Y-intercept)		3.959**	0.545	
	Time at org.		-0.062	0.033	-0.236
	<b>Demand</b>		<b>0.368**</b>	0.109	0.431
<b>4</b>		<b>0.218**</b>			
	Constant (Y-intercept)		4.045**	0.466	
	Time at org.		-0.036	0.032	-0.138
	<b>Feedback from the Job</b>		<b>-0.355**</b>	0.092	0.472
<b>5</b>		<b>0.274**</b>			
	Constant (Y-intercept)		3.270**	0.571	
	Time at org.		-0.016	0.031	-0.060
	<b>Personal Growth</b>		<b>0.435**</b>	0.098	0.535
<b>6</b>		<b>0.084*</b>			
	Constant (Y-intercept)		3.605**	0.918	
	Time at org.		-0.021	0.036	-0.081
	<b>Technical Growth</b>		<b>0.341*</b>	0.148	0.315
<b>7</b>		<b>0.342**</b>			
	Constant (Y-intercept)		2.092	0.711	
	Time at org.		-0.028	0.030	-0.106
	<b>Aesthetics</b>		<b>0.618**</b>	0.199	0.586
<b>8</b>		<b>0.224**</b>			
	Constant (Y-intercept)		3.159	0.671	
	Time at org.		0.011	0.035	0.041
	<b>Ergonomics</b>		<b>0.402**</b>	0.103	0.518

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

Table 54: Employee Loyalty predicting Total Burnout.

Model	Constructs	R <sup>2</sup> adjusted	B	SE	β
1		0.257**			
	Constant (Y-intercept)		4.730	0.505	
	Time at org.		-0.006	0.022	-0.034
	<b>Employee Loyalty</b>		<b>-0.381**</b>	0.086	-0.538

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

As paths A1, B1, and C were all found to be significant in the conceptual model, and a mediation analysis was conducted via the PROCESS module in SPSS (Hayes, 2017), see Section 7.2.2.3 for details. Results show that Employee Loyalty does mediate some, but not all, of the relationship between each of the eight significant Work Characteristics and Total Burnout. Table 55 provides details.

For example, 38.2% of *accomplishment's* effect on Total Burnout is mediated via Employee Loyalty. In other words, the data analysis revealed that when *accomplishment* (i.e., a feeling of satisfaction towards one's contribution to an organization) increases, employees experience less Total Burnout via a direct effect (*accomplishment* → Total Burnout; 61.8%) and an indirect effect (*accomplishment* → Employee Loyalty → Total Burnout; 38.2%). Thus, path C in the conceptual model was -0.338 and reduced to -0.209 (path C') when Employee Loyalty was included as a mediator in the regression analysis.

The most significant reduction in the direct effect of a Work Characteristic on Total Burnout via the mediation of Employee Loyalty was found between *personal growth* and Total Burnout, wherein 65.2% of the effect of *personal growth* on Total Burnout is mediated through Employee Loyalty. Therefore, improving the degree to which the work helps its workers further themselves according to their personal beliefs, values, and

aspirations, may not have a large effect on reducing Total Burnout directly, but does have a significant effect on bolstering Employee Loyalty, which in turn reduces Total Burnout.

Interestingly, the least significant, but still impactful, reduction in the direct effect of a Work Characteristic on Total Burnout was found between *technical growth* and Total Burnout, as 37.2% of the effect is mediated by Employee Loyalty. Most of the effect is direct (*technical growth* → Total Burnout; 62.8%), and some of the effect is indirect (*technical growth* → Employee Loyalty → Total Burnout; 37.2%).

Table 55: Total, direct, and total indirect effects of Work Characteristics on Total Burnout mediated by Employee Loyalty.

Work Characteristic	Total Burnout			% Mediated via Employee Loyalty
	Total	Direct	Indirect	
<b>Motivational Characteristics</b>				
Accomplishment	<b>-0.338**</b>	-0.209	<b>-0.129<sup>a</sup></b>	38.2%
Autonomy	<b>-0.179**</b>	-0.079	<b>-0.100<sup>a</sup></b>	55.9%
Demand	<b>-0.206**</b>	-0.081	<b>-0.125<sup>a</sup></b>	60.8%
Feedback from the Job	<b>-0.277**</b>	-0.119	<b>-0.108<sup>a</sup></b>	47.6%
<b>Growth Characteristics</b>				
Personal Growth	<b>-0.221**</b>	-0.077	<b>-0.144<sup>a</sup></b>	65.2%
Technical Growth	<b>-0.301**</b>	-0.189	<b>-0.112<sup>a</sup></b>	37.2%
<b>Work Context Characteristics</b>				
Aesthetics	<b>-0.311**</b>	-0.116	<b>-0.195<sup>a</sup></b>	62.6%
Ergonomics	<b>-0.218**</b>	-0.084	<b>-0.135<sup>a</sup></b>	61.3%

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed).

<sup>a</sup> Statistically significant at alpha ≤ 0.05 via Bootstrapping Analysis showing lower confidence and upper confidence intervals as non-overlapping zero (Hayes, 2017).

## 7.4 Discussion

This investigation sought to evaluate a comprehensive work design assessment that was developed by using extant literature to adopt or create scales to measure 1) Current and Preferred Work along 19 Work Characteristics, 2) Work Outcomes, and 3) Organizational Culture. The resulting GWQ was administered to 55 participants working in three different organizations. Relationships between Work Characteristics, Work Outcomes, and Organizational Culture were identified, which offers possibilities for addressing work design trade-offs.

The following section discusses the results presented in Section 7.3. The initial discussion focuses on the relationships between Work Characteristics, Work Outcomes, and Organizational Culture. Then, the contributions of the GWQ to the work design field are detailed.

#### 7.4.1 Relationships between Work Characteristics, Work Outcomes, and Organizational Culture

There were many significant relationships identified between Work Characteristics, Work Outcomes, and Organizational Culture, which are illustrated in Figure 42. Current Work Characteristics, when aggregated together (i.e., the average of all responses to the 19 questions), were shown to be positively correlated with Total Loyalty ( $\rho = 0.559$ , p-value  $\leq 0.01$ ), Total Management ( $\rho = 0.708$ , p-value  $\leq 0.01$ ), and Known Expectations ( $\rho = 0.465$ , p-value  $\leq 0.01$ ); and negatively correlated with Total Burnout ( $\rho = -0.432$ , p-value  $\leq 0.01$ ). This suggests that organizations that design work to address several design characteristics are expected to have increased loyalty, better perceived management practices, and known expectations for employees, along with decreased employee burnout, and the reverse holds true.

Total Employee Loyalty was shown to correlate positively with Total Management ( $\rho = 0.682$ ,  $p\text{-value} \leq 0.01$ ) and Known Expectations ( $\rho = 0.436$ ,  $p\text{-value} \leq 0.01$ ), while negatively correlating with Total Burnout ( $\rho = -0.526$ ,  $p\text{-value} \leq 0.01$ ). Therefore, organizations with loyal workers will likely have better perceived management practices, clearer expectations for employees, and lower levels of burnout.

Total Management was shown to be positively correlated with Known Expectations ( $\rho = 0.447$ ,  $p\text{-value} \leq 0.01$ ) and negatively correlated with Total Burnout ( $\rho = -0.514$ ,  $p\text{-value} \leq 0.01$ ). Organizations that practice quality management practices will likely have employees who know what is expected of them and are not as negatively impacted by burnout. In addition, Known Expectations was found to be negatively associated with Total Burnout, documenting the importance of documenting and clarifying expectations of employees.

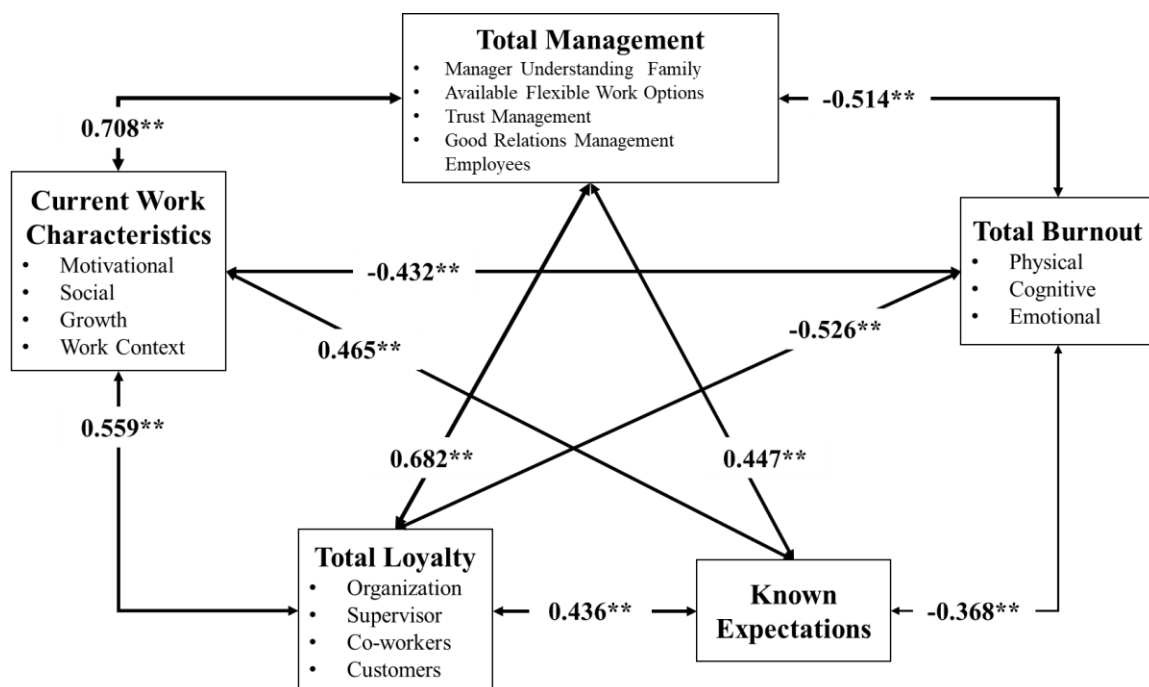


Figure 42: Relationships between the GWQ components. Thicker lines indicate stronger correlations, and thinner lines indicate weaker relationships.

When considering the path analysis conducted in Section 7.3.3, Employee Loyalty mediated the relationships between eight Work Characteristics and Total Burnout that were statistically significant, illustrated in Figure 43. Perhaps it should not be surprising that four of the eight characteristics were in the Motivational Characteristics grouping, which is the oldest and best studied grouping and is the origin of research into Work Characteristics (Turner & Lawrence, 1965). When considering the four Motivational Characteristics' (*accomplishment, autonomy, demand, and feedback from the job*) impact on Total Burnout, mediated through Employee Loyalty, other psychological investigations can help us understand this relationship. Research suggests that the paramount goal for people is the pursuit of meaning, which promotes well-being and happiness (Ryan & Deci, 2001).



To pursue a goal, an employee must have the *autonomy* to choose the target and *feedback* to know the goal has been met. Furthermore, an employee must feel challenged (*demand*) and end up with a sense of satisfaction with their contribution to the organization (*accomplishment*) once that goal has been accomplished. If an employee learns through feedback that their efforts are not accomplishing the intended goal, she/he must have the ability to change their behavior (*autonomy*) to allow them to find a different path towards goal accomplishment. Thus, having *accomplishment*, *autonomy*, *demand*, and *feedback from the job* must promote positive Work Outcomes (e.g., reduced burnout).

Two of the Growth Characteristics' (*personal growth* and *career growth*) effect on Total Burnout were also mediated by Employee Loyalty; however, to very different extents. *Personal growth* had the highest percentage of mediation (65.2%), out of all eight characteristics, while *technical growth* had the lowest percentage (37.2%). This is quite interesting, as the growth potentials may initially be seen as equivalent; however, analysis shows they are quite different. When considering the definitions, one can see the difference. Having opportunities for employees to further themselves along a set of beliefs and values is a more personal connection to their growth and therefore has a stronger relationship to Loyalty. On the other hand, providing opportunities for learning new knowledge, skills, and abilities will not be as personal, and therefore have less of an effect on Loyalty.

Two of the Work Context Characteristics', namely *aesthetics* and *ergonomics*, effect on Total Burnout was also mediated through Employee Loyalty at similar percentages: 62.6% and 61.3%, respectively. Surprisingly, *aesthetics* had the highest

regression coefficient to Loyalty out of the eight, illustrating how significant a pleasant work environment is towards fostering faithful adherence.

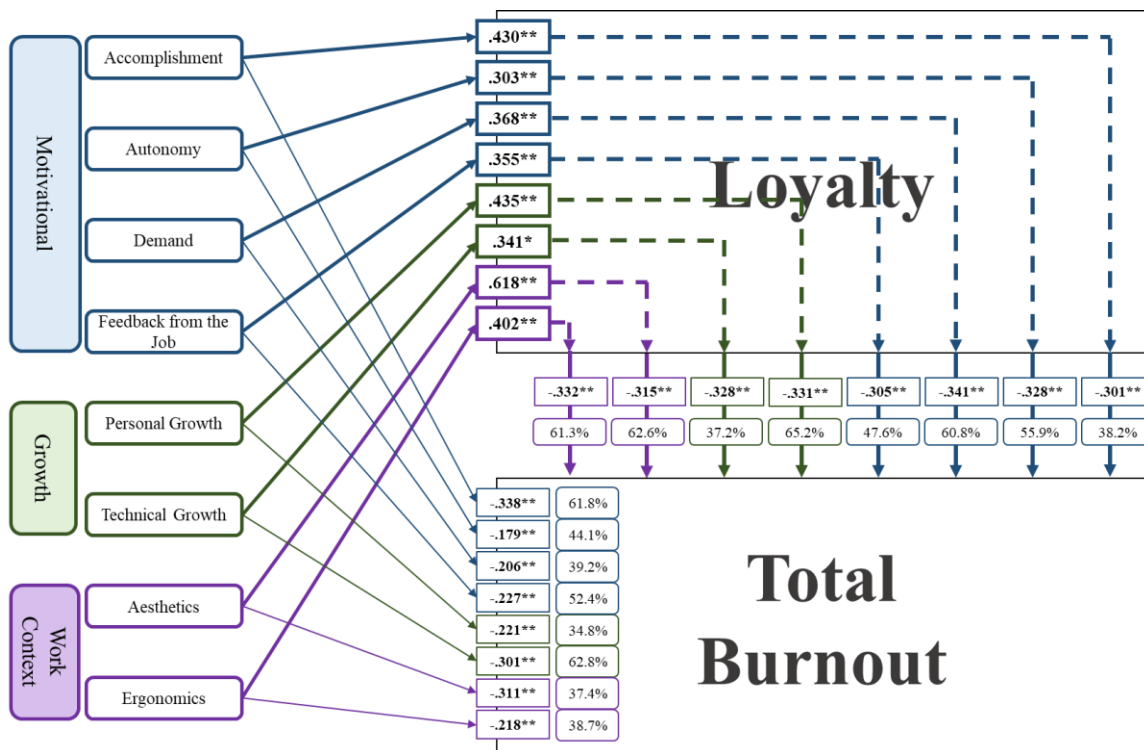


Figure 43: Work Characteristics effect on Total Burnout Mediated through Employee Loyalty. \*\* Correlation is significant at the 0.01 level (2-tailed). \* Correlation is significant at the 0.05 level. Regression coefficients (B) are provided in rectangles with sharp corners, and the percentage of effect is provided in rectangles with rounded corners. For example, for every one-unit increase in accomplishment, a 0.430 increase in loyalty, and a -0.338 unit decrease in burnout is expected. Of the -0.388 unit decrease on Total Burnout, 38.2% is mediated through Employee Loyalty.

#### 7.4.2 Contribution of the GWQ to the Work Design Field

Based on the results of this investigation, the GWQ makes at least five distinct contributions to the work design field. First, it is the most comprehensive measure of work design currently available. As such, it represents more than 50 years of work design research from at least four distinct fields (industrial engineering, management, sociology, and industrial and organizational psychology) into a comprehensive measure.

Second, the GWQ assess the preferred work along with the current work, which has not been done by other work design surveys that only measure the work currently performed, such as the Job Diagnostic Survey (Hackman & Oldham, 1975) and the Work Design Questionnaire (Morgeson & Humphrey, 2006), upon which the GWQ is built. The Preferred Work component allows for an understanding of how important each characteristic is to the participants, which can then be the basis for enacting change to improve the quality of work for specific participants. Other surveys fail to take into consideration participant preferences, leaving managers with little information on where and how to realize positive change after using the survey to measure the design of work.

Third, the internal consistency of all components, except for the Employee Expectations component, is uniformly high (average Cronbach's alpha was = 0.86). Interestingly, the reliabilities of the GWQ components are higher than the reliability of the Job Diagnostic Survey<sup>23</sup> - as assessed from a meta-analytic summary, which found reliabilities that ranged from 0.65 to 0.70, with an average of 0.68 (T. Taber & Taylor, 1990). Moreover, reliability is similar to the Work Design Questionnaire that had average reliability of 0.87.

Fourth, the Preferred Work component could be used to measure the preferences of a community when an organization is looking to hire and recruit from that community. For example, as new generations replace retiring ones, organizations may want to assess the differences in preferences of work and adjust the design accordingly. Or, if an organization is starting a new facility, they may use the GWQ to measure the preferences of the

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<sup>23</sup> (see SECTION 2.5.3.1)

community where the facility will be located. Other work design surveys fail to provide ready-made tools for such an inquiry.

Fifth, the GWQ was able to identify causal relationships between Work Characteristics and Work Outcomes, which often aligned with the extant literature. This information would be valuable to organizations experiencing employment problems, such as turnover and absenteeism, who could use the information to pinpoint where issues lie. Based on these contributions, the GWQ shows marked improvement as a work design measurement implement, compared to extant surveys.

#### 7.4.3 Limitations and Future Research

The most notable and significant limitation of this work is the small sample size and limited variety in job positions. With a relatively small sample size and many variables, the analysis has limitations regarding generalizability. The results are ecologically valid for the three organizations studied but are not necessarily valid for other organizations in other locations.

Finally, because this investigation was focused on developing and examining the direct relationships between components, except for the mediation analysis, many nuances due to moderation, were ignored. This is unfortunate as there is a history in the work design literature of investigating moderators of these relationships. Therefore, future research should investigate how relationships between constructs measured via the GWQ might be moderated by individual employee differences, such as personality [e.g., the Big-Five (Gosling et al., 2003)] and culture [e.g., Hofstede Cultural Dimensions (Hofstede, 2011)].

Future research should also investigate the relationship between Cognitive Weariness and Organizational Culture, as this investigation surprisingly did not find any

correlations between them. In addition, future research should examine the GWQ's ability to assess the design of work for supervisors and managers. The current investigation focused on employees whose job does not involve managing other people, only performing the tasks that directly benefit the customers/clients. It would be interesting to examine the design of work for supervisors and managers and compare the results to the results presented here.

### 7.5 Conclusion

*Good work* does not occur in a silo; all major components of work measured in the GWQ related to one another, see Figure 42 for details. Thus, it would be unexpected to measure Work Characteristics and find a lack of fulfillment coinciding with high ratings of management and loyalty, along with low ratings of burnout. The design of work is a complex system of interactions between Work Characteristics, Work Outcomes, and Organizational Culture. *Good work*, therefore, is a system property that emerges from the arrangement of components that together exhibit behaviors that the individual components do not, just as in any system (Dori et al., 2019), i.e., *good work* is an emergent property of a complex organization. See Figure 44 for a concept map<sup>24</sup>, which is a diagram that can be read as individual statements that convey information by reading the node-link-node as standalone meaningful expressions (Crandall et al., 2006).

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<sup>24</sup> See 2.4.4 for more details on concept maps.



Figure 44: Concept map of a work system.

Thus, simplifying work to only consider one component, or even worse, one sub-component (e.g., loyalty to supervisors), is not conducive to improving work, and may in fact be detrimental. As shown in Figure 44, the system of work has complex interdependencies. For example, the *work system* includes *Current Work Characteristics* (e.g., *autonomy, variety, demand*) that measure the *existing design of work* that may *mismatch* with the *ideal design of work*, which contribute to the *system state* that may create *good work*. Human beings are complex, and the tools to measure the design of work for

humans must map to their complexities. Simplifying work to reduce the intricacies may seem fruitful to the industrial engineer, or other work design practitioner, who may not have the time and/or bandwidth to think in such complex terms. However, overt simplification is bound to cause harm to the employees and the organization as a whole. Thus, the GWQ provides a good balance of precision and speed. It is detailed enough to provide work design practitioners with quality information about the work system, without being so complicated it cannot/will not be completed by employees.

## Chapter 8

### 8 Discussion and Limitations

#### 8.1 General Discussion

The primary objectives of this research were to improve the theoretical understanding how to define and measure good work and validate Lee's Work Improvement Process. The theoretical aspect of this research focused on enhancing the extant literature describing work design investigations that examined the relationships between the inputs of work design (referred to as Work Characteristics), outcomes of work design, and culture of the organization. The applied aspect of this research focused on explicit efforts to update, expand, and in general, improve Lee's Process.

##### 8.1.1 The Characteristics of *Good Work*

The systematic evaluation of work design has been the topic of investigation for over one hundred years, beginning most notably, with Fredric Taylor in his seminal work, "The Principles of Scientific Management." Taylor developed and pursued work design by analyzing humans' capacity/ability and started a revolution in work design that moved from the standard 'rules of thumb' to guidelines based on mathematical formulations. For example, the amount of pig iron a person could move in a day was improved upon by analyzing the calories burned and applying physiological constraints dictating when to begin and when to stop for a break (Taylor, 1911).

Unfortunately, Taylor's work, now known as Taylorism, was then refined to the extreme resulting in a revolution of bad work - work that is too simplified and controlled for humans to remain healthy doing it. By removing employees' autonomy over their work



and their ability to socialize, managers unknowingly controlled and isolated employees to such an extent it resulted in suffering (Lawrence, 2010).

For example, employees at Foxconn, one of the best organizations in terms of tightly controlled work processes, were so dismally treated they started jumping off the dormitories they were required to live, protesting the working conditions by taking their own lives. Foxconn, in true “Taylorist” thinking, chose to increase the pay of their employees to help alleviate the negative impacts of the work, along with nets they hung to catch jumping employees and promptly return them to the production line (Perlin, 2013; Pun & Chan, 2012).

Foxconn’s efforts have been beneficial in producing inexpensive electronics that many people, including the author, can afford. However, does the benefit of inexpensive electronics justify the treatment of the people employed? Moreover, does the situation need to be that way produce cost effective goods? Or, can work design inquiry establish other methods for designing work that does not involve treating people as calorie burning machines whose sole motivation is money? The author, and numerous other researchers concluded so (Parker, 2014), which sparked extensive efforts to establish Work Characteristics, beyond money, that must be considered to design *good work*.

Investigation #1 was conducted to establish and understand characteristics that are important to employees and to enhance known important factors of work beyond compensation. The investigation had two main contributions that filled a gap in the extant literature. First, most quantitative studies established characteristics *a priori*, and then investigated their impact on work outcomes, which is problematic, as researchers’ opinion of what is important in work may differ from other classifications of employees (e.g., blue-

collar workers). This investigation overcame this issue with an open-ended question asking participant's, "*What characteristics, or factors, of work are most important to you?*" Results showed that the three most important characteristics were positive interactions with people, valuable work, and control over work.

The second contribution was the reasoning given for the importance of characteristics, as opposed to a binary option, or a numerical assignment of importance, the results included many explanations for a characteristic's importance. For example, participants who discussed the importance of compensation described the need to help their family prosper and the psychological benefit in seeing their family thrive. Organizations like Foxconn, who attempt to improve work outcomes by increasing compensation may benefit from the findings. If employees do not have an opportunity to see the impact of their increase in pay because they are required to live away from their family in a dorm located on the organization's grounds, then the increase in money may not positively impact them as much as other design actions targeted at different characteristics.

"You cannot improve what you do not measure", is a common phrase attributed to many individuals, most notable, Peter Drucker. Investigation #1 enhanced the work design field by providing further dimensions upon which to measure work, thereby providing employers more options to improve the design of work for their employees.

#### 8.1.2 Benchmarking Actions to Improve the Design of Work

If there truly is nothing new under the sun, then why not seek advice and guidance from other organizations on how to improve the design of work? Investigation #2 sought to do just that – document Work Improvement Actions (WIAs) and connect them to

characteristics established in Investigation #2. By creating a database of WIAs, employers can now more readily find inspiration for how they may improve the design of work.

As an engineer by trade, the author is not satisfied with merely identifying problems, he must also identify potential solutions. The database created in Investigation #2 was an attempt to provide managers who use Lee's Work Improvement Process with a set of examples they could implement directly or use as inspiration for their own actions.

The creation of the database identified many interesting aspects about improving the design of work. Some characteristics, like *autonomy* and *compensation* were more readily identified while other characteristics, like *accomplishment* and *aesthetics* were more challenging to find actions. This does not necessarily indicate *accomplishment* and *aesthetics* are not as important because there are many articles discussing the importance, just not specific actions to address them, particularly for *accomplishment*.

When considering *aesthetics*, it is the author's opinion that while many organizations may have improved work by enhancing the *aesthetics* of the workplace, they simply have not reported those results in the literature. It could be that reporting on how beautiful and pleasant X organization is to work at may be perceived as boasting. Perhaps, the lack of WIAs could be attributed to the term *aesthetics*, which might not be commonly used, and the applicable keywords were missed. However, a few interesting findings did come from the search on *aesthetics*, like the mental health benefits from views of the outdoors (Pearson & Craig, 2014).

When considering *accomplishment*, the difficulty likely arose due to the definition, which links *accomplishment* to a feeling of satisfaction with one's work. Most WIAs identified ended up being primarily linked to another characteristic, like *feedback* to

improve an employee's understanding of the impact of their work and, therefore, improve the feeling of satisfaction. It could be that the best way to address *accomplishment* and satisfaction overall, is to address one of the other characteristics.

Due to the pressure on employers to produce goods and provide services in a competitive market, combined with the pressure on employees to earn money, *demand* is rarely reduced without reducing pay and/or hours - an unwelcome measure in the eyes of employees who need the income. Instead, most WIAs that were said to reduce the workload on employees increased the *autonomy* of the employees, which in turn reduced the negative impacts of the work.

### 8.1.3 Systematically Improving the Design of Work

Organizations in a competitive market will likely not implement a process if it has not been tested in some capacity. Investigation #3a sought to validate Lee's Work Improvement Process to demonstrate that it is possible to redesign work by analyzing the work from the employees' perspectives to establish the need for improvements. Rather than managers and engineers deciding what to do based on casual observations, Lee's Process systematically collected data from employees to use as the basis for making changes.

The Process identified similarities in mismatched characteristics; specifically, *feedback*, either *from the job* and/or *from others* was found to be deficient in all three organizations. This is not surprising to the author, based on his knowledge of pedagogy and human factors engineering (HFE). Feedback is one of the most critical mechanisms to improve understanding and performance. This fact can be seen in the educational system that regularly provides students feedback on their understanding of concepts, and

instructors on their ability to teach. The importance of feedback is paramount in human information processing (a core HFE concept).

A feedback loop allows us to sense the results of actions. Once actions are taken our senses perceive a change, then our central processing allocates resources to understand the change and decide what new action to perform. Without a feedback loop, improvements to the future state cannot be made (Wickens et al., 2004). For example, an audio engineer hears a deviation in the desired sound and adjusts a control on the audio console to align the actual sound with the desired sound. Once the adjustment has been made, she/he listens to perceive if the adjustment has resulted in the intended outcome. If the feedback loop was delayed too much, or even worse, not there altogether, then the audio engineer could not effectively improve the audio quality.

The ability for the organizations participating in Investigation #3a to improve the design of work was related to the budget and bureaucracy in each. The amount of change was proportional to the available funds and the timeliness was inversely proportional to the level of bureaucracy. The Technology Organization had a relatively large budget, possibly not the largest as the Production Organization was much larger in size and scope, and the smallest amount of bureaucracy due to their horizontal structure. Both attributes coalesced and facilitated implementing the largest and quickest change, which involved creating a new department and hiring staff to manage the department. The Production Organization had a relatively large budget, but extensive bureaucracy due to their vertical structure. The structure required many checks and balances prior to implementation and therefore took more time to implement than the Technology Organization. The Service Organization had

the smallest budget and a high level of bureaucracy resulting in the longest implementation time and subjectively the smallest changes.

Thus, an organization's ability to redesign work in the pursuit of *good work* would be aided by reducing the bureaucracy by moving from a vertical structure to a horizontal one if funds cannot readily be made available. It seems, based on the application of Lee's Process, that organizations with a horizontal structure may be best equipped to redesign work in the pursuit of *good work*. This finding aligns with what was reported in the Section 2.5.2 that discussed the benefits of horizontal structures, which included providing employees a better sense of connection to the product, better *feedback*, higher quality of products/services, higher productivity and flexibility, and lower rates of absenteeism and turnover (Jenkins, 1996).

#### 8.1.4 A Deeper Understanding of the Good Work Questionnaire

Employee surveys, like the Good Work Questionnaire (GWQ), have been used to measure variables of interest to employers across an expansive range of industries. By tracking progress over time, organizations can measure their improvements and receive *feedback* regarding the effectiveness of organizational changes and policies (Muchinsky & Howes, 2019). Establishing the reliability of survey components and understanding how components relate to one another is essential if an organization intends to use the survey regularly to improve the organizations' health and effectiveness systematically.

The GWQ proved to be reliable, and many relationships between constructs were established. Most notably were the relationships between Work Characteristics, Work Outcomes, and Organizational Culture, which are illustrated in Figure 42 in Section 7.4.1. Current Work Characteristics were shown to be positively correlated with Total Loyalty,

Total Management, and Known Expectations, and negatively correlated with Total Burnout.

Thus, organizations that design work to realize a comprehensive set of design characteristics are expected to have increased loyalty, quality management practices, and known expectations, along with decreased burnout. This finding is the antithesis of the malpractice of Taylorism, which seeks to simplify Work Characteristics, thereby simplifying humans' connection with their work. Humans are complex, and their work must match their complexity. That does not mean that every person requires complex work; rather, simplifying work will most likely result in unfortunate work outcomes and an undesirable organizational culture.

Thus, *good work* emerges when employees' inherent complexities are matched by their work and the GWQ has proven to be a useful tool to elicit said complexities. When designing work engineers and managers must consider the intricacy of the employees as humans, not as calorie burning machines, while simultaneously acknowledging interactions between Work Characteristics (e.g., *autonomy* and *demand*).

## 8.2 Limitations

Table 56 details the limitations for each investigation and limitations for the research as a whole. For full detail, see the limitations section for each investigation.

*Table 56: Limitations of this research.*

Investigation #1	<ul style="list-style-type: none"> <li>• Generalizability of the findings – results reflect participants' experiences and does not necessarily include all workers.</li> <li>• The candor and honesty of participants – responding with what they thought the author wanted to hear versus than they thought.</li> </ul>
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Investigation #2	<ul style="list-style-type: none"> <li>• The database is missing all WIAs that were never published or were not published in English.</li> <li>• Bias from the search engines is present.</li> <li>• A lack of equal representation from all characteristics.</li> <li>• No attempt was made to evaluate the effectiveness of the actions in the database.</li> <li>• Lack of multiple coders and inter-rater reliability for coding WIA onto characteristics.</li> </ul>
Investigation #3a	<ul style="list-style-type: none"> <li>• Incomplete evaluation of Lee's Process via the intended longitudinal study.</li> <li>• Lack of multiple coders for the qualitative analysis of interview findings.</li> <li>• Negatively worded items in the Employee Expectations components and Regular Schedule in the Preferred work component.</li> <li>• The candor and honesty of participants in the in-person interview.</li> <li>• Honesty of participants in the GWQ and in-person interview due to fear of admonishment from their managers.</li> </ul>
Investigation #3b	<ul style="list-style-type: none"> <li>• Small samples size.</li> <li>• Limited variety of job positions</li> <li>• Ignoring many nuances of moderating variables, like personality and culture.</li> </ul>
Research as a Whole	<ul style="list-style-type: none"> <li>• Ignoring work that is not performed for an organization, like generational farming.</li> <li>• Lack of generalizability.</li> </ul>



## Chapter 9

### 9 General Conclusion

#### 9.1 Summary and General Conclusions

This research was planned and carried out to better understand how to design *good work* in an organizational setting and included three investigations to determine how to measure work and how to implement a systematic process to improve work.

Investigation #1 sought to identify the characteristics of *good work* and the reasons why workers thought the characteristics were important. Worker interviews were conducted, and 19 Work Characteristics were established: *accomplishment, aesthetics, autonomy, career growth, compensation, demand, ergonomics, feedback from the job, feedback from others, job security, mutual trust, personal growth, regular schedule, safety, social interaction, social support, technical growth, variety, and value*. The established characteristics of *good work* were then the basis for inquiry into WIAs and subsequent coding in Investigation #2. Then, Investigation #3 used them as variables to establish mismatches between what workers prefer and what workers are offered. Despite the limitations of the study, future inquiries into work design should consider the characteristics as inputs, or measurable variables in the design of work.

Investigation #2 established a database of WIAs that was used in Investigation #3 to suggest WIAs for each identified mismatch. Reports written to each of the three organizations summarized the results from Round 1 of Lee's Process and included a customized subset of WIAs from the database. Furthermore, the database can be used by

employers who seek to improve the design of work for their employees, either as a source of inspiration or as direct measures.

Investigation #3a tested Lee's Work Improvement Process at three organizations, all of which were located in Oregon. Each organization was in a different industry, contained different classifications of workers, and had different organizational structures. The investigation elicited many extant theoretical relationships between Work Characteristics. For example, *autonomy* dampened the negative impact of *demand*, as measured by a well-vetted burnout survey – employees with more *autonomy* were less burned out compared to employees with less autonomy.

Investigation #3b established the Good Work Questionnaire (GWQ) as a marked improvement over all other similar work design surveys identified in Chapter 2 and made at least five contributions to the work design field. First, it is the most comprehensive survey available and represents over 50 years of research. Second, the GWQ establishes mismatches between the current and preferred design of work, which had not been done prior to Lee's work (2014). Third, all components, except for Employee Expectations, proved to be highly reliable as assessed by a Cronbach's alpha (Cronbach, 1951). Fourth, the Preferred component can be used as a stand-alone survey to measure the preferences of a community, if an organization is looking to hire and recruit from that community. Fifth, the GWQ was able to identify relationships between Work Characteristics and Work Outcomes, which often aligned with the extant literature.

## 9.2 Recommendations

Going forward, work should be done to complete the longitudinal application of the Process that Investigation #3a sought to accomplish. Also, improvements to the Preferred

Work component and additions to the Organizational Culture component of the GWQ should be made. Improvements to the Preferred Work component include re-writing the question about *regular schedule* to frame it in a positive light, where an increase in the response would indicate a consistent and predictable schedule. Improvements to the Organizational Culture component include adding a section measuring engagement at work, like the engagement survey created by the authors the burnout survey used in the GWQ (Bilgel et al., 2012; Schaufeli et al., 2002) and eliminating or re-writing negatively framed questions in the Employee Expectations component.

Other future research on the Process would be an investigation into the wording of the questionnaire's anchoring words – what effect would changing the wording associated with a maximum score of a 7 from 'often' to 'always' have? Also, future work should investigate what effect working from home has on the *goodness* of work; as telecommuting is bound to be more common after the COVID-19 pandemic subsides. Specifically, inquiry into the trade-offs between autonomy over one's schedule working from home allows and social interaction working from home decreases must be further understood.

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## **10 APPENDICES**

## 10.1 Appendix A: Lee's Questionnaire

## Current Job Characteristics

The following questions focuses on your current job. Please answer the following questions to the best of your ability.

1. The work I do is challenging.

Strongly		Disagree	Strongly		Agree	
1	2	3	4	5	6	7

2. My work consists of a variety of tasks.

Strongly		Disagree	Strongly		Agree	
1	2	3	4	5	6	7

3. I regularly talk with my co-workers during work.

Strongly		Disagree	Strongly		Agree	
1	2	3	4	5	6	7

4. I regularly learn new skills and knowledge through my work.

Strongly		Disagree	Strongly		Agree	
1	2	3	4	5	6	7

5. When I work hard, my contributions are recognized.

Strongly		Disagree	Strongly		Agree	
1	2	3	4	5	6	7

6. I consider my work important.

Strongly		Disagree	Strongly		Agree	
1	2	3	4	5	6	7

7. I have plenty of freedom and control over my work.

Strongly		Disagree	Strongly		Agree	
1	2	3	4	5	6	7

8. I feel that my work contributes to making me a better person.

Strongly		Disagree	Strongly		Agree	
1	2	3	4	5	6	7

9. I consider my work environment pleasant.

Strongly		Disagree	Strongly		Agree	
1	2	3	4	5	6	7

10. I am regularly made aware of my performance at work.

Strongly		Disagree	Strongly		Agree	
1	2	3	4	5	6	7

11. I earn enough money from this job to meet my needs.

Strongly		Disagree	Strongly		Agree	
1	2	3	4	5	6	7

12. Overall, my workplace is safe.

Strongly		Disagree	Strongly		Agree	
1	2	3	4	5	6	7

#### Dimension Significance

The following questions focus on determining how important different aspects of your work are in determining the “goodness” of your work. Think of it in terms of the following question: How significant of a role does each of the following aspects play in determining how well you like your work? You may reflect on the work at your current job or your

previous work experiences to arrive at your answer here. It would be helpful if you reflect on a job you especially like and what you like about it.

1. Being challenged by my work.

Not	Important	Extremely Important
1	2 3	4 5 6 7

2. Working on a number of different types of tasks or activities.

Not	Important	Extremely Important
1	2 3	4 5 6 7

3. Being free to interact with my co-workers.

Not	Important	Extremely Important
1	2 3	4 5 6 7

4. Learning new work-related knowledge and skills.

Not	Important	Extremely Important
1	2 3	4 5 6 7

5. Being recognized for my hard work.

Not	Important	Extremely Important
1	2 3	4 5 6 7

6. Having work that I feel is important.

Not	Important	Extremely Important
1	2 3	4 5 6 7

7. The amount of control and freedom I have over my work.

Not	Important	Extremely Important
1	2 3	4 5 6 7

8. Having work that makes me a better person overall.

Not	Important			Extremely Important		
1	2	3	4	5	6	7

9. Having a pleasant work environment.

Not	Important			Extremely Important		
1	2	3	4	5	6	7

10. Being regularly informed about my performance.

Not	Important			Extremely Important		
1	2	3	4	5	6	7

11. The amount of pay I receive.

Not	Important			Extremely Important		
1	2	3	4	5	6	7

12. Having work that is physically safe.

Not	Important			Extremely Important		
1	2	3	4	5	6	7

#### Dimensional Preference

The following questions focus on determining your preference regarding different aspects of work. Imagine yourself in a situation where you are trying to decide between several potential jobs. Please rate your preference for each aspect of work.

1. A job that provides a \_\_\_\_\_ degree of challenge to me.

Low	Moderate			High		
1	2	3	4	5	6	7

2. A job where I perform \_\_\_\_\_ task(s).

Just One      A Few Different      Many Different

1      2      3      4      5      6      7

3. A job that involves \_\_\_\_\_ interaction with people.

Little to No      Some      Much

1      2      3      4      5      6      7

4. A job that \_\_\_\_\_ exposes me to new technical skills.

Never      Sometimes      Regularly

1      2      3      4      5      6      7

5. A job that \_\_\_\_\_ recognizes my contributions to the company.

Never      Sometimes      Very Often

1      2      3      4      5      6      7

6. A job with a role that I consider to be of \_\_\_\_\_ value to the company and society.

Little      Some      Great

1      2      3      4      5      6      7

7. A job where I have \_\_\_\_\_ control over when and how I perform my work.

No      Some      Complete

1      2      3      4      5      6      7

8. A job that is \_\_\_\_\_ in making me a better person.

Helpful      Sometimes helpful      Very helpful

1      2      3      4      5      6      7

9. A job that could be described as having \_\_\_\_\_ sense of beauty in the environment.

Little      Some      Great

1      2      3      4      5      6      7

10. A job where I am \_\_\_\_\_ informed of my performance.

Never

Sometimes

Often

1    2    3    4    5    6    7

11. A job that offers a relatively \_\_\_\_\_ salary.

Low

Average

High

1    2    3    4    5    6    7

12. A job that pays \_\_\_\_\_ attention to creating a safe work environment.

Little

Moderate

Much

1    2    3    4    5    6    7

Please describe the following about yourself:

Where you were raised: Country: \_\_\_\_\_ State/Province: \_\_\_\_\_

Where you currently live: Country: \_\_\_\_\_ State/Province: \_\_\_\_\_

What is your highest level of education: \_\_\_\_\_

Number of dependents: \_\_\_\_\_



## 10.2 Appendix B: Investigation #1 –Plan for Interview

### Plan for Interview

<b>Project Title:</b>	Dimensions of Work Study
<b>Principal Investigator:</b>	Kenneth H. Funk II, PhD
<b>Student Researcher:</b>	Steven H. Hatstrup
<b>Version Date:</b>	May 24, 2018

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This document describes how the Interview will be performed.

**People:** Student Researcher and participant

**Materials:** 12 dimensions defined on note cards, blank notecards, blank notepaper, clip board, and writing device

### Procedure:

1. Participant identifies interest in participating in an Interview.
2. Participant identifies their job title
  - If the job title is one that falls within a strata that has been saturated with other interviews the student research will thank the patient for their interest and then dismiss any further Dimensions of Work Study related interactions with the individual.
3. The interviews will be scheduled at a time that works for the student researcher and the participant.
4. The Student Researcher begins the Interview with an introduction:
  - Steven Hatstrup
    - *"...Good evening/day, thanks for participating in this study. My name is Steven Hatstrup..."*
    - *"... I am doing this research as part of my graduate work, which is mostly concerned with the psychological aspects of the modern workplace"*
  - Goal of study
    - *"We are interested in learning from you the kinds of things that seem important to you in the types of work you are engaged in..."*
5. The Student Researcher will then present informed Consent: Employee Interview Consent.
  - After participant reads consent form: *"...Before we get started on the interview, do you have any questions about the informed consent form?"*
6. Open discussion about work dimensions:
  - *"What characteristics, or factors, of work are most important to you?"*
    - The student researcher will write down by hand the most important dimensions on the blank notecards (one card for each dimension).
  - *"Why"*
  - *"What characteristics, or factors, are least important to you?"*

- *“Why”*
7. Introduction to previously identified (through literature) dimensions:
    - The Student Researcher will read the 12 dimensions and their definitions to the participants. The participant could ask questions during the explanation. As the researcher describes the dimensions, a note card with the dimension and the definition will be handed to the participant.
      - *“I will be describing to you 12 characteristics previous research has identified as the basis for characterizing work. Please feel free to stop and ask questions if anything seems unclear...”*
      - *“Autonomy... How much freedom or control you have over your work”*
      - *“Compensation... How much salary and other types of benefits you gain from performing work”*
      - *“Variety... The number of different tasks or actions you perform at work”*
      - *“Demand... The degree of physical and mental effort you have to exert, in order to accomplish your work”*
      - *“Safety... How well you are protected from harm at the workplace”*
      - *“Technical Growth... The amount of learning you get in terms of work-related skills and knowledge”*
      - *“Personal Growth... The extent in which your work makes you a better person”*
      - *“Social Interaction... The amount of interaction between you and your peers”*
      - *“Accomplishment & Status... The recognition you receive when you perform extraordinarily well”*
      - *“Value... The significance of your role”*
      - *“Aesthetics... The amount of beauty your work and its environment reflects”*
      - *“Feedback... The degree in which your performance is reflected back to you”*
    - The researcher will take notes of the questions asked.
  8. 12 Dimensions Questions:
    - *“Out of the described list, what are the 3 most important characteristics in determining whether you would consider a job good? Why?”*
    - *“Out of the described list, what are the 3 least important characteristics in determining whether you would consider a job good? Why?”*
    - The researcher will take notes of the answers.
  9. Participant’s dimensions versus the previously identified dimensions:
    - *“Do you see any similarities between the characteristics you identified and the characteristics presented on the note cards?”*
      - Note cards, both pre-defined and hand written, will be available to the interviewee as a memory aid.
    - *“Would you change which characteristics are most important to you know that you know of the others?”*
    - *“Would you change which characteristics are least important to you know that you know of the others?”*
  10. Demographic Information:
    - *“Out of the following options, what age bracket do you fall into?”*

- 18 to 35
  - 36 to 45
  - 46 to 55
  - 56 to 65
  - 65 and older”
  - What gender do you identify with?
    - This will be open-ended question, with no requirements for an answer.
  - How many years of working experience do you have?
    - This will be an open-ended question, with no requirements for an answer.
11. The researcher will thank the participant and offer him/her the compensation.
    - Opportunity for questions
      - *“...Thank you for your participation in this study, here is a little something as our way of thanking you. Do you have any questions for us?”*
  12. All notes will be kept by the student researcher and taken with them upon departure from the interview.
  13. Follow up/ probing questions
    - *“Can you say more?”*
    - *“Can you provide an example?”*
    - *“Walk me though...”*

### 10.3 Appendix C: The Good Work Questionnaire

#### Good Work Questionnaire

Explanation of Research:

<b>Project Title:</b>	Design of Good Work
<b>Principal Investigator:</b>	Kenneth H. Funk II, PhD
<b>Co-Principal Investigator:</b>	Mark Edwards, PhD
<b>Student Researcher:</b>	Steven H. Hattrup
<b>Version Date:</b>	April 12, 2019

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**Purpose:** You are being asked to take part in a research study. The purpose of this research study is to understand the nature of work and ways of improving work by applying an assessment tool that evaluates work dimensions. Statistical summaries of survey results, and generalized information from interviews will be shared with your organization's management along with recommendations for improvement actions. You may be asked if you would like to participate in a second iteration of the survey and interviews after the improvement actions have been implemented. The result will also be used as part of the student researcher's graduate research and thesis.

**Activities:** The study activities include taking a questionnaire.

**Time:** Your participation in this study will last about 20 minutes.

**Risks:** There is a risk that we could accidentally disclose information that identifies you. But many measures have been put in place to protect against such an incident from occurring, including several measures to protect collected data, protect your confidentiality, and minimize collection of any data that could be used to identify you. A breach in confidentiality could pose a risk to employment or to the quality of the working environment. We foresee no other significant risks in participating in this study.

**Benefit:** We do not know if you will benefit from being in this study. However, studies such as this could help scholars and persons who participate in design of work to understand how to design work that better fulfills the needs and wants of workers. The result of this study could also generate work design measures your company could use to make your job more satisfying.

**Payment:** The employees of participating organizations will all receive an OSU writing utensil and will all be entered into a lottery to win a \$100 gift card.

**Confidentiality:** Your responses to the Good Work Questionnaire will be confidential regardless of your participation in the lottery or a follow up interview because your individual responses will not be provided to the organization. Only aggregate, or overview statistics based on all participants' responses will be provided, for example, the average response was X. Information collected from you for this research will not be used or distributed for future research.

**Voluntary:** Participation in this study is voluntary and your decision to not take part in the study will not impact your employment or benefits. You have the right to withdraw at any time.

**Sponsor:** This study is funded by an anonymous gift administered by the OSU Foundation.

**Study contacts:** If you have any questions about this research project, please contact: Steven Hattrup at [hattrups@oregonstate.edu](mailto:hattrups@oregonstate.edu) or Kenneth Funk, PhD at [funkk@engr.orst.edu](mailto:funkk@engr.orst.edu). If you have questions about your rights or welfare as a participant, please contact the Oregon State University Human Research Protection Program (HRPP) office, at (541) 737-8008 or by email at [IRB@oregonstate.edu](mailto:IRB@oregonstate.edu)

### Consent:

Do you agree to participate in the Good Work Questionnaire?

Yes  No

Are you at least 18 years old, fluent in English, and currently employed at the organization?

Yes  No



### Most and Least Important Characteristics

By placing stickers from the following page, please rank your five most important and five least important characteristics of work. Consider what your ideal work would provide, rather than what your current job is providing. **Basically, if you had complete freedom of choice over your work, what would be the five most important factors you would consider in choosing your ideal job? In addition, what would be the five least important factors?**

Your 5 Most Important
Your 5 Least Important (unimportant)

<b>Removable Sticker</b>	<b>Characteristic</b>	<b>Definition</b>
<b>Demand</b>	<b>Demand</b>	The physical and psychological effort required from the worker to accomplish the work.
<b>Variety</b>	<b>Variety</b>	The number of different types of tasks and/or activities workers perform at work.
<b>Social Interaction</b>	<b>Social Interaction</b>	The degree to which workers interact with each other during the course of performing their work.
<b>Technical Growth</b>	<b>Technical Growth</b>	Opportunities available to workers to improve work-related knowledge, skills, and abilities that could be applied to workers' immediate work.
<b>Accomplishment</b>	<b>Accomplishment</b>	Feeling of satisfaction towards one's contribution to an organization.
<b>Value</b>	<b>Value</b>	The significance of one's role and its impact within and beyond the organization.
<b>Autonomy</b>	<b>Autonomy</b>	The degree of freedom and control workers can exert over their work in terms of being able to freely apply their knowledge, judgment, skills, and creativity towards performing work.
<b>Personal Growth</b>	<b>Personal Growth</b>	The degree to which work helps its workers further themselves according to their personal beliefs, values, and aspirations.
<b>Aesthetics</b>	<b>Aesthetics</b>	Exposure to elements of beauty and creativity while performing work, possibly from the work or the work environment.
<b>Feedback from others</b>	<b>Feedback from others</b>	Reflects the degree to which others in the organization provide information about performance.
<b>Feedback from the job</b>	<b>Feedback from the job</b>	The degree to which the job provides direct and clear information about the effectiveness of task performance.
<b>Compensation</b>	<b>Compensation</b>	All the material gains workers could obtain by performing their assigned work.
<b>Safety</b>	<b>Safety</b>	The degree to which workers are protected from physical harm while performing their work within the workplace.
<b>Social Support</b>	<b>Social Support</b>	Reflects the degree to which a job provides opportunities for advice and assistance from others.
<b>Ergonomics</b>	<b>Ergonomics</b>	Reflects the degree to which a job allows correct or appropriate posture and movement.
<b>Mutual Trust</b>	<b>Mutual Trust</b>	The degree to which workers feel trusted by and/or trust in managers and co-workers.
<b>Career Growth</b>	<b>Career Growth</b>	Opportunities for career growth and advancement within, or outside, the organization.
<b>Regular Schedule</b>	<b>Regular Schedule</b>	The degree to which workers have a schedule that does not readily change.
<b>Job Stability</b>	<b>Job Stability</b>	The degree to which workers feel their job is secure from termination based on factors outside of their control.



## Current Work Characteristics

The following questions focus on the work you are **currently performing**. Please answer by circling the number.

1. The work I do is challenging.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Somewhat Disagree</i>	<i>Neutral</i>	<i>Somewhat Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>Select one</i>	1	2	3	4	5	6	7

2. My work consists of a variety of different types of tasks and/or activities.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Somewhat Disagree</i>	<i>Neutral</i>	<i>Somewhat Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>Select one</i>	1	2	3	4	5	6	7

3. I regularly interact with my co-workers during work either verbally and/or non-verbally concerning either job related and/or non-job related items.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Somewhat Disagree</i>	<i>Neutral</i>	<i>Somewhat Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>Select one</i>	1	2	3	4	5	6	7

4. I regularly learn new work-related knowledge, skills, and/or abilities through my work.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Somewhat Disagree</i>	<i>Neutral</i>	<i>Somewhat Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>Select one</i>	1	2	3	4	5	6	7

5. When I do my work well, I feel satisfied with my contribution towards the organization.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Somewhat Disagree</i>	<i>Neutral</i>	<i>Somewhat Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>Select one</i>	1	2	3	4	5	6	7

6. I consider my work important to the organization and/or society.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Somewhat Disagree</i>	<i>Neutral</i>	<i>Somewhat Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>Select one</i>	1	2	3	4	5	6	7

7. I have plenty of freedom and/or control over when and how I perform my work.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Somewhat Disagree</i>	<i>Neutral</i>	<i>Somewhat Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>Select one</i>	1	2	3	4	5	6	7

8. I feel that my work contributes to making me a better person overall.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Somewhat Disagree</i>	<i>Neutral</i>	<i>Somewhat Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>Select one</i>	1	2	3	4	5	6	7





<i>Select one</i>	1	2	3	4	5	6	7
-------------------	---	---	---	---	---	---	---

17. I have opportunities for career growth and advancement.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Somewhat Disagree</i>	<i>Neutral</i>	<i>Somewhat Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>Select one</i>	1	2	3	4	5	6	7

18. My work schedule does not often change week to week.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Somewhat Disagree</i>	<i>Neutral</i>	<i>Somewhat Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>Select one</i>	1	2	3	4	5	6	7

19. I feel secure that my job is not at risk of termination based on factors outside of my control.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Somewhat Disagree</i>	<i>Neutral</i>	<i>Somewhat Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>Select one</i>	1	2	3	4	5	6	7

## Preferred Job Characteristics

The following questions focus on determining your preference regarding different aspects of work. Imagine yourself in a situation where you are trying to decide between several potential jobs. **What would your ideal job provide?** Please rate your preference for each aspect of work.

1. A job that provides a \_\_\_\_\_ degree of challenge to me.

	<i>Low</i>	<i>Moderate</i>				<i>High</i>	
<i>Select one</i>	1	2	3	4	5	6	7

2. A job where I perform \_\_\_\_\_ types of task(s) and/or activity(s).

	<i>Just one</i>	<i>A few</i>			<i>Many different</i>		
<i>Select one</i>	1	2	3	4	5	6	7

3. A job that involves \_\_\_\_\_ interaction with people either verbally and/or non-verbally concerning either job related and/or non-job related items.

	<i>Little to no</i>	<i>Some</i>			<i>Much</i>		
<i>Select one</i>	1	2	3	4	5	6	7

4. A job that \_\_\_\_\_ gives me the opportunity to learn new work-related knowledge, skills, and/or abilities.

	<i>Never</i>		<i>Sometimes</i>			<i>Regularly</i>
<i>Select one</i>	1	2	3	4	5	6 7

5. A job that \_\_\_\_\_ provides me a feeling of accomplishment for my contribution towards the organization.

	<i>Never</i>		<i>Sometimes</i>			<i>Very often</i>
<i>Select one</i>	1	2	3	4	5	6 7

6. A job with a role that I consider to be of \_\_\_\_\_ value to the organization and/or society.

	<i>Little</i>		<i>Some</i>			<i>Great</i>
<i>Select one</i>	1	2	3	4	5	6 7

7. A job where I have \_\_\_\_\_ freedom and/or control over when and how I perform my work.

	<i>No</i>		<i>Some</i>			<i>Complete</i>
<i>Select one</i>	1	2	3	4	5	6 7

8. A job that is \_\_\_ in making me a better person overall.

	<i>Helpful</i>		<i>Sometimes Helpful</i>				<i>Very Helpful</i>
<i>Select one</i>	1	2	3	4	5	6	7

9. A job that could be described as having a pleasing physical environment to a \_\_\_-  
\_\_\_ degree.

	<i>Little</i>		<i>Moderate</i>				<i>Great</i>
<i>Select one</i>	1	2	3	4	5	6	7

10. A job where I am \_\_\_\_\_ informed about my work performance from  
managers and co-workers in such a way that helps me improve.

	<i>Never</i>		<i>Sometimes</i>				<i>Often</i>
<i>Select one</i>	1	2	3	4	5	6	7

11. A job where I am \_\_\_\_\_ provided with direct and clear information from the  
work task itself about the effectiveness of task performance in such a way that  
help me improve.

	<i>Never</i>		<i>Sometimes</i>				<i>Often</i>
<i>Select one</i>	1	2	3	4	5	6	7



12. A job that offers a relatively \_\_\_\_\_ salary.

	<i>Low</i>		<i>Average</i>		<i>High</i>		
<i>Select one</i>	1	2	3	4	5	6	7

13. A job that pays \_\_\_\_\_ attention to creating a safe work environment.

	<i>Little</i>		<i>Moderate</i>		<i>Much</i>		
<i>Select one</i>	1	2	3	4	5	6	7

14. A job that facilitates \_\_\_\_\_ opportunities for advice and/or assistance from others.

	<i>Few</i>		<i>Some</i>		<i>Many</i>		
<i>Select one</i>	1	2	3	4	5	6	7

15. A job that facilitates \_\_\_\_\_ appropriate posture(s) and/or movement(s) that minimize my physical discomfort while working.

	<i>Few</i>		<i>Some</i>		<i>Many</i>		
<i>Select one</i>	1	2	3	4	5	6	7

16. A job where I \_\_\_\_\_ feel trusted by, and feel trust in my coworkers.

	<i>Never</i>			<i>Sometimes</i>			<i>Often</i>
<i>Select one</i>	1	2	3	4	5	6	7

17. A job where I \_\_\_\_\_ have opportunities for career growth and advancement.

	<i>Never</i>			<i>Sometimes</i>			<i>Often</i>
<i>Select one</i>	1	2	3	4	5	6	7

18. A job where my schedule \_\_\_\_\_ changes week to week.

	<i>Never</i>			<i>Sometimes</i>			<i>Often</i>
<i>Select one</i>	1	2	3	4	5	6	7

19. A job where I feel \_\_\_\_\_ secure that my work will not be readily terminated based on factors outside of my control.

	<i>Not</i>			<i>Somewhat</i>			<i>Very</i>
<i>Select one</i>	1	2	3	4	5	6	7

### How Do You Feel at Work?

Below are a number of statements that describe different feelings that you may feel at work. Please indicate how often, in the past 30 workdays, you have felt each of the following feelings:

How often have you felt this way at work?

	Never or almost never	Very infrequentl y	Quite infrequentl y	Sometime s	Quite frequentl y	Very frequentl y	Always or almost always
1. I feel tired	1	2	3	4	5	6	7
2. I have no energy for going to work	1	2	3	4	5	6	7
3. I feel physically drained	1	2	3	4	5	6	7
4. I feel fed up	1	2	3	4	5	6	7
5. I feel like my "batteries" are "dead"	1	2	3	4	5	6	7
6. I feel burned out	1	2	3	4	5	6	7
7. My thinking process is slow	1	2	3	4	5	6	7
8. I have difficulty concentrating	1	2	3	4	5	6	7
9. I feel I'm not thinking clearly	1	2	3	4	5	6	7
10. I feel I'm not focused in my thinking	1	2	3	4	5	6	7
11. I have difficulty thinking about complex things	1	2	3	4	5	6	7

12. I feel I am unable to be sensitive to the needs of coworkers and customers	1	2	3	4	5	6	7
	Never or almost never	Very infrequently	Quite infrequently	Sometimes	Quite frequently	Very frequently	Always or almost always
13. I feel I am not capable of investing emotionally in co-workers and customers	1	2	3	4	5	6	7
14. I feel I am not capable of being sympathetic to co-workers and customers	1	2	3	4	5	6	7
15. I feel loyalty to the organization	1	2	3	4	5	6	7
16. I feel loyalty towards my immediate supervisor	1	2	3	4	5	6	7
17. I feel loyalty towards my fellow coworkers	1	2	3	4	5	6	7
18. I feel loyalty towards customers and clients	1	2	3	4	5	6	7
19. I worry about my work outside working hours	1	2	3	4	5	6	7

20. My manager understands about my family responsibilities	1	2	3	4	5	6	7
21. Flexible work options are available to me if needed	1	2	3	4	5	6	7
	Never or almost never	Very infrequently	Quite infrequently	Sometimes	Quite frequently	Very frequently	Always or almost always
22. I trust management to look after my best interests	1	2	3	4	5	6	7
23. There are good relations between managers and employees	1	2	3	4	5	6	7
24. I don't know what is expected of me at work	1	2	3	4	5	6	7
25. My work responsibilities are clearly defined	1	2	3	4	5	6	7
26. I don't know how I will be evaluated for a raise or promotion	1	2	3	4	5	6	7
27. I have unclear orders from my supervisor	1	2	3	4	5	6	7
27. I know exactly what is expected of me	1	2	3	4	5	6	7

Demographics		
Age bracket (please circle your answer)	<ul style="list-style-type: none"> <li>• 18 to 35</li> <li>• 36 to 45</li> <li>• 46 to 55</li> </ul>	<ul style="list-style-type: none"> <li>• 56 to 65</li> <li>• 66 and older</li> <li>• Prefer not to answer</li> </ul>
Gender (please circle your answer)	<ul style="list-style-type: none"> <li>• Male</li> <li>• Female</li> <li>• Prefer not to answer</li> </ul>	
Total years of working experience		
Total time working with this organization		
Race (select all that apply)	<ul style="list-style-type: none"> <li>• African American</li> <li>• American Indian or Alaskan Native</li> <li>• Asian</li> </ul>	<ul style="list-style-type: none"> <li>• Caucasian</li> <li>• Hispanic/Latinx</li> <li>• Pacific Islander</li> <li>• Prefer not to answer</li> </ul>

Linking Questions		
<p>We would like to link your answers from this survey to future surveys. Only the researcher will see individual responses, <u>your employer will not have access to your individual answers.</u></p>		
Question	Full response	First 3 letters
<i>Example: what elementary school did you first attend?</i>	<i>Surprise Valley Elementary</i>	<i>sur</i>
What elementary school did you first attend?		
In what town or city was your first job?		
In what season were you born?		

End of Good Work Questionnaire.  
Thank you for your time.

– Steven Hattrup & Kenneth Funk, Ph.D.

#### 10.4 Appendix D: Plan for Follow-Up Interview

<b>Project Title:</b>	Design of Good Work
<b>Principal Investigator:</b>	Kenneth H. Funk II, PhD
<b>Student Researcher:</b>	Steven H. Hattrup
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*This document describes how the provisional Follow-up Interview will be performed.*

People: Student Researcher and participant

Materials: multiple copies of definitions of 12 dimensions defined on single sheet of paper, blank note paper, and writing device

#### **Procedure:**

Note: The provisional Follow-up Interview will take place after the Good Work Questionnaire has been closed.

14. Participant identifies interest in participating in a provisional Follow-up Interview while taking the Good Work Questionnaire through a single sheet of paper that is not attached to the Good Work Questionnaire but handed to the participant along with questionnaire. This paper will obtain the participant's name and department.
15. The interviews will be scheduled at a time that works for the student researcher and the participant.
16. The Student Researcher begins the Follow-up Interview with an introduction:
  - Steven Hattrup

- *“...Good evening/day, thanks for participating in this study. My name is Steven Hatstrup...”*
- *”... I am doing this research as part of my graduate work, which is mostly concerned with the psychological aspects of the modern workplace”*

➤ Goal of study

- *“We are interested in learning from you the kinds of things that seem important to your happiness in the types of work you are engaged in, and the types of work that you are currently performing...”*

17. The Student Researcher will then present informed Consent Form C: Employee Follow-Up Interview Consent.

- After participant reads consent form: *“...Before we get started on the interview, do you have any questions about the informed consent form?”*

18. Introduction to dimensions:

- The Student Researcher will read the 12 dimensions and their definitions to the participants. The participant could ask questions during the explanation.
- The Student researcher will have all 12 dimensions, and their definitions, written on a piece of paper that will be presented to the participant.
  - *“Let's get started on the interview. I will start off by describing to you 12 dimensions this study uses as a basis for characterizing work. If you would like to view these dimensions in writing they can be found online at [research.engr.oregonstate.edu/gwt/work-dimensions-defined](http://research.engr.oregonstate.edu/gwt/work-dimensions-defined). Please feel free to stop and ask questions if anything seems unclear...”*
  - *“Autonomy... How much freedom or control you have over your work”*



- *“Compensation... How much salary and other types of benefits you gain from performing work”*
- *“Variety... The number of different tasks or actions you perform at work”*
- *“Demand... The degree of physical and mental effort you have to exert, in order to accomplish your work”*
- *“Safety... How well you are protected from harm at the workplace”*
- *“Technical Growth... The amount of learning you get in terms of work-related skills and knowledge”*
- *“Personal Growth... The extent in which your work makes you a better person”*
- *“Social Interaction... The amount of interaction between you and your peers”*
- *“Accomplishment & Status... The recognition you receive when you perform extraordinarily well”*
- *“Value... The significance of your role”*
- *“Aesthetics... The amount of beauty your work and its environment reflects”*
- *“Feedback... The degree in which your performance is reflected back to you”*

➤ The researcher will take notes of the questions asked.

#### 19. Dimensional Questions:

- *“What are the 3 most important dimensions in determining whether you would consider a job good? Why?”*

- *“What are the 3 least important dimensions in determining whether you would consider a job good? Why?”*
  - *“At your current job, which 3 dimensions do you think are the best satisfied? Why?”*
  - *“Which would you consider to be the least satisfied? Why?”*
- The researcher will take notes of the answers.

## 20. Additional Questions

- For up to three dimensions that have a statistically significant mismatch in the Good Work Questionnaire aggregate results the following question will be asked for each of the ‘Identified Dimension(s)’:
- *The Good Work Questionnaire results show a great difference in respect to ‘Identified Dimension’ then what they receive in work. Why do you think this is so?*
- The researcher will take notes of the answers.

## 21. The researcher will thank the participant and offer him/her the gift card.

- Opportunity for questions
- *“...Thank you for your participation in this study, here is a little something as our way of thanking you. Do you have any questions for us?”*

## 22. The participant will be allowed to keep the 12 dimensions and their definitions

## 23. All notes will be kept by the student researcher and taken with them upon departure from organization. No notes will be left on the organizations site, nor

will any of the organization's employees (including management and company representative) be able to view notes.