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Table of Contents

| | Page |
|-----------------------------------|------|
| Acknowledgements..... | 1 |
| Table of Contents..... | 2 |
| List of Tables..... | 3 |
| List of Figures..... | 4 |
| List of Appendices..... | 5 |
| Abstract..... | 6 |
| Chapter | |
| I. Review of the Literature..... | 7 |
| II. Rationale and Hypotheses..... | 16 |
| III. Method..... | 22 |
| IV. Results..... | 28 |
| V. Discussion..... | 33 |
| VI. Summary..... | 42 |
| References..... | 53 |
| Appendices..... | 57 |

List of Tables

| Table | Page |
|---|------|
| 1. Demographic Information..... | 24 |
| 2. Means, Standard Deviations, and Intercorrelations for Primary Study Variables..... | 29 |
| 3. Moderated Regression Analysis for Testing Hypothesis 3..... | 31 |

List of Figures

| Figure | Page |
|---|------|
| 1. Hypothesized relationship between combined TR drivers and overall job satisfaction as moderated by combined TR inhibitors..... | 19 |

List of Appendices

| Appendix | Page |
|--|------|
| A. Source for the Technology Readiness Index 2.0..... | 57 |
| B. Source for the Minnesota Satisfaction Questionnaire Facets..... | 58 |
| C. Demographics..... | 59 |
| D. IRB Approval Letter..... | 61 |
| E. MTurk Recruitment Page..... | 62 |
| F. Informed Consent Form..... | 63 |
| G. Debriefing Form..... | 65 |

Abstract

The current study investigated the relationship between technology readiness (TR; Parasuraman, 2000) and job satisfaction. Participants were recruited via MTurk and assessed on their TR and job satisfaction. The final sample consisted of 93 participants. Findings indicated that overall TR, as well as combined TR drivers, were positively correlated with overall job satisfaction. The TR driver *optimism* was positively correlated to *ability utilization*, as well as *independence*. The TR driver *innovativeness* was positively correlated with *creativity*. Combined TR inhibitors were not significantly related to overall job satisfaction, nor were the individual TR inhibitor facets significantly related to the chosen job satisfaction facets. These findings suggest that TR may play a significant role in employee job satisfaction in the modern workplace, and that TR driver facets may hold a more significant role in this relationship.

Chapter I

Review of the Literature

Technology's pervasive influence drives change in all types of environments, including home life, education, entertainment industries, and work life. For example, the automobile took 55 years to achieve 25% ownership among the population, yet cellular devices took only 13 years for the same percentage of ownership (Parasuraman, 2000). As technology advances and becomes more prevalent in various environments, individuals will have to adapt to these changes. This is especially relevant in the workplace, as employees usually do not have the option to decide which technologies they utilize. Additionally, the availability and ownership of technological infrastructure does not guarantee usage (Ma, Anderson, & Streith, 2005). The construct of technology readiness (TR) refers to one's inclination to adopt new technology (Parasuraman, 2000). One avenue of TR research that has not been explored is its relationship with job satisfaction. Organizations benefit from satisfied employees, and as organizations adapt to technology changes, keeping their employees satisfied during the transition is beneficial. The purpose of this study, therefore, was to examine how TR relates to employee job satisfaction, which can shed light on how organizations should implement new technology in their workplaces.

Technology Readiness

Attitudes towards computers have been studied in the past (e.g., Morris, 1988; Morrison, 1983). Since then, more technologies and computer advances have been developed, and it is

important to take these into account as well when research technology change. TR refers to an individual's "propensity to embrace and use new technologies for accomplishing goals in home life and at work" (Parasuraman, 2000, p. 308). Mick and Fournier's (1998) qualitative research inspired the development of the TR construct. They identified eight paradoxes of technological products. These paradoxes create frustration for consumers as well as employees. The *control/chaos* paradox states technology can regulate order while also producing upheaval and disorder. The *freedom/enslavement* paradox states technology can allow independence while also creating dependence. The *new/obsolete* paradox states technology provides users with updated products but yet can quickly become outdated. The *competence/incompetence* paradox states that technology can provide users with feelings of intelligence as well as incompetence. The *efficiency/inefficiency* paradox states technology can lead to less required effort for certain tasks, but can also lead to more required effort for other tasks. The *fulfill/creates needs* paradox states technology satisfies certain desires while creating new desires as well. The *assimilation/isolation* paradox states technology can facilitate feelings of human togetherness and human separation. The *engaging/disengaging* paradox states technology can facilitate activity flow, but can also increase disconnection. These paradoxes illustrate that there are both benefits and difficulties regarding technology. Mick and Fournier's research inspired Parasuraman (2000) to create a scale that assesses the inclination to adopt new technology, which allows researchers to quantify the willingness to adapt to technological change.

The initial technology readiness index (TRI) was published by Parasuraman in 2000 and consisted of 36 items. The project was a combined effort of the author and Rockbridge Associates, a Virginia-based company that specializes in service and technology research. The initial phase of development began with qualitative and quantitative consumer research

performed by Rockbridge Associates. Building on the results of those studies, the project concluded with the National Technology Readiness Survey (NTRS), which was submitted countrywide to adult consumers for the purposes of creating the final TRI scale.

Since then, various forms of technology have been developed, such as smart phones, tablet devices, wireless headphones, and advanced laptops. Although these technologies may have seemed new and flashy during the early 2000s, they are common and widely used in current society. Parasuraman and Colby (2015) argued that the original TRI needed to be updated in order to appropriately assess TR due to newer and innovative technologies that are now widely used, such as mobile technology, cloud computing, and social media. The authors conducted a quantitative research phase that shortened the original 36-item TRI scale to a 16-item TRI scale. The new scale was named the TRI 2.0, and the original was renamed the TRI 1.0. The TRI 2.0 is more practical for research because there are fewer burdens on participants to complete the survey, which makes it easier to examine how TR relates to other constructs. An example of an item from TRI 1.0 is, “I like *computer programs* that allow me to tailor things to fit my own needs.” The reworded version of that item is, “I like *technologies* that allow me to tailor things to fit my own needs” (italics added for emphasis).

Both TRI 1.0 and 2.0 (Parasuraman, 2000; Parasuraman & Colby, 2015) assess four domains. These four dimensions consist of two drivers and two inhibitors, and they collectively determine one’s mental readiness to adopt and use new technology. The two drivers of TR are optimism and innovativeness. *Optimism* refers to having a positive outlook regarding technology and the belief that it can aid people’s lives for the better. *Innovativeness* refers to acting as a pioneer of technology and having leadership qualities for its utilization. The two inhibitors of TR are discomfort and insecurity. *Discomfort* refers to having a perceived lack of control over

technology and a tendency to be overwhelmed by technology. *Insecurity* refers to a general distrust of technology and its ability to function as intended. An employee with high levels of optimism and innovativeness, and lower levels of discomfort and insecurity, will be more eager to adopt novel technologies. A total TR score can be calculated from the four scores from each dimension.

Ferreira, da Rocha, and da Silva (2014) found that TR was more strongly related to affective assessments than cognitive evaluations of technology. This finding is particularly important because it suggests that emotion may have a significant role in how employees view new technology. Aiming to minimize frustration brought on by new technology can allow a workplace to function more efficiently. Training programs can be geared towards making the transition as easy as possible, so that employees with low TR will not be left behind or doubt their abilities.

In another study, Kuo, Liu, and Ma (2013) examined nurses' TR levels regarding acceptance of a new mobile electronic medical record (MEMR) system. These systems are rapidly becoming popular in hospitals, as they enhance patient safety, improve service quality, and reduce costs. The results showed that nurses were high on optimism and innovativeness, and low on discomfort. However, they scored high on insecurity. The authors concluded that in order to maximize nurses' inclination to adopt new technology, user interfaces must be friendly and not overly complicated.

Other forms of technology adoption currently exist. Ma et al. (2005) examined perceptions of first-year students at a university teaching program regarding their intention to use computer technology. The authors utilized a similar adoption model called the Technology Acceptance Model (TAM; Davis, 1986). This adoption model has two dimensions: *perceived*

usefulness (PU) and *perceived ease of use* (PEOU). The TRI 1.0 and 2.0 assess the inclination to adopt new technology, whereas the TAM assesses the perceptions of new technology. Eighty-four questionnaires were completed, and results suggested that students' PU of computers had a direct, significant effect on intention to use them. However, PEOU did not have a significant effect on intention.

The TRI has been combined with TAM in order to broaden technology adoption models (TRAM; Lin, Shih, & Sher, 2007). Results showed that that PEOU and PU completely mediated the effects of TR on customers' intentions to use an online stock trading system (Lin et al., 2007). These findings provide insight into technology adoption by combining both the TRI and TAM models. This is especially useful for implementing technologies that are optional, where the technology utilization depends on peoples' intent to use them. A specific type of technology that heavily depends on intent to use is self-service technologies.

Self-service technologies. Adoption of self-service technologies (SSTs; e.g., self-service check-out kiosks at grocery stores) has been examined in research (e.g., Kaushik & Rahman, 2017; Liljander, Gillber, & van Riel, 2006; Meuter, Ostrom, Roundtree, & Bitner, 2000). SSTs are technological interfaces that allow people to use a service independent of direct service employee involvement (Meuter et al., 2000). As SSTs become more prevalent, it is important to understand customers' and employees' inclination to use them. Liljander et al. (2006) investigated the extent to which TR was able to account for variance in customers' attitudes and adoption of self-service check-in kiosks. Of the two motivating TR dimensions, optimism was more strongly related to the customers' willingness to adopt the self-service check-in kiosks. Innovativeness only had a marginal effect on SST adoption. The authors stressed that customers

need to associate SSTs with freedom and control in order for them to have positive attitudes about SSTs.

Furthermore, people are not guaranteed to be satisfied with using an SST even if they are inclined to use it (Lin & Hsieh, 2007). Lin and Hsieh (2007) examined TR's influence on customers' satisfaction and behavioral intentions to utilize SSTs. They found that customers with higher TR were more likely to have higher satisfaction with an SST and more favorable intentions to utilize an SST, and were more likely to recommend that SST to others. These findings suggest that SST providers should pay attention to the tech readiness of their audience. If SST providers are aware of their target audience's TR, they will be able to better market and/or implement SSTs so they are accepted.

In another study, Meuter, Ostrom, Bitner, and Roundtree (2003) examined the influence of technology anxiety on SST usage patterns and satisfaction levels. Instead of focusing on technology readiness, *technology anxiety* refers to the anxiety level regarding peoples' ability to utilize new technology (Meuter et al., 2003). Results showed that those higher in technology anxiety were less satisfied with using an SST, less likely to use it again in the future, and less likely to recommend it to others. Findings from the SST studies suggest that users should be properly educated on new technology.

The relationship between computer anxiety and job satisfaction is a similar research avenue to technology anxiety that has been briefly explored. *Computer anxiety* refers to experiencing a negative emotional state when using computer equipment (Bozionelos, 2001). Parayitam, Desai, Desai, and Eason (2010) found that attitudes towards computers moderated the relationship between computer anxiety and job satisfaction, such that the relationship was weaker when people had medium to high favorable attitudes towards computers. Their results

also indicated that the negative effect of computer anxiety lessened as participants received further training and experience using computers.

It is important to be aware of the impact that constructs like technology anxiety, computer anxiety, and TR can have on adoption of new technology and satisfactory experiences with new technology. One area that has not been examined in this literature is how TR relates to job satisfaction. Job satisfaction is important to an organization's success, and considering technology's exponential advances, this unexplored relationship seems imperative to explore.

Job Satisfaction

Hoppock (1935) first defined job satisfaction as “the psychological and physiological aspects of employees' satisfaction with job environmental factors” (p. 47). Keeping employees satisfied with their jobs should benefit organizations. The Minnesota Satisfaction Questionnaire (MSQ; Weiss, Dawis, England, & Lofquist, 1967) is a widely utilized measure of job satisfaction. It is available in a long form (100 questions) and a short form (20 questions). When possible, it is preferable to administer the long form as it provides a more comprehensive overview of participants' job satisfaction (Weiss et al., 1967). The MSQ assesses 20 facets: ability utilization, achievement, activity, advancement, authority, company policies and practices, compensation, co-workers, creativity, independence, moral values, recognition, responsibility, security, social service, social status, supervision-human relations, supervision-technical, variety, and working conditions. The MSQ facets relevant to this study are: achievement, ability utilization, independence, and creativity. *Achievement* is defined as “the feeling of accomplishment I get from the job” (Weis et al., 1967, p. 2). *Ability utilization* is defined as “the chance to do something that makes use of my abilities” (Weis et al., 1967, p. 2). *Independence* is defined as “the chance to work alone on the job” (Weis et al., 1967, p. 3).

Creativity is defined as “the chance to try my own methods of doing the job” (Weis et al., 1967, p. 3).

Using the MSQ, Lee, Yang, and Li (2017) examined the relationship between job satisfaction and turnover intention with early-career employees. Early-career employees are a unique demographic in the workplace because they are reluctant to follow orders and are likely to leave an organization on impulse (Lee et al., 2017). Therefore, job satisfaction is an important area of study when examining early-career employees. Results showed that job satisfaction had a significant negative effect on turnover intention. Reassuring early-career employees that there is potential for upward movement should minimize any concerns they may have about their career growth, allowing them to be more satisfied at work.

Productivity-related costs are another organizational concern that can be examined by investigating job satisfaction because keeping productivity high is central to any organization. In a meta-analysis using 312 samples, Judge, Thoresen, Bono, and Patton (2001) found a mean true correlation of .30 between job satisfaction and job performance. Arnold et al. (2016) performed a longitudinal analysis investigating how job satisfaction related to total productivity-related (absenteeism and presenteeism) costs, as well as how it related to absenteeism costs and presenteeism costs separately. Presenteeism is defined as employees going to or remaining at work even though they are sick (Kim, Lee, Muntaner, & Kim, 2016). Arnold et al.’s study was carried out using previous data collected during a vitality research project. Job satisfaction, absenteeism, presenteeism, and total productivity-related costs (i.e., absenteeism plus presenteeism) were collected from company records at three different times over the course of a year. The results showed that job satisfaction was significantly related to lower levels of total productivity-costs and presenteeism costs. However, job satisfaction was not significantly related

to lower levels of absenteeism costs. These findings suggest that improving job satisfaction not only benefits the employees, but financially benefits the organization as well, particularly relating to the reduction of presenteeism costs (Arnold et al., 2016). Given the importance of job satisfaction, this study will examine how it relates to TR.

The Current Study

Most of the current TR literature has examined consumers' TR levels. However, investigating TR's relationship with job satisfaction is especially relevant in today's society because often, employees do not choose the type of technology they utilize at work. Therefore, measuring their willingness to adopt new technologies and modifications is particularly important. Assessing TR's dimensions individually can provide additional insight into what types of user interfaces would work best for employees. The following section will provide the rationale, based on the current TR, job satisfaction, and related research, on the hypothesized relationships between overall TR and job satisfaction, as well as the relationships between specific TR facets and job satisfaction facets.

Chapter II

Rationale and Hypotheses

TR is the “propensity to embrace and use new technologies for accomplishing goals in home life and at work” (Parasuraman, 2000, p. 308). Qualitative research by Mick and Fournier (1998), and their eight technology paradoxes, inspired the TR construct and the TRI 1.0 and TRI 2.0 (Parasuraman, 2000; Parasuraman & Colby, 2015). The TRI 2.0 is considered to be more appropriate to assess TR than TRI 1.0, as it was adjusted for modern technology devices (Parasuraman & Colby, 2015). Low correlations between the TR facets show they are distinct from one another (Parasuraman & Colby, 2015). If people score high on both drivers (optimism and innovativeness) and low on both inhibitors (discomfort and insecurity), they will eagerly adopt new technology with little resistance (Parasuraman & Colby, 2015). Other combinations of TR facet scores produce distinct effects as well. Kuo et al. (2013) found that nurses scored high on both drivers, yet their high score on insecurity hindered their eagerness for adopting a new MEMR system.

SSTs are a common category in TR research as they are becoming more prevalent. Liljander et al. (2006) found that consumers who had more positive opinions of SST technology were more likely to adopt them. People who are high in overall TR were more likely to be satisfied with SSTs, utilize SSTs repeatedly, and recommend SSTs to others (Lin & Hsieh, 2007). Other related constructs, like TA, have also shown significant effects on technology

adoption. For example, those who had low TA and a positive experience using SSTs were more likely to adopt them and recommend them to others (Meuter et al., 2003).

Satisfied employees are less likely to leave an organization (Lee et al., 2017; Parveen et al., 2017) and incur lower productivity-related and presenteeism costs (Arnold et al., 2016). Given the increase in technology use in the workplace, the relationship between computer anxiety and job satisfaction is a relevant avenue of research. Research has shown that attitudes towards computers moderate the relationship between computer anxiety and job satisfaction, such that the relationship was weaker when people had medium to high favorable attitudes towards computers (Parayitam et al., 2010). Technology is rapidly evolving, and so the relationship between technology anxiety and job satisfaction is an equally relevant avenue of research. Because most professions utilize some sort of technology and have periodic changes in technology, the relationship between TR and job satisfaction should also be examined, and it can be argued that TR should have a significant relationship with job satisfaction. Specifically, this study proposed:

Hypothesis 1: There will be a positive relationship between overall TR and overall job satisfaction.

As previously mentioned, the TR facets consist of two drivers (optimism and innovativeness) and two inhibitors (discomfort and insecurity). Hence, although an overall TR score can be computed, scores for the TR drivers and TR inhibitors can also be computed by calculating the means for the corresponding dimensions. It was expected that higher scores on the combined TR drivers would be related to higher job satisfaction. Conversely, higher scores on the combined TR inhibitors were expected to be related to lower job satisfaction. Therefore, this study also proposed the following hypotheses:

Hypothesis 2a: There will be a positive relationship between combined TR drivers and overall job satisfaction.

Hypothesis 2b: There will be a negative relationship between combined TR inhibitors and overall job satisfaction.

Although scoring higher on the drivers is expected to be related to higher overall job satisfaction, scoring higher on the inhibitors might moderate the strength of the relationship between the drivers and job satisfaction. Given that TR drivers are independent of TR inhibitors, it was expected that scores on the combined TR inhibitors would moderate the relationship between scores on the combined TR drivers and overall job satisfaction. In other words, it was expected that scoring high on inhibitors would weaken the relationship between drivers and overall job satisfaction. Specifically, the following hypothesis was proposed (see Figure 1):

Hypothesis 3: Combined TR inhibitors will moderate the relationship between combined TR drivers and overall job satisfaction, such that the relationship will be weaker as TR inhibitor levels increase.

In addition to computing separate scores for the drivers and inhibitors, separate scores can be computed for each dimension, given that they are all independent from each other. Hence, one can score high on all four, low on all four, or any combination. By doing so, it was possible to examine how individual TR facets related to individual job satisfaction facets, not just overall job satisfaction. As previously stated, TR has been found to be more strongly related to affective assessments than cognitive evaluations regarding technology (Ferreira et al., 2014). Therefore, the MSQ (Weiss et al., 1967) was chosen for the job satisfaction measurement, as its 20 job

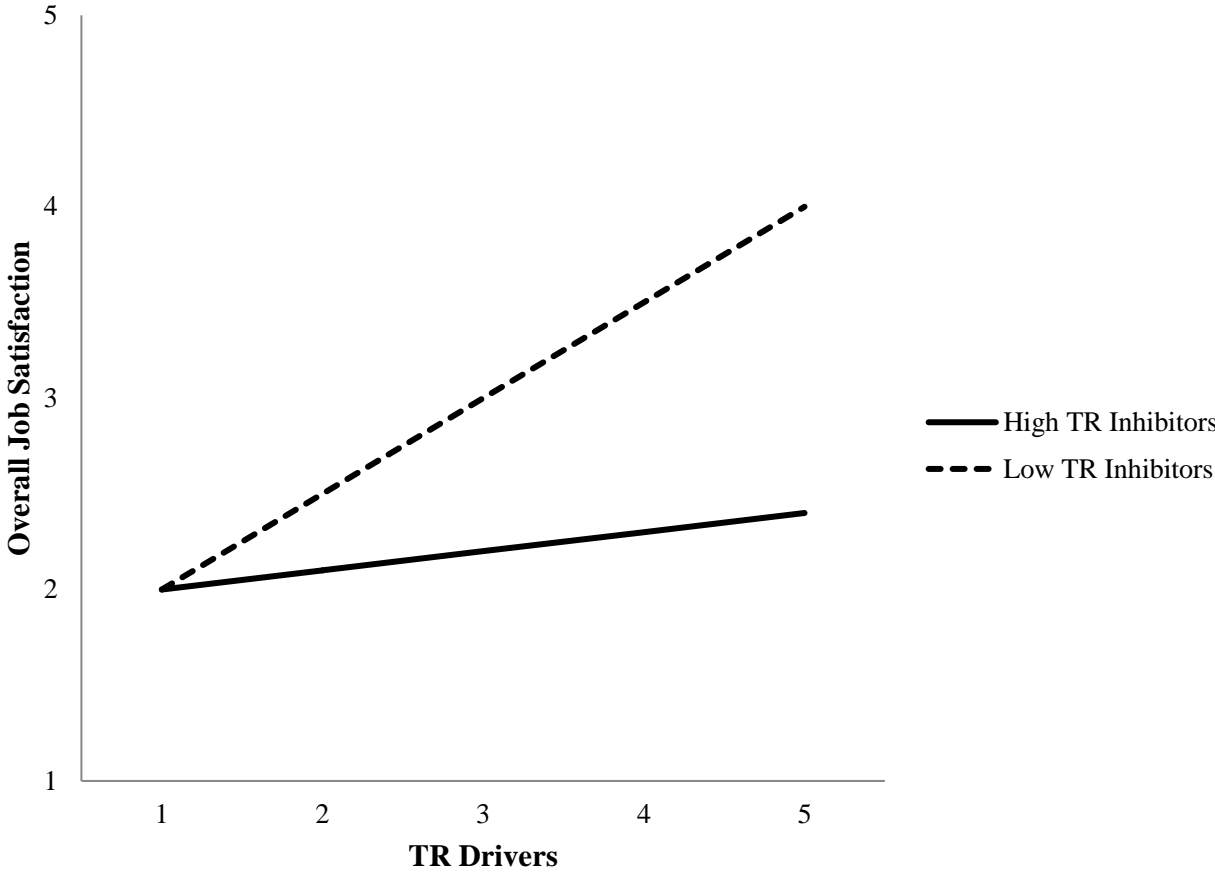


Figure 1. Hypothesized relationship between TR combined drivers and overall job satisfaction as moderated by combined TR inhibitors.

satisfaction facets focus on how employees feel about their jobs. Furthermore, several of the MSQ facets can be related to the four TR facets. Specifically, the achievement and ability utilization MSQ facets seem relevant, especially pertaining to the TR facet of discomfort. If people are uncomfortable with new technology, they may feel that their chances for accomplishment are diminished. Additionally, they may feel that their abilities are not utilized to the fullest. The TR facet discomfort refers to having a perceived lack of control over technology and a tendency to be overwhelmed by technology. Considering these definitions, this study proposed the following:

Hypothesis 4a: There will be a negative relationship between discomfort and ability utilization.

Hypothesis 4b: There will be a negative relationship between discomfort and achievement.

Ability utilization seems also relevant to another TR facet: optimism. The TR facet optimism refers to having a positive outlook regarding technology and the belief that it can aid people's lives for the better. Harboring positive views towards technology may encourage employees to use newer technology that enhances their abilities and work more efficiently. Another MSQ facet that was examined in this study and that could also be related to the TR facet of optimism is independence. Specifically, harboring positive views towards technology may allow employees to feel more independent, as work-related tasks may become easier with using new technology, allowing for more multi-tasking and requiring less supervision. For instance, employees can communicate with supervisors remotely through various new forms of technology-based contact. Essentially, utilizing abilities and working independently by utilizing

new technology may be related to a positive perspective on new technology. Hence, this study proposed:

Hypothesis 5a: There will be a positive relationship between optimism and ability utilization.

Hypothesis 5b: There will be a positive relationship between optimism and independence.

Finally, the MSQ facet of creativity seems relevant to the TR facet of innovativeness, which refers to acting as a pioneer of technology and having leadership qualities for its utilization. Employees who use new technology in an innovative manner may have greater levels of creative satisfaction at work because they may feel free to utilize new technology for a wider variety of workplace procedures and solutions. Employees who are creative and are innovators may utilize new technology to solve problems in a more efficient, easier, and fun manner.

Therefore, this study proposed:

Hypothesis 6: There will be a positive relationship between innovativeness and creativity.

Chapter III

Method

Participants

This study recruited participants via Amazon's Mechanical Turk (MTurk). MTurk allows access to a wider variety of participants compared to traditional participant pools (Buhrmester, Kwang, & Gosling, 2011). Participants were required to be either employed or have been employed within the last year at the time of data collection, which granted them the potential for exposure to current technology in the workplace. Participants were restricted to living in the United States, required to be an MTurk user with a minimum of 50 Human Intelligence Tasks (HITs) completed, and had to have a HIT approval rate of at least .95. Based on a power analysis for a zero-order correlation and a linear regression, this study required a minimum of 85 participants to have .80 power to detect a medium effect with an alpha level of .05 (Cohen, 1992). Each participant was compensated \$0.50 if they passed both quality checks.

A total of 107 participants attempted to complete the survey. However, 10 participants failed the quality check items and two participants did not respond to all items in the survey. These participants were not compensated, nor were they included in the analysis. Additionally, two participants were neither employed nor had been employed within the past year and were also not included in the analysis. These eliminations yielded a final sample size of 93 participants. The sample consisted of mostly male (68%) and White/Caucasian participants (71%). The mean age was 33.96 years ($SD = 10.03$). A total of 91 participants used a computer

to complete the survey, one used a tablet, and one selected “Other” without specifying the type of device that was used. Pertaining to using technology devices, 83.9% reported using four technology devices or less at work and 77.4% reported using four technology devices or less in their daily life. The median work experience duration was 5 years. Please refer to Table 1 for the complete demographic information.

Measures

Technology readiness. The 16-item Technology Readiness Index (TRI 2.0; Parasuraman & Colby, 2015) was used to assess participants’ technology readiness. The scale ranges from 1 (*strongly disagree*) to 5 (*strongly agree*). The scale has four facets (i.e., optimism, innovativeness, discomfort, and insecurity), and each facet has four items. Sample items are “Technology gives me more freedom of mobility” (for optimism), “In general, I am among the first in my circle of friends to acquire new technology when it appears” (for innovativeness), “Sometimes, I think that technology systems are not designed for use by ordinary people” (for discomfort), and “Too much technology distracts people to a point that it is harmful” (for insecurity). The scores for each facet were obtained by calculating the mean scores for each of those facets, and they were used separately for their respective hypotheses. A total driver score was computed by calculating the average score among optimism and innovativeness. A total inhibitor score was computed by calculating the average score among discomfort and insecurity. The overall TR score was obtained by calculating the mean score among the four facets after reverse-coding the scores on the discomfort and insecurity dimensions. Parasuraman and Colby (2015) found that the TRI 2.0 dimensions all met the minimum threshold for reliability, with reliabilities ranging from .70 (for discomfort) to .83 (for innovativeness). The TR and its individual facets were also reliable in the current study, as they had the following coefficient

Table 1

| <i>Demographic Information</i> | | |
|--|-----------|------------|
| Variable | Frequency | Percentage |
| Gender | | |
| Female | 30 | 32.3 |
| Male | 63 | 67.7 |
| Race | | |
| American Indian or Alaskan Native | 1 | 1.1 |
| Asian | 9 | 9.7 |
| Biracial/Multiracial | 1 | 1.1 |
| Black/African American | 13 | 14 |
| Hispanic/Latinx | 3 | 3.2 |
| Non-Hispanic White/Caucasian | 66 | 71.0 |
| Tech Devices Used at Work | | |
| 1 | 12 | 12.9 |
| 2 | 33 | 35.5 |
| 3 | 22 | 23.7 |
| 4 | 11 | 11.8 |
| 5+ | 15 | 16.1 |
| Tech Devices Used in Daily Life | | |
| 1 | 5 | 5.4 |
| 2 | 22 | 23.7 |
| 3 | 27 | 29.0 |
| 4 | 18 | 19.4 |
| 5+ | 21 | 22.6 |

alphas: .82 for optimism, .72 for innovativeness, .80 for discomfort, .76 for insecurity, .85 for combined drivers, .81 for combined inhibitors, and .83 for overall TR. The source needed to obtain the TRI 2.0 is included as Appendix A.

Job satisfaction. Overall job satisfaction was originally supposed to be measured by using a one-item question “Overall, how satisfied are you with your job?” This item was unintentionally left out from the survey. In order to obtain an overall job satisfaction score, the scores from the four MSQ facets utilized in this study were summed for a total score. Thus, overall job satisfaction that was used to test Hypotheses 1, 2, and 3 was reflective of the combined scores of ability utilization, achievement, independence, and creativity.

The ability utilization, achievement, independence, and creativity facets from the MSQ (Weiss et al., 1967) were used individually to assess job satisfaction for Hypotheses 4, 5, and 6. Participants were asked to indicate how they feel about their present job (if they were currently employed), or how they felt about the most recent job they had within the past year (if they were *not* currently employed). Examples of items are “The chance to do things that I do best” (for ability utilization), “Being able to see the results of the work I do” (for achievement), “The chance to work by myself” (for independence), and “The chance to try out my own ideas” (for creativity). Each facet had five items, and responses for these facet questions ranged from 1 (*very dissatisfied*) to 5 (*very satisfied*). Facet scores were obtained by summing the chosen responses.

The MSQ facets are: ability utilization, achievement, activity, advancement, authority, company policies and practices, compensation, co-workers, creativity, independence, moral values, recognition, responsibility, security, social service, social status, supervision-human relations, supervision-technical, variety, and working conditions (Weiss et al., 1967). The MSQ scales have adequate internal consistency reliabilities. The median Hoyt reliability coefficients

for the facets mentioned were: .91 for ability utilization, .84 for achievement, .85 for independence, and .87 for creativity (Weiss et al., 1967). The utilized facets were also reliable in the current study, as they had the following coefficient alphas: .92 for ability utilization, .85 for achievement, .91 for independence, .90 for creativity, and .95 for overall job satisfaction, with overall job satisfaction deriving from the sum of the four individual facets chosen for this study. The source needed to obtain the MSQ items utilized in this study is included as Appendix B.

Demographics. Demographic information such as age, gender, race, industry, work experience, and employment status were collected. Gender and race had the option “prefer not to respond.” Additionally, participants were asked what type of device they were using to complete the survey, the number of tech devices they used at their place of employment, and the number of tech devices they used in their daily lives. MTurk worker IDs were collected as a back-up for compensation purposes in case the survey completion code did not display properly. The worker IDs were deleted before any analyses are conducted, but after compensation was completed. The demographic questions are included in Appendix C.

Procedure

This study was submitted to Xavier University’s Institutional Review Board (IRB) and approved as exempt research (see Appendix D). The study was posted on MTurk asking workers to participate in a study regarding technology and job satisfaction (see Appendix E). Participants accessed the survey through Qualtrics. First, they were directed to an informed consent form (see Appendix F). The form stated that the participant must have been employed within one year and must answer all questions honestly. It also stated that if any quality check was not passed, participants would not be compensated, and their data would not be used in the study. The survey consisted of 16 items from the TRI 2.0, 20 from the four MSQ facets, 11 demographic items, and

two quality checks. Participants were asked to select “Agree” for the first quality check and “Dissatisfied” for the second quality check. The first quality check was included in the TRI 2.0, and the second quality check was included amid the chosen MSQ facet items. If participants failed either of the quality checks, they were not compensated, and their data were deleted prior to any analyses. At the completion of the study, participants were debriefed (see Appendix G), thanked for their time, and provided with the researcher’s and faculty advisor’s contact information. Participants were compensated \$0.50 if they passed both quality checks, even if they did not meet the employment study requirement. However, participants who did not meet the employment study requirement were not included in the analysis.

Chapter IV

Results

Please refer to Table 2 for the means, standard deviations, and intercorrelations for the primary study variables. Hypotheses 1, 2a, and 2b were tested using a Pearson correlation. Hypothesis 1 predicted that there would be a positive relationship between overall TR and overall job satisfaction. Overall job satisfaction was calculated by summing the scores of the four MSQ facets (*ability utilization, achievement, independence, and creativity*). The correlation between overall TR and overall job satisfaction was $r(91) = .40, p < .001$. Thus, Hypothesis 1 was supported.

Hypothesis 2a predicted that there would be a positive relationship between combined TR drivers and overall job satisfaction. The correlation between combined TR drivers and overall job satisfaction was $r(91) = .52, p < .001$. Thus, Hypothesis 2a was supported. Hypothesis 2b predicted that there would be a negative relationship between combined TR inhibitors and overall job satisfaction. The correlation between combined TR inhibitors and overall job satisfaction was not statistically significant, $r(91) = -.14, p = .174$. Therefore, Hypothesis 2b was not supported.

Hypothesis 3 proposed that the combined TR inhibitors would moderate the relationship between the combined TR drivers and overall job satisfaction. A hierarchical linear regression

Table 2

Means, Standard Deviations, and Intercorrelations of Primary Study Measures

| Variable | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------------------------|-------|-------|-------|-------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|
| 1 Optimism | 4.01 | 0.75 | (.82) | | | | | | | | | | | |
| 2 Innovativeness | 3.72 | 0.76 | .64** | (.72) | | | | | | | | | | |
| 3 Discomfort | 2.75 | 0.93 | -.35* | -.11 | (.80) | | | | | | | | | |
| 4 Insecurity | 3.21 | 0.92 | -.22* | -.16 | .41** | (.76) | | | | | | | | |
| 5 Drivers | 3.87 | 0.68 | .91** | .91** | -.25* | -.21* | (.85) | | | | | | | |
| 6 Inhibitors | 2.98 | 0.78 | .34** | -.16 | .84** | .84** | -.28** | (.81) | | | | | | |
| 7 Overall TR | 3.44 | 0.58 | .75** | .64** | -.71** | -.68** | .77** | -.83** | (.83) | | | | | |
| 8 Ability Utilization | 18.73 | 4.69 | .60** | .39** | -.16 | .14 | .54** | -.18 | .44** | (.92) | | | | |
| 9 Achievement | 19.18 | 4.19 | .47** | .32** | -.13 | -.13 | .43** | -.15 | .36** | .82** | (.85) | | | |
| 10 Independence | 18.01 | 4.94 | .40** | .35** | -.09 | .01 | .41** | -.05 | .27** | .55** | .41** | (.93) | | |
| 11 Creativity | 18.44 | 4.66 | .39** | .25* | -.03 | -.15 | .35** | -.10 | .27** | .71** | .66** | .49** | (.90) | |
| 12 Overall Job Satisfaction | 74.37 | 15.49 | .55** | .40** | -.12 | -.12 | .52** | -.14 | .40** | .91** | .85** | .74** | .85** | (.95) |

Note. * $p < .05$, two-tailed, ** $p < .01$, two-tailed. Coefficient alphas are presented along the diagonal in parentheses. Overall job satisfaction was computed by summing the scores of ability utilization, achievement, independence, and creativity.

was conducted to test this moderation hypothesis. Evidence of moderation would exist if the product variable of the inhibitor score and the driver score accounts for significant variance in overall job satisfaction in the second step of the regression analysis, while controlling for the inhibitor and driver scores in the first step of the regression analysis (Baron & Kenny, 1986). Results showed that combined TR inhibitors did not significantly moderate the relationship between combined TR drivers and overall job satisfaction, $\Delta R^2 = .01$, $\Delta F(1, 89) = 0.71$, $p = .402$. Therefore, Hypothesis 3 was not supported. Please refer to Table 3 for the complete moderated regression analysis results.

Hypothesis 4a proposed that there would be a negative relationship between discomfort and ability utilization. However, the correlation between discomfort and ability utilization was not statistically significant, $r(91) = -.16$, $p = .116$. Hence, Hypothesis 4a was not supported. Hypothesis 4b proposed that there would be a negative relationship between discomfort and achievement. The correlation between discomfort and achievement was not statistically significant, $r(91) = -.13$, $p = .212$. Therefore, Hypothesis 4b was also not supported.

Hypothesis 5a proposed that there would be a positive relationship between optimism and ability utilization. The correlation between optimism and ability utilization was positive and significant, $r(91) = .60$, $p < .001$. Thus, Hypothesis 5a was supported. Hypothesis 5b proposed that there would be a positive relationship between optimism and independence. The correlation between optimism and independence was positive and significant, $r(91) = .40$, $p < .001$. Thus, Hypothesis 5b was also supported.

Hypothesis 6 proposed that there would be a positive relationship between innovativeness and creativity. The correlation between innovativeness and creativity was positive and significant, $r(91) = .25$, $p = .018$. Therefore, Hypothesis 6 was supported.

Table 3

Moderated Regression Analysis for Testing Hypothesis 3

| <i>Variable</i> | <i>B</i> | <i>SE b</i> | β | ΔR^2 |
|--------------------|----------|-------------|---------|--------------|
| Step 1 | | | | .27*** |
| Drivers | 11.79 | 2.13 | .52 | |
| Inhibitors | .01 | 1.86 | .00 | |
| Step 2 | | | | .01 |
| Drivers | 17.75 | 7.40 | .78 | |
| Inhibitors | 7.89 | 9.55 | .40 | |
| Drivers*Inhibitors | -1.92 | 2.28 | -.42 | |

Note. $N = 93$. The criterion in this analysis was *overall job satisfaction*.

*** $p < .001$.

Exploratory analyses were conducted to examine if overall TR was related to participants' age or years of work experience. Results revealed that age and overall TR were not significantly related to each other, $r(91) = .01, p = .923$; however, there was a significant positive relationship between years of work experience and overall TR, $r(91) = .23, p = .030$. A hierarchical linear regression was also conducted to investigate if age moderated the relationship between overall TR and job satisfaction, but results indicated that age was not a moderator of that relationship.

Completion time was also examined in exploratory analyses. Greszki, Meyer, and Schoen (2015) stated that responses of participants who take less than 60% of the median completion time to finish the study should be discarded to enhance the quality of the data. The median completion time in this study was 188 seconds, and 12 of the 93 participants took less than 112.8 seconds to complete the survey, which is less than 60% of the median duration. Therefore, the analyses were rerun after removing these 12 participants to examine if the pattern of results would change. After removing these 12 participants, the pattern of results remained the same with the exception of the correlation between innovativeness and creativity becoming non-significant, $r(79) = .18, p = .10$, affecting Hypothesis 6. However, the correlation remained positive, and the magnitude of the correlation was not significantly different from the previous one.

Chapter V

Discussion

Technology is rapidly evolving in many aspects of modern society, including the workplace. Understanding how employees' willingness to adopt new technology developments and advancements is important to consider when implementing changes in the workplace. The purpose of this study, therefore, was to explore the relationship between overall TR and job satisfaction, as well as the relationship between specific TR facets and job satisfaction facets in a sample of online workers.

Hypothesis 1, which predicted that there would be a positive relationship between overall TR and overall job satisfaction, was supported. This finding confirms that there is at least some relationship between an employee's overall willingness to adopt new technologies and their level of overall job satisfaction. Lin and Hsieh (2007) had previously found that users with higher TR were more likely to have higher satisfaction with and more favorable intentions to utilize an SST. Technology changes in the workplace, such as virtual desktops and/or working remotely from home, often involve devices that mimic consumer SST utilization and may have a significant impact on an employee's overall job satisfaction. Even though many factors contribute to job satisfaction, taking employees' overall TR levels into account when implementing technological changes in the workplace could prove to be beneficial with regards to maintaining and/or improving overall job satisfaction levels in the workplace.

Hypothesis 2a, which predicted that there would be a positive relationship between combined TR drivers and overall job satisfaction, was also supported. This finding confirms that there is a positive relationship between the combination of an employee's views of optimism and innovativeness towards technology and their overall level of job satisfaction. Thus, when implementing new technology in the workplace, it may be beneficial to focus on how it can improve daily functioning and success for employees in order for them to fully accept and adopt the technological changes.

Hypothesis 2b, which predicted that there would be a negative relationship between combined TR inhibitors and overall job satisfaction, was not supported. These results imply that even if TR inhibitor levels are high, it does not necessarily mean that employees are more likely to be dissatisfied with their job. Given the results from Hypotheses 2a and 2b, workplace management may benefit more from focusing on and catering to combined drivers, rather than combined inhibitors, when trying to maintain or improve job satisfaction levels when implementing technological changes.

Hypothesis 3 proposed that the combined TR inhibitors would moderate the relationship between the combined TR drivers and overall job satisfaction, such that the relationship would be weaker as TR inhibitor levels increase. Results indicated that this hypothesis was not supported. One explanation for these results is the possibility that TR driver facets and TR inhibitor facets may work together in combinations to produce unique characteristics. Parasuraman and Colby (2015) developed a segmentation scheme using the TRI 2.0 data that yielded five segments based on unique combinations of technology-related beliefs: "skeptics," "explorers," "avoiders," "pioneers," and "hesitators." For example, the authors stated that "explorers" have a high degree of motivation and low degree of resistance to adopting new

technology, whereas “pioneers” have both high degrees of positive and negative views of new technology. “Explorers” may be more willing to adopt new technology unconditionally, whereas “pioneers” may be willing to adopt new technology, but with a higher level of skepticism towards the benefits it would provide. Additionally, the sample consisted solely of experienced online participants who may have found solutions to overcome any levels of inhibition regarding technology adoption and utilization. Thus, it is possible that the current findings may not generalize to other samples.

Hypothesis 4a proposed that there would be a negative relationship between discomfort and ability utilization, and Hypothesis 4b proposed that there would be a negative relationship between discomfort and achievement. However, both Hypotheses 4a and 4b were not supported. One explanation for these results is that comfort level with adopting and utilizing new technology is only one of many factors that could contribute to ability utilization and achievement in a workplace setting. It is possible that employees may take steps towards coping with their level of discomfort so it does not interfere with their ability utilization and achievement. Another possibility for these results is that employees may not view technology usage as a main contributor to their ability utilization and achievement in their job, and thus any inhibiting factor such as TR discomfort would not be related as well.

Hypothesis 5a proposed that there would be a positive relationship between optimism and ability utilization. Hypothesis 5b proposed that there would be a positive relationship between optimism and independence. Results supported both of these hypotheses and echo previous research findings, where optimism was strongly related to participants’ willingness to adopt SSTs (Liljander et al., 2006). These findings are important as technology is prevalent in almost all modern workplace settings. Employees who view technology in a more positive light may

also perceive it as a helpful tool when applying their abilities at work and when trying to work more independently.

Hypothesis 6 proposed there would be a positive relationship between innovativeness and creativity. Results indicated that this relationship also existed. It is no surprise that if employees act as pioneers and leaders for using new technology, they are also more likely to be satisfied with the creative aspects of their job. Employees who advocate using new technologies are more likely to know most or all of the different functions and capabilities of those technologies, and therefore would be able to use them in a variety of creative manners. Overall, the results of this study showed that individual facets of TR also have unique relationships with individual job satisfaction facets.

Theoretical and Practical Implications

This study contributes to the body of TR literature by examining its relationship with job satisfaction. Most of the current TR research focuses on consumer usage of technology (e.g., Kaushik & Rahman, 2017; Liljander et al., 2006; Meuter et al., 2000), whereas employee technology usage has yet to be explored. Popular job satisfaction measures, such as the MSQ (Weiss et al., 1967) were developed decades ago, before TR research began. This study found a positive relationship between overall TR and overall job satisfaction. Given the fact that workplace technology is evolving in addition to consumer-based technology, this finding is important, especially because past research has shown that job satisfaction is significantly related to job performance (Judge et al., 2001) and further research involving TR may add further clarification into this relationship.

Furthermore, the current findings showed that there was a positive relationship between combined TR drivers and overall job satisfaction, and that combined TR inhibitors did not

moderate this relationship. Additionally, combined TR inhibitors were not significantly related to job satisfaction. Relationships between individual TR facets and individual job satisfaction facets were only significant for TR driver facets (e.g., the relationship between optimism and ability utilization was significant), as opposed to TR inhibitor facets (e.g., the relationship between discomfort and ability utilization was not significant). Thus, it may be possible that TR drivers contribute more than TR inhibitors to the significant relationship between overall TR and overall job satisfaction, and future research should investigate this possibility.

Results from this study also have practical implications for the workplace. Past research has found that TR was more strongly related to affective assessments than cognitive evaluations of technology, and that emotion may have a significant role in how one views new technology (Ferreira et al., 2014). Given that this study found TR drivers, individually as well as combined, had significant relationships with individual job satisfaction facets and overall job satisfaction, workplace management may benefit by catering to employee TR driver levels when implementing new technology. Marketing technology changes should take into consideration if the employees are high or low on TR drivers, which can then ensure that employees have a positive attitude towards the respective changes, help ensure they adopt and utilize them accordingly, and also prevent job satisfaction levels from dropping when implementing the new changes.

Additionally, focusing on individual TR facets when implementing technology changes in the workplace may prove to be beneficial when addressing specific job satisfaction issues. This study found that optimism was positively related to both ability utilization and independence. If a workplace is struggling with specific aspects of job satisfaction, such as the feeling of employees using their abilities and skills to their full potential, or being able to work

independently, management can highlight how their current and future technology implementations can enhance those specific aspects.

Study Limitations and Future Research Suggestions

There are a few limitations to this study. First, it would have been preferable had the one-item measure for job satisfaction been included in the survey, as that was an oversight in the study. Scarpello and Campbell (1983) stated that a 5-point single item question accounted for more variance in job satisfaction than summed MSQ scores. A global measure of job satisfaction is more inclusive than a summation of facet measures. Furthermore, in the current study, overall job satisfaction was measured by summing only four MSQ facets instead of the 20 facets. Job satisfaction is conceptually more than a combination of four facets, and thus the way overall job satisfaction was measured in this study was not adequate. Therefore, future research should examine the relationship between TR and overall job satisfaction using a global overall job satisfaction measure in an attempt to replicate the current findings.

Second, technology used in the workplace may not be the same technology used at home or used by participants to take the survey. For example, manufacturing settings would require workers to operate industrial machines, which they would not have at their home. There is a possibility that TR would vary regarding workplace technologies compared to technologies for recreation and entertainment, such that TR may vary across different types and purposes of new technologies. Future research should take specific types of technology into account when examining the relationship between TR and job satisfaction.

Third, this study did not take into consideration the possibility that participants may or may not be forced to adopt new technologies compared to having the option to use new technologies in their respective work environments. The mere act of forcing employees to utilize

new technologies in their workplace could decrease job satisfaction levels. For instance, employees may feel that their ability to solve problems creatively, or work independently, may be stifled with mandatory technology adoption and could decrease job satisfaction. Conversely, if employees are given the option to utilize new technology, they may feel their abilities to work creatively, as well as work more independently, are enhanced and may increase job satisfaction. How technology is implemented in the workplace may be a confounding variable in the relationship between TR and job satisfaction that was not accounted or controlled for in this study. Future research should consider the method of technology implementation when examining the relationship between TR and job satisfaction.

Fourth, MTurk provides data from users who already know how to use a computer, or other technology devices, that successfully connect to the internet, and are taking this survey on said devices out of their own volition. All 93 participants used an internet compatible device to complete the survey (computer = 91, tablet = 1, “other” = 1). This implies that the study sample consisted of participants that were, in the very least, marginally tech-savvy. Future research should give further insight into the relationship between TR and job satisfaction by gathering data from participants who have varying levels of technology reliance and immersion. However, MTurk is an efficient method of collecting data. Current research has also shown that MTurk provides demographics that are more representative of non-college populations (Buhrmester et al., 2011). Despite the fact the sample consisted of participants that some level of experience with modern technologies, MTurk provided the most feasible method for this study and allowed for data collection that was more representative of the U.S. population compared to using a college student sample.

Fifth, TR may vary across cultures. This study limited participation to the U.S., where technology is utilized on a frequent basis. TR data may significantly differ in less wealthy nations, as well as in nations that have different cultural values. Despite this limitation, the sample is relevant to the modern workplace because it used online workers as participants. These findings may not generalize to all other samples, but they may be generalizable to samples similar to the modern U.S. workplace. Further studies on TR and job satisfaction in other geographic regions would complement the results from this study.

A final limitation worth noting is that generational differences in job type may also have an impact on the relationship between TR and job satisfaction. Younger generations may work in industries where technology is utilized on a more frequent basis, and therefore may both be forced, as well as more inclined, to utilize the newest technology to succeed and find satisfaction in their careers. Older generations are either at a mid-point or end-point in their careers and theoretically would not have to continue adopting and utilizing newer technology as much as younger generations as they most likely have already found some level of satisfactory success in their respective careers. Furthermore, different levels of tech immersion exist across industries, which may lead to different results in future TR-job satisfaction research. Certain industries, such as the gig economy (e.g., Uber, DoorDash) are heavily reliant on technology adoption, especially considering the numerous updates that use mobile devices and apps. Research comparing traditional work industries and gig economy industries could provide interesting insight into the TR-job satisfaction relationship.

Conclusion

The current findings suggest that TR and job satisfaction are related to each other. Overall TR as well as combined TR drivers were both positively correlated with overall job

satisfaction. When examining relationships between individual TR and job satisfaction facets, the TR driver optimism was both positively correlated with ability utilization and independence. In addition, the second TR driver innovativeness was positively correlated with creativity. Combined TR inhibitors were not significantly related to overall job satisfaction, nor were the individual TR inhibitor facets significantly related to the chosen job satisfaction facets. These findings suggest that TR may play a significant role in employee job satisfaction in the modern workplace. Furthermore, TR driver facets may hold a more significant role in this relationship and should be explored in future research. Future research should also consider specific types of technology and their implementations, gathering data with different sources, examining cross-cultural trends, as well as trends across industries with varying levels of tech immersion.

Chapter VI

Summary

As technology advances and becomes more prevalent in various environments, individuals will have to adapt to these changes. This is especially relevant in the workplace. Technology readiness (TR) is defined as the “propensity to embrace and use new technologies for accomplishing goals in home life and at work” (Parasuraman, 2000, p. 308). Examining TR’s relationship with employee job satisfaction is especially relevant in today’s society because often, employees do not choose the type of technology they utilize at work. Therefore, assessing their willingness to adopt new technologies and modifications is particularly important. The purpose of the current study was to examine the relationship between TR, job satisfaction, as well as specific TR facets and job satisfaction facets.

Past research has shown that attitudes towards computers moderate the relationship between computer anxiety and job satisfaction, such that the relationship was weaker when people had medium to high favorable attitudes towards computers (Parayitam et al., 2010). Technology is rapidly evolving, and so the relationship between TR and job satisfaction is an equally relevant avenue of research. Because most professions utilize some sort of technology and have periodic changes in technology, the relationship between TR and job satisfaction should also be examined, and it can be argued that TR should have a significant relationship with job satisfaction. Specifically, this study proposed:

Hypothesis 1: There will be a positive relationship between overall TR and overall job satisfaction.

TR consists of two drivers (optimism and innovativeness) that encourage a person to adopt new technology, and two inhibitors (discomfort and insecurity) that prevent a person from adopting new technology. It was expected that higher scores on the combined TR drivers would be related to higher job satisfaction. Higher scores on the combined TR inhibitors was expected to be related to lower job satisfaction. Therefore, this study proposed the following hypotheses:

Hypothesis 2a: There will be a positive relationship between combined TR drivers and overall job satisfaction.

Hypothesis 2b: There will be a negative relationship between combined TR inhibitors and overall job satisfaction.

Although scoring higher on the drivers is expected to be related to higher overall job satisfaction, scoring higher on the inhibitors might moderate the strength of the relationship between the drivers and job satisfaction., such that the relationship is weakened as inhibitors increased. Specifically, the following hypothesis was proposed:

Hypothesis 3: Combined TR inhibitors will moderate the relationship between combined TR drivers and overall job satisfaction, such that the relationship will be weaker as TR inhibitor levels increase.

TR has been found to be more strongly related to affective assessments than cognitive evaluations regarding technology (Ferreira et al., 2014). Therefore, the Minnesota Satisfaction Questionnaire (MSQ; Weiss, Dawis, England, & Lofquist, 1967) was chosen for the job satisfaction measurement, as its 20 job satisfaction facets focus on how employees feel about their jobs. The achievement and ability utilization MSQ facets are relevant, especially pertaining

to the TR facet of discomfort. Achievement is defined as “the feeling of accomplishment I get from the job” (Weis et al., 1967, p. 2), whereas ability utilization is defined as “the chance to do something that makes use of my abilities” (Weis et al., 1967, p. 2). If people are uncomfortable with new technology, they may feel that their chances for accomplishment are diminished and that their abilities are not fully utilized. The TR facet discomfort refers to having a perceived lack of control over technology and a tendency to be overwhelmed by technology. Considering these definitions, this study proposed the following:

Hypothesis 4a: There will be a negative relationship between discomfort and ability utilization.

Hypothesis 4b: There will be a negative relationship between discomfort and achievement.

The TR facet optimism refers to having a positive outlook regarding technology and the belief that it can aid people’s lives for the better. Optimism may also be related to ability utilization, as harboring positive views towards technology may encourage employees to use newer technology that enhances their abilities and work more efficiently. Another MSQ facet may also be related to optimism is independence, which is defined as “the chance to work alone on the job” (Weis et al., 1967, p. 3). Specifically, harboring positive views towards technology may allow employees to feel more independent, as new technology may allow for more multi-tasking and requiring less supervision. Essentially, utilizing abilities and working independently by utilizing new technology may be related to a positive perspective on new technology. Hence, this study proposed:

Hypothesis 5a: There will be a positive relationship between optimism and ability utilization.

Hypothesis 5b: There will be a positive relationship between optimism and independence.

Finally, the MSQ facet creativity will be examined in this study. Creativity is defined as “the chance to try my own methods of doing the job” (Weis et al., 1967, p. 3). The TR facet innovativeness refers to acting as a pioneer of technology and having leadership qualities for its utilization. Employees who use new technology in an innovative manner may have greater levels of creative satisfaction at work because they may feel free to utilize new technology for a wider variety of workplace procedures. Therefore, this study proposed:

Hypothesis 6: There will be a positive relationship between innovativeness and creativity.

Method

Participants

This study recruited participants via Amazon’s Mechanical Turk (MTurk). Participants were required to be either employed or have been employed within the last year, restricted to living in the United States, required to be an MTurk user with a minimum of 50 Human Intelligence Tasks (HITs) completed, and a HIT approval rate of at least .95. A total of 107 participants attempted the survey; however, 10 participants failed the quality check items, two participants did not respond to all items in the survey, and two participants were neither employed nor had been employed within the past year. These participants were excluded, leaving a final sample size of 93 participants. The sample consisted of 68% male and 71% White/Caucasian participants. The mean age was 33.96 years ($SD = 10.03$). Median work experience was 5 years. Please refer to Table 1 for the complete demographic information.

Measures

Technology readiness. The 16-item Technology Readiness Index (TRI 2.0; Parasuraman & Colby, 2015) was used to assess participants’ technology readiness. The scale ranges from 1

(*strongly disagree*) to 5 (*strongly agree*). The scale has four facets (i.e., optimism, innovativeness, discomfort, and insecurity). A sample item is “Technology gives me more freedom of mobility” (for optimism). The TRI 2.0 coefficient alphas for this study were: .82 for optimism, .72 for innovativeness, .80 for discomfort, .76 for insecurity, .85 for combined drivers, .81 for combined inhibitors, and .83 for overall TR. The source needed to obtain the TRI 2.0 is included as Appendix A.

Job satisfaction. Overall job satisfaction was originally to be measured using a one-item question “Overall, how satisfied are you with your job?” This item was unintentionally left out from the survey. An overall job satisfaction score was obtained from summing the scores from the four MSQ facets (Weiss et al., 1967) utilized in this study (ability utilization, achievement, independence, and creativity). Responses for these facet questions ranged from 1 (*very dissatisfied*) to 5 (*very satisfied*). An examples item is “The chance to do things that I do best” (for ability utilization). The MSQ coefficient alphas for this study were: .92 for ability utilization, .85 for achievement, .91 for independence, .90 for creativity, and .95 for overall job satisfaction. The source needed to obtain the MSQ items utilized in this study is included as Appendix B.

Demographics. Participants were asked several demographic items, which are included in Appendix C.

Procedure

This study was submitted to and approved by Xavier University’s Institutional Review Board (IRB; see Appendix D). The study was posted on MTurk (see Appendix E). Participants accessed the survey through Qualtrics. First, they were directed to an informed consent form (see Appendix F). The survey consisted of 16 items from the TRI 2.0, 20 from the four MSQ facets,

11 demographic items, and two quality checks. If participants failed any quality check, they were not compensated, and their data were deleted prior to any analyses. At the completion of the study, participants were debriefed (see Appendix G), thanked for their time, and provided with the researcher's and faculty advisor's contact information. Participants were compensated \$0.50 if they passed both quality checks. Participants who did not meet the employment study requirement were compensated, but not included in the analysis.

Results

Please refer to Table 2 for the means, standard deviations, and intercorrelations for the primary study variables. Hypotheses 1, 2a, and 2b were tested using a Pearson correlation. Hypothesis 1 predicted that there would be a positive relationship between overall TR and overall job satisfaction. The correlation between overall TR and overall job satisfaction was $r(91) = .40, p < .001$. Thus, Hypothesis 1 was supported.

Hypothesis 2a predicted that there would be a positive relationship between combined TR drivers and overall job satisfaction. The correlation between combined TR drivers and overall job satisfaction was $r(91) = .52, p < .001$. Thus, Hypothesis 2a was supported. Hypothesis 2b predicted that there would be a negative relationship between combined TR inhibitors and overall job satisfaction. The correlation between combined TR inhibitors and overall job satisfaction was not statistically significant, $r(91) = -.14, p = .174$. Therefore, Hypothesis 2b was not supported.

Hypothesis 3 proposed that the combined TR inhibitors would moderate the relationship between the combined TR drivers and overall job satisfaction. A hierarchical linear regression was conducted to test this moderation hypothesis. Results showed that combined TR inhibitors did not significantly moderate the relationship between combined TR drivers and overall job

satisfaction, $\Delta R^2 = .01$, $\Delta F(1, 89) = 0.71$, $p = .402$. Please refer to Table 3 for the complete moderated regression analysis results.

Hypothesis 4a proposed that there would be a negative relationship between discomfort and ability utilization. The correlation between discomfort and ability utilization was not statistically significant, $r(91) = -.16$, $p = .116$. Hence, Hypothesis 4a was not supported.

Hypothesis 4b proposed that there would be a negative relationship between discomfort and achievement. The correlation between discomfort and achievement was not statistically significant, $r(91) = -.13$, $p = .212$. Therefore, Hypothesis 4b was not supported.

Hypothesis 5a proposed that there would be a positive relationship between optimism and ability utilization. The correlation between optimism and ability utilization was positive and significant, $r(91) = .60$, $p < .001$. Thus, Hypothesis 5a was supported. Hypothesis 5b proposed that there would be a positive relationship between optimism and independence. The correlation between optimism and independence was positive and significant, $r(91) = .40$, $p < .001$. Thus, Hypothesis 5b was also supported.

Hypothesis 6 proposed that there would be a positive relationship between innovativeness and creativity. The correlation between innovativeness and creativity was positive and significant, $r(91) = .25$, $p = .018$. Therefore, Hypothesis 6 was supported.

Completion time was also examined in exploratory analyses. Greszki, Meyer, and Schoen (2015) stated that responses of participants who take less than 60% of the median completion time to finish the study should be discarded to enhance the quality of the data. The analyses were rerun after removing the 12 participants who took less than 60% of the median completion time to finish the survey. The pattern of results remained the same with the exception of the

correlation between innovativeness and creativity becoming non-significant, $r(79) = .18, p = .10$, affecting Hypothesis 6.

Discussion

The purpose of this study was to explore the relationship between overall TR and job satisfaction, as well as the relationship between specific TR facets and job satisfaction facets. Hypothesis 1 predicted that there would be a positive relationship between overall TR and overall job satisfaction, and it was supported. This finding confirms that there is at least some relationship between an employee's overall willingness to adopt new technologies and their level of overall job satisfaction. Lin and Hsieh (2007) had previously found that users with higher TR were more likely to have higher satisfaction with and more favorable intentions to utilize a Self-service technology (SST). Technology changes in the workplace, such as virtual desktops, often involve devices that mimic consumer SST utilization and may have a significant impact on an employee's overall job satisfaction.

Hypothesis 2a predicted that there would be a positive relationship between combined TR drivers and overall job satisfaction, and it was supported. This implies that the more an employee views new technology as an overall positive source for improving daily life, the more likely their level of job satisfaction will be higher as well. Hypothesis 2b predicted that there would be a negative relationship between combined TR inhibitors and overall job satisfaction, but it was not supported. These results imply that even if TR facet levels that prevent an employee from adopting new technology are high, it does not necessarily relate to their overall job satisfaction level.

Hypothesis 3 proposed that the combined TR inhibitors would moderate the relationship between the combined TR drivers and overall job satisfaction. Hypothesis 3 was not supported.

One explanation for these results is the possibility that TR driver facets and TR inhibitor facets may work together in combinations to produce unique characteristics (Parasuraman & Colby, 2015). Additionally, the sample consisted solely of experienced online participants who may have found solutions to overcome any levels of inhibition regarding technology adoption and utilization. Thus, it is possible that the current findings may not generalize to other samples.

Hypothesis 4a proposed that there would be a negative relationship between discomfort and ability utilization, and Hypothesis 4b proposed that there would be a negative relationship between discomfort and achievement. However, Hypotheses 4a and 4b were not supported. One explanation for these results is that comfort level with adopting and utilizing new technology is only one of many factors that could contribute to ability utilization and achievement in a workplace setting.

Hypothesis 5a proposed that there would be a positive relationship between optimism and ability utilization, and it was supported. Hypothesis 5b proposed that there would be a positive relationship between optimism and independence, and it was also supported. These results echo previous research findings (Liljander et al., 2006) and are important because technology is prevalent in almost all modern workplace settings.

Hypothesis 6 proposed that there would be a positive relationship between innovativeness and creativity, and it was supported. It should be noted though that when 12 participants who took less than 60% of the median duration to complete the survey were deleted in exploratory analyses, Hypothesis 6 was not supported. These results show that individual facets of TR also have unique relationships with individual job satisfaction facets.

Theoretical and Practical Implications

Most of the current TR research focuses on consumer usage of technology (e.g., Kaushik & Rahman, 2017; Liljander, Gillber, & van Riel, 2006; Meuter, Ostrom, Roundtree, & Bitner, 2000), whereas employee technology usage has yet to be explored. This study found a positive relationship between overall TR and overall job satisfaction. Furthermore, the current findings showed that there was a positive relationship between combined TR drivers and overall job satisfaction, and that combined TR inhibitors did not moderate this relationship. Additionally, combined TR inhibitors were not significantly related to overall job satisfaction.

Relationships between individual TR facets and individual job satisfaction facets were only significant for TR driver facets as opposed to TR inhibitor facets. Thus, it may be possible that TR drivers contribute more than TR inhibitors to the significant relationship between overall TR and overall job satisfaction. Workplace management may benefit by catering to employee TR driver levels when implementing new technology. Additionally, focusing on individual TR facets when implementing technology changes in the workplace may prove to be beneficial when addressing specific job satisfaction issues.

Study Limitations and Future Research Suggestions

First, it would have been preferable had the one-item measure for job satisfaction been included in the survey, as that was an oversight in the study. A global measure of job satisfaction is more inclusive than a summation of facet measures. Therefore, future research should use a global overall job satisfaction measure in an attempt to replicate the current findings.

Second, there is a possibility that TR may vary across different types and purposes of new technologies. Future research should take specific types of technology into account when examining the relationship between TR and job satisfaction.

Third, this study did not take into consideration that how technology is implemented in the workplace may be a confounding variable. Future research should consider how technology is implemented when examining the relationship between TR and job satisfaction.

Fourth, all 93 participants used an internet compatible device to complete the survey. Therefore, the study sample consists of participants that are, in the very least, marginally tech-savvy. Gathering data from participants who have varying levels of technology reliance and immersion in their daily lives would give further insight into the relationship between TR and job satisfaction.

Fifth, TR may vary across cultures. This study limited participation to the U.S., where technology is utilized on a frequent basis. Further studies on TR and job satisfaction in other geographic regions would complement the results from this study.

A final limitation worth noting is that TR may vary across generations and industries. Younger generations may work in industries where technology is utilized on a more frequent basis. Furthermore, certain industries, such as the gig economy (e.g., Uber, DoorDash) are heavily reliant on technology adoption. Research comparing traditional work industries and gig economy industries could provide interesting insight into the TR-job satisfaction relationship.

Conclusion

The current findings from this study suggest that TR and job satisfaction are related, and that TR may play a significant role regarding employee job satisfaction in the modern workplace. Furthermore, TR driver facets may hold a more significant role in this relationship and should be explored in future research. Future research should also consider specific types of technology and their implementations, gathering data with different sources, examining cross-cultural trends, as well as trends across different ages and generations.

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Appendix A

Source for the Technology Readiness Index 2.0

The Technology Readiness Index 2.0 is not reproduced for copyright reasons, but below is the reference needed to obtain it:

Parasuraman, A. & Colby, C. L. (2015). An updated and streamlined technology readiness index:

TRI 2.0. *Journal of Service Research*, 18, 59-74. doi: 10.1177/109467051439730

Appendix B

Source for the Minnesota Satisfaction Questionnaire Facets

The Minnesota Satisfaction Questionnaire Facets are not reproduced for copyright reasons, but below is the reference needed to obtain them:

Weiss, D. J., Dawis, R. V., England, G.W., & Lofquist, L. H. (1967). Manual for the Minnesota Satisfaction Questionnaire. Minneapolis: University of Minnesota, Industrial Relations Center. Retrieved from <http://vpr.psych.umn.edu/instruments/msq-minnesota-satisfaction-questionnaire>

Appendix C

Demographics

Age _____

What is your preferred gender identity?

- Male
- Female
- Non-binary
- Preferred gender identity not listed: _____
- Prefer not to respond

With what race/ethnicity do you identify?

- White or Caucasian
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or other Pacific Islander
- Hispanic or Latinx
- Biracial/Multiracial
- Preferred racial/ethnic identity not listed: _____
- Prefer not to respond

Are you currently employed?

- Yes
- No

If not, have you been employed within the last year?

- Yes
- No

*Years of work experience at current employer (if you are employed) or most recent employer (if you are **not** currently employed): _____*

*How many technology-based devices do you use at your current place of employment or your most recent employer (if you are **not** currently employed)?*

- 1
- 2
- 3
- 4
- 5+

Industry sector in which you are currently employed or industry sector in which you were most recently employed (if you are not currently employed): _____

How many technology-based devices do you use in your daily life?

- 1
- 2
- 3
- 4
- 5+

What device are you currently using to complete this study?

- *Computer*
- *Tablet*
- *Mobile*
- *Other:* _____

Please enter your MTurk Worker ID to be used as a back-up for compensation purposes, if necessary: _____

Appendix D
IRB Approval Letter



September 3, 2019

Douglas Hein


Re: Protocol #19-004, *Technology Readiness and Job Satisfaction*

Dear Mr. Hein:

The IRB has reviewed the materials regarding your study, referenced above, and has determined that it meets the criteria for the Exempt from Review category under Federal Regulation 45CFR46. Your protocol is approved as exempt research, and therefore requires no further oversight by the IRB. We appreciate your thorough treatment of the issues raised and your timely response.

If you wish to modify your study, including the addition of data collection sites, it will be necessary to obtain IRB approval prior to implementing the modification. If any adverse events occur, please notify the IRB immediately.

Please contact our office if you have any questions. We wish you success with your project!

Sincerely,



Joanne Estes, PhD
Vice Chair, Institutional Review Board
Xavier University

JE/sb

Appendix E

MTurk Recruitment Page

The purpose of this research project is to investigate the relationship between technology readiness and work-related attitudes. In this study, you will be asked to complete a questionnaire, including items on technology readiness, attitudes at work, and demographic information. **You must either be employed or have been employed within the past year in the United States to participate in this research project.** The study should be completed **only once**. The total time to complete this task is one hour; however, most test takers will take **no more than 15 minutes** and experienced survey takers will likely complete it in **less than 5 minutes**. **If you answer all the questions, meet the study requirements, and pass all the quality checks, you will be compensated \$0.50.** Please note that you will have to **enter your survey completion code, which you will receive once you complete the study** in the box below in order to be compensated, if eligible.

Please click the link located below in order to access the survey. **After you have completed the survey and entered your unique completion code, click the “Submit” button below.**

Survey Link: [Qualtrics link will be added here]

Completion Code: [Box to enter Survey Completion Code]

[SUBMIT BUTTON]

Appendix F

Informed Consent Form

My name is Douglas Hein and you are being given the opportunity to volunteer to participate in a project conducted through Xavier University. The purpose of this study is to examine the relationship between technology readiness and attitudes at work. Participants in this study will be asked to answer questions about your willingness to adopt and utilize new technology, attitudes at work, and general demographic questions. The study should take no more than 15 minutes to complete, and experienced survey takers will likely complete it in less than 5 minutes. There are no anticipated risks for this study. Benefits to this study include \$.50 upon successful completion, adding to a novel and emerging body of research regarding technology readiness, and positively impacting employee job satisfaction in organizations as technological changes are implemented in organizations.

Nature and Purpose of the Project

The purpose of this study is to examine the relationship between technology readiness and overall job satisfaction, as well as relationships between certain aspects of technology readiness and certain aspects of job satisfaction. This is a relatively under-explored area of research and findings will significantly contribute to the technology readiness body of research.

Why You Were Invited to Take Part

You were invited to take part in this study because you are an MTurk user.

Study Requirements

To participate in this study, you must be currently employed or have been employed within the last year, live in the United States, be an MTurk user with a minimum of 50 Human Intelligence Tasks (HITs) completed, and have a HIT approval rating of at least .95.

Anticipated discomforts/risks

There are no anticipated discomforts or risks with this study.

Benefits

Benefits for this study include contributing to an emerging body of research regarding technology readiness.

Confidentiality/Anonymity

All responses are anonymous. No one, other than the researchers, will have access to your responses. No identifying information (e.g., your name) will be collected at any time as part of this study and therefore your answers can never be linked to you. Please note that you will be asked to enter your MTurk worker ID at the end of the survey. This is to ensure compensation can be made if the survey completion code does not display properly. Your worker ID number will be deleted from all data files prior to any analyses being conducted. Your identity will remain anonymous unless you contact me through MTurk.

Compensation

Compensation will be provided upon completion of the study and entering your survey completion code on the MTurk website. Participation in this study is voluntary, and you are free to withdraw at any point. If you do withdraw, or refuse to participate in the study, it will have no effect on future study participation. However, you will not receive the completion code to receive compensation until you finish the study. If you withdraw before that point, you will not receive compensation. If you answer all the questions, meet the study requirements, and pass all the quality checks, you will be compensated \$0.50.

If you have any questions at any time during the study, you may contact Douglas Hein at heind1@xavier.edu or his thesis advisor, Dr. Dalia Diab at diabd@xavier.edu. Questions about your rights as a research participant should be directed to Xavier University's Institutional Review Board at (513) 745-2870, or irb@xavier.edu.

You may print a copy of this form or contact Douglas Hein at heind1@xavier.edu to request a copy be sent to you.

By clicking on the arrow below, you agree to the following statement: I have been given information about this research study and have had the opportunity to contact the researcher with any questions, and to have those questions answered to my satisfaction. By completing the elements of the study as previously described to me, I understand that I am giving my informed consent to participate in this research study.

Appendix G

Debriefing Form

Thank you for taking the time to participate in this study. The purpose of this study is to investigate the relationship between technology readiness and job satisfaction.

If you have any questions about the study, you may contact the principal investigator, Doug Hein at heind1@xavier.edu, or his thesis advisor, Dr. Dalia Diab, at diabd@xavier.edu.