Autonomy :A Modern Perspective

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requirements for the degree of
Master of Science

by

RILEY SCHWANZ
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Organizational leaders want to retain employees who are healthy and motivated. Physical and mental health issues are on the rise in America for younger and older generations. Researchers have found that higher levels of autonomy relate to improved mental health, physical health, job satisfaction, performance, and the list goes on. However, a gap in the literature is a lack of understanding of the complex relationships between autonomy and outcomes, both functional and dysfunctional. I found that intrinsic motivation and autonomy support can compensate for lower levels of autonomy in one’s work. These new findings provide researchers and organizational leaders with a modern perspective on past well-established findings. Organizational leaders can directly improve their employees’ work and life outcomes by allocating resources and implementing interventions to align employees with work they enjoy and train leaders to better support their employees’ autonomy.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>The Evolution of Autonomy</td>
<td>2</td>
</tr>
<tr>
<td>Definitions</td>
<td>2</td>
</tr>
<tr>
<td>Need Theories</td>
<td>5</td>
</tr>
<tr>
<td>Debates Related to Need Theories and Autonomy</td>
<td>13</td>
</tr>
<tr>
<td>Findings and Unanswered Questions within the Autonomy, Intrinsic Motivation, and Autonomy Support literature</td>
<td>16</td>
</tr>
<tr>
<td>Autonomy</td>
<td>16</td>
</tr>
<tr>
<td>Intrinsic Motivation</td>
<td>21</td>
</tr>
<tr>
<td>Autonomy Support</td>
<td>24</td>
</tr>
<tr>
<td>Reasons for Present Study</td>
<td>26</td>
</tr>
<tr>
<td>Complex Interactive Effects Including Autonomy, Intrinsic Motivation, and Autonomy Support</td>
<td>27</td>
</tr>
<tr>
<td>Theoretical Underpinnings and Hypotheses</td>
<td>28</td>
</tr>
<tr>
<td>METHOD</td>
<td>38</td>
</tr>
<tr>
<td>Participants and Design</td>
<td>38</td>
</tr>
<tr>
<td>Measures</td>
<td>39</td>
</tr>
<tr>
<td>Procedure</td>
<td>54</td>
</tr>
</tbody>
</table>
RESULTS AND DISCUSSION .............................................................................................................. 55

Study 1 (Student Sample) Results and Discussion ...................................................................... 55
Study 1 Discussion ......................................................................................................................... 94
Study 2 (Student Sample) Results and Discussion ..................................................................... 103
Study 2 Discussion and Comparisons with Study 1 Results ....................................................... 166

GENERAL DISCUSSION ...................................................................................................................... 174

Theoretical Implications ............................................................................................................... 175
Practical Implications .................................................................................................................. 179
Limitations ..................................................................................................................................... 181
Conclusion ..................................................................................................................................... 182

REFERENCES ..................................................................................................................................... 184

APPENDICES ..................................................................................................................................... 198
<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Intrinsic Motivation and Positive Outcomes</td>
<td>30</td>
</tr>
<tr>
<td>2. Intrinsic Motivation and Negative Outcomes</td>
<td>31</td>
</tr>
<tr>
<td>3. Autonomy Support and Positive Outcomes</td>
<td>33</td>
</tr>
<tr>
<td>4. Autonomy Support and Negative Outcomes</td>
<td>33</td>
</tr>
<tr>
<td>5. Curvilinear Effects on Positive Outcomes</td>
<td>36</td>
</tr>
<tr>
<td>6. Curvilinear Effects on Negative Outcomes</td>
<td>37</td>
</tr>
<tr>
<td>7. Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Job Satisfaction in Study 1</td>
<td>63</td>
</tr>
<tr>
<td>8. Intrinsic Motivation as a Moderator of the Relationship between Job Diagnostic Autonomy and Job Satisfaction in Study 1</td>
<td>64</td>
</tr>
<tr>
<td>9. Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Well-Being in Study 1</td>
<td>67</td>
</tr>
<tr>
<td>10. Intrinsic Motivation as a Moderator of the Relationship between One-Item Autonomy and Well-Being in Study 1</td>
<td>68</td>
</tr>
<tr>
<td>11. Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Anxiety in Study 1</td>
<td>71</td>
</tr>
<tr>
<td>12. Autonomy Support as a Moderator of the Relationship between BPNS Autonomy and Anxiety in Study 1</td>
<td>77</td>
</tr>
</tbody>
</table>
13. The Curvilinear Relationship between BPNS Autonomy and Job Satisfaction in Study 1..80
14. The Curvilinear Relationship between BPNS Autonomy and Well-Being in Study 1……81
15. The Curvilinear Relationship between BPNS Autonomy and Anxiety in Study 1 ........82
16. The Curvilinear Relationship between Autonomy Support and Well-Being in Study 1.....85
17. The Curvilinear Relationship between Autonomy Support and Anxiety in Study 1.........86
18. The Curvilinear Relationship between Intrinsic Motivation and Job Satisfaction in Study 
   1.................................................................................................................................89
19. The Curvilinear Relationship between Intrinsic Motivation and Well-Being in Study 1....90
20. Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Job 
    Satisfaction in Study 2 ..................................................................................................112
21. Intrinsic Motivation as a Moderator of the Relationship between Job Diagnostic Autonomy 
    and Job Satisfaction in Study 2 ...................................................................................113
22. Intrinsic Motivation as a Moderator of the Relationship between Factual Autonomy and Job 
    Satisfaction in Study 2 ..................................................................................................114
23. Intrinsic Motivation as a Moderator of the Relationship between One-Item Autonomy and 
    Job Satisfaction in Study 2 ..........................................................................................115
24. Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Well- 
    Being in Study 2 ........................................................................................................118
25. Intrinsic Motivation as a Moderator of the Relationship between JDS Autonomy and Well- 
    Being in Study 2 ........................................................................................................119
26. Intrinsic Motivation as a Moderator of the Relationship between One-Item Autonomy and
Well-Being in Study 2 .............................................................................................................. 120

27. Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Stress in Study ........................................................................................................................................... 123

28. Intrinsic Motivation as a Moderator of the Relationship between JDS Autonomy and Stress in Study 2  .............................................................................................................................................. 124

29. Intrinsic Motivation as a Moderator of the Relationship between One-Item Autonomy and Stress in Study 2 .............................................................................................................................................. 125

30. Intrinsic Motivation as a Moderator of the Relationship between Factual Autonomy and Anxiety in Study 2 .............................................................................................................................................. 127

31. Autonomy Support as a Moderator of the Relationship between 1-Item Autonomy and Job Satisfaction in Study 2 .............................................................................................................................................. 130

32. Autonomy Support as a Moderator of the Relationship between BPNS Autonomy and Well-Being in Study 2.............................................................................................................................................. 132

33. Autonomy Support as a Moderator of the Relationship between JDS Autonomy and Well-Being in Study 2 .............................................................................................................................................. 132

34. Autonomy Support as a Moderator of the Relationship between 1-item Autonomy and Well-Being in Study 2.............................................................................................................................................. 134

35. Autonomy Support as a Moderator of the Relationship between BPNS Autonomy and Stress (Operationalized as Burnout) in Study 2 .............................................................................................................................................. 137

36. Autonomy Support as a Moderator of the Relationship between JDS Autonomy and Stress (Operationalized as Burnout) in Study 2 .............................................................................................................................................. 138
37. Autonomy Support as a Moderator of the Relationship between Factual Autonomy and Stress (Operationalized as Burnout) in Study 2 .......................................................... 139
38. Autonomy Support as a Moderator of the Relationship between 1-Item Autonomy and Stress (Operationalized as Burnout) in Study 2 .......................................................... 140
39. Autonomy Support as a Moderator of the Relationship between BPNS Autonomy and Anxiety in Study 2 ........................................................................................................... 142
40. Autonomy Support as a Moderator of the Relationship between JDS Autonomy and Anxiety in Study 2 ........................................................................................................... 143
41. Autonomy Support as a Moderator of the Relationship between 1-Item Autonomy and Anxiety in Study 2 ........................................................................................................... 144
42. The Curvilinear Relationship between BPNS Autonomy and Job Satisfaction in Study 2 ........................................................................................................... 147
43. The Curvilinear Relationship between BPNS Autonomy and Well-Being in Study 2...... 148
44. The Curvilinear Relationship between BPNS Autonomy and Stress in Study 2.......... 149
45. The Curvilinear Relationship between Autonomy Support and Well-Being in Study 2 .... 151
46. The Curvilinear Relationship between Autonomy Support and Stress in Study 2 .......... 152
47. The Curvilinear Relationship between Autonomy Support and Anxiety in Study 2....... 153
48. The Curvilinear Relationship between Intrinsic Motivation and Job Satisfaction in Study 2 ........................................................................................................... 156
49. The Curvilinear Relationship between Intrinsic Motivation and Well-being in Study 2 ... 157
50. The Curvilinear Relationship between Intrinsic Motivation and Stress in Study 2 .......... 158
51. The Curvilinear Relationship between Intrinsic Motivation and Anxiety in Study 2 .... 159
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Descriptive Statistics for Primary Predictors and Outcomes in Study 1</td>
<td>57</td>
</tr>
<tr>
<td>2. Descriptive Statistics for Autonomy Measures in Study 1</td>
<td>58</td>
</tr>
<tr>
<td>3. Descriptive Statistics for Exploratory Measures in Study 1</td>
<td>59</td>
</tr>
<tr>
<td>4. Correlations between Primary Study Variables and Exploratory Study Variables in Study 1</td>
<td>60</td>
</tr>
<tr>
<td>5. Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of Relationships between Four Autonomy Scales and Job Satisfaction in Study 1</td>
<td>62</td>
</tr>
<tr>
<td>6. Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of Relationships between Four Autonomy Scales and Subjective Well-Being in Study 1</td>
<td>66</td>
</tr>
<tr>
<td>7. Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationships between the Four Autonomy Scales and Stress (Operationalized as Burnout) in Study 1</td>
<td>69</td>
</tr>
<tr>
<td>8. Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationship between the Four Autonomy Scales and Anxiety in Study 1</td>
<td>70</td>
</tr>
<tr>
<td>9. Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Job Satisfaction in Study 1</td>
<td>73</td>
</tr>
<tr>
<td>10. Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Subjective Well-Being in Study 1</td>
<td>74</td>
</tr>
</tbody>
</table>
11. Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Stress (Operationalized as Burnout) in Study 1… ........................................................................................................................................75

12. Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Anxiety in Study 1.................................76

13. Hierarchical Regression Analyses Examining the Curvilinear Effects between Autonomy and Four Outcomes (Hypothesis 3) in Study 1.................................................................79

14. Hierarchical Regression Analyses Examining the Curvilinear Effects between Autonomy Support and Four Outcomes (Hypothesis 4) in Study 1 .................................................................84

15. Hierarchical Regression Analyses Examining the Curvilinear Effects between Intrinsic Motivation and Four Outcomes (Hypothesis 5) in Study 1 .................................................................88

16. Descriptive Statistics for Primary Predictors and Outcomes in Study 2...............................105

17. Descriptive Statistics for Autonomy Measures in Study 2 .......................................................106

18. Descriptive Statistics for Exploratory Measures in Study 2 .....................................................108

19. Correlations between Primary Study Variables and Exploratory Study Variables in Study 2 ........................................................................................................................................109

20. Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of Relationships between Four Autonomy Scales and Job Satisfaction in Study 2 ...............111

21. Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of Relationships between Four Autonomy Scales and Subjective Well-Being in Study 2.... 117
22. Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationships between the Four Autonomy Scales and Stress (Operationalized as Burnout) in Study 2 ........................................................... 122

23. Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationship between the Four Autonomy Scales and Anxiety in Study 2 .................. 126

24. Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Job Satisfaction in Study 2 ........ 129

25. Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Subjective Well-Being in Study 2 ........................................................................... 131

26. Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Stress (Operationalized as Burnout) in Study 2 ........................................................................... 136

27. Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Anxiety in Study 2................. 141

28. Hierarchical Regression Analyses Examining the Curvilinear Effects between Autonomy and Four Outcomes (Hypothesis 3) in Study 2 ................................................................. 146

29. Hierarchical Regression Analyses Examining the Curvilinear Effects between Autonomy Support and Four Outcomes (Hypothesis 4) in Study 2 .............................................. 150

30. Hierarchical Regression Analyses Examining the Curvilinear Effects between Intrinsic Motivation and Four Outcomes (Hypothesis 5) in Study 2 .............................................. 155
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DEDICATION

I dedicate this project to the many friends and family who have helped me out along the way.
Introduction

Roughly 21% of U.S. adults (52.9 million) experienced mental illness in 2020, and this percentage continues to increase (National Alliance on Mental Illness, 2021). Researchers have found consistent support for autonomy improving mental health outcomes, such as well-being, and minimizing mental health concerns, such as stress (e.g., Deci & Ryan, 2000). People can satisfy their need for autonomy in autonomy supportive environments (e.g., Williams et al., 1998), which enables people to successfully navigate ambiguous, uncertain, and stressful situations. Further, researchers have discovered that autonomy correlates positively with outcomes such as satisfaction and performance and correlates negatively with outcomes such as anxiety, depression, and ill-being (e.g., Deci & Flaste, 1995). These findings are consistent across lab, organizational, healthcare, developmental, and educational environments (e.g., Hmel & Pincus, 2002). However, future studies are needed to address important gaps in the literature. First, research has examined a linear relationship between autonomy and positive and negative outcomes, but excessive autonomy, autonomy support, and intrinsic motivation may result in diminished beneficial effects on outcomes. Second, although research has examined the need for autonomy and autonomy supportive environments (e.g., Deci, Olafsen, & Ryan, 2017), research has not yet examined interactive effects between autonomy and autonomy supportive environments. Third, aspects of the individual, such as level of intrinsic motivation, may moderate the relationship between need for autonomy and positive and negative outcomes. Thus, the purpose of my study is to examine how features of the individual and environment affect the relationship between autonomy and well-being, satisfaction, stress, and anxiety.
The Evolution of Autonomy

In the following section, I will define autonomy, intrinsic motivation, and autonomy support. Then, I will discuss and evaluate the evolution of need theories from the early 20th century to modern theories.

Definitions

Autonomy

Since ancient Greek times, people have defined and applied the term “autonomy” in different contexts (Hmel & Pincus, 2002). The Greek meaning of autonomous is self-ruling or self-governing. The notion of autonomy can be traced back to Greek states during the emergence of democracy (Hmel & Pincus, 2002). Political discussions at this time focused on fostering autonomy on the individual level (Hmel & Pincus, 2002). Within the psychology literature, Murray (1938) defined the need for autonomy as the need “to free, shake off restraint, or break out of confinement. To resist coercion and restriction, to be independent and free to act according to impulse. To defy conventions.” More recently, autonomy has been defined as one’s freedom to self-govern and to make choices from self-awareness rather than external controls (Hodgins, Koestner, & Duncan, 1996).

Self-Determination Theory Definitions. For my proposed study, I am primarily interested in Deci and Ryan’s (1985) definition of autonomy within self-determination theory (SDT). Deci and Ryan (1985) defined autonomy in terms of volition and believing that behaviors are aligned with one’s integrated sense of self, not controlled by external pressures. Deci and Ryan suggested that autonomy is a psychological need that, when satisfied, can lead to personal development and adaptability (e.g., Deci et al., 1994). People may experience need frustration and other negative outcomes when their need for autonomy is not fulfilled (e.g., Deci & Ryan, 1985). It is important to note that Deci and Ryan (1985) assessed autonomy in terms of the extent
to which one is satisfying their need for autonomy. In other words, researchers assessed one’s perceived level of autonomy, rather than one’s explicit need for autonomy (e.g., Deci & Ryan, 1985). There might be a discrepancy between assessing perceived level of autonomy and explicit need for autonomy, yet the scales researchers used to assess autonomy reflect the former (e.g., Deci & Ryan, 1985; Hackman & Oldham, 1980). Further, Deci and Ryan (1985) posited that humans have universal needs for autonomy, relatedness, and competence. Deci and Ryan (1985) defined competence as believing that one has the ability to reach an outcome or goal. A person with a high level of competence is effective and can accomplish set goals (e.g., Sheldon, Ryan, & Reis, 1996). Deci and Ryan (1985) defined relatedness in terms of developing and maintaining positive social relationships. A person high in relatedness is connected, feels loved, and contributes positively to social relationships (e.g., Kasser & Ryan, 1999).

Deci and Ryan’s (1985) model is built on the foundation of Murray’s (1938) model of needs. Murray (1938) defined a need as “a hypothetical process the occurrence of which is imagined in order to account for certain objective and subjective facts.” Murray (1938) categorized needs as being physical, such as food and water, or psychological, such as autonomy, achievement, and affiliation. Humans are motivated to satisfy their needs (Murray, 1938). The question that most need theories have attempted to answer is what those specific psychological needs are. Although autonomy has been defined in various ways, my study will investigate autonomy as a universal psychological need (e.g., Deci & Ryan, 1985).

**Intrinsic Motivation**

Researchers such as Deci (1971) and White (1959) have pioneered research on intrinsic motivation. White (1959) defined intrinsic motivation as performing a task simply to experience that enjoyment and competence from the task whereas an extrinsically motivated person is
performing a task to achieve an external reward (e.g., status, money, e.g., Deci, 1971). Further, internally motivated individuals are said to be productive, engaged, and find enjoyment in the task at hand (e.g., Eghrari et al., 1994). This line of research has shown that solely externally motivated individuals can become passive and uninterested in their work (e.g., Eghrari et al., 1994). Within SDT, Ryan and Deci (2000) identified two types of internalization: introjection and integration, when regulating tasks, behavior, and goal attainment. Introjection refers to partial internalization in which a person accepts a task or value but does not fully identify with it as their own (e.g., Eghrari et al., 1994). Integration refers to internalization that is “self-determined,” meaning that a person accepts and identifies with a task or value, which entirely becomes a part of that person’s self (e.g., Eghrari et al., 1994). Thus, Deci (1971) studied intrinsic and extrinsic motivation as being a construct on one continuum, rather than studying the constructs on separate continuums (as Herzberg did; Herzberg, Mausner, & Snydermann, 1959).

**Autonomy Support**

Williams, Rodin, Ryan, Grolnick, and Deci (1989) suggested that different environments can support different levels of autonomy. Researchers have hypothesized that an autonomy-supportive environment would ultimately lead to greater positive outcomes, relative to a controlling environment (e.g., Williams et al., 1989). For example, autonomy-supportive managers would not order or control the behavior of their employees, but they would facilitate, acknowledge feelings and insight, provide feedback, and include employees in the planning process (e.g., Deci & Ryan, 2002). An autonomy-supportive environment reflects a less controlled environment that allows a person to satisfy their need for autonomy. Further, autonomy support is not simply removing an organizational constraint from an environment, it is an active behavior that leaders carry out (e.g., William et al., 1998). Removing a constraint may
increase an employee’s perception of personal control, but the removal of a constraint might not increase perception of autonomy. Thus, people have a perception of how much autonomy they need or have whereas autonomy support is their perception regarding how much autonomy their leaders allow within certain environments. Williams et al. (1998) found that autonomy and autonomy support relate at a level of .24.

**Related Definitions.** Autonomy, self-regulation, perceived control, autonomy support, and autonomous self-regulation are terms used throughout the literature. Deci and Ryan (2006) wrote that “autonomy literally refers to regulation by the self” (p. 1). It is important to note that there is a separate line of research concerned with self-regulation. Self-regulation is defined relative to self-monitoring, goal setting, and self-reward (e.g., Bandura, 1986). SDT researchers have investigated autonomous regulation as a primary construct (e.g., Williams, Rodin, Ryan, Grolnick, & Deci, 1989). Autonomous regulation is defined relative to the concept of autonomy support, which facilitates autonomous self-regulation (e.g., Williams et al., 1989). SDT and self-regulation are separate lines of research, but one could suggest that research on autonomy within self-determination theory and self-regulation have substantial overlap. Further, perceived control is defined as the extent to which individuals believe they can influence their environment and how their belief of control influences their perceptions towards the environment (Spector, 1986). Overall, these related constructs are defined as being distinct in the literature but there may be overlap.

**Need Theories**

It is important to understand the evolution of autonomy and need theories to better understand the current state of needs-related research and application of autonomy. In 1938, Murray proposed a personality theory. Within this theory, Murray (1938) developed a
comprehensive human need model. The foundation of the need model focuses on a behavioral event that Murray outlined with the following figure:

B.S. ✗ A. ✗ E.S.

The beginning stimulus (B.S.) represents the environment at the beginning of the activity and the ending stimulus (E.S.) represents the environment at the end of the activity (Murray, 1938). A. represents the motor or verbal action within the behavioral event (Murray, 1938). For example, placing food in front of a dog (B.S.) would lead to the dog eating the food (A), which would end with food in the dog’s stomach (E.S.; Murray, 1938), thus, satisfying the hunger need of the dog. This basic model aided Murray in developing a list of primary, viscerogenic needs, and secondary, psychogenic needs (Murray, 1938). Viscerogenic needs are more physical whereas psychogenic needs are psychological (Murray, 1938). Air, food, harm-avoidance, and sentience are examples of viscerogenic needs (Murray, 1938). Aggression, autonomy, order, play, and rejection are examples of needs in Murray’s (1938) finalized list of 20 psychogenic needs. Murray (1938) stated that needs can conflict with one another and that one may or may not experience each of the needs. Further, he stated that needs can be conscious or subconscious and that there seems to be periodicity in how needs manifest in an individual (Murray, 1938). It is important to note that prior research had focused on instincts (as cited in Freud, 1925). Murray (1938) was clear that his psychogenic needs are separate from instincts. Humans have the knowing instinct to find food and water, but they may not knowingly understand what psychogenic needs ought to be satisfied (Murray, 1938).

There has been substantial research and refutation in the 80 years since the development of Murray’s taxonomy of needs (e.g., Xu, Mellor, Xu, & Duan, 2013). One major issue with Murray’s taxonomy of needs was the measurement method used to assess the individual needs.
Researchers have used the Thematic Apperception Test (TAT; e.g., Murray, 1938) to determine individual motivation, which involved listening to the stories participants told about pictures that were presented. Although, this method led to the development of more recent and reliable measures, the general coding used for the 20 needs and open response format created uncertainty for the needs that were manifesting (e.g., Megargee & Parker, 1968). The breadth of needs in the taxonomy was another major issue that led to the creation of theories with fewer and broader needs (e.g., Xu, Mellor, Xu, & Duan, 2013). Murray’s needs such as affiliation, power, and achievement have received much attention, but 11 out of the total 27 motives have received fewer than 30 citations since the creation of the theory (Xu, Mellor, Xu, & Duan, 2013). Murray may have an overabundance of needs in his theory, but the question of how many psychological needs there are remains today.

In 1943, Maslow developed a human motivation theory. Maslow (1943) stated that humans are motivated to satisfy specific needs in a specific order. Further, humans only focus on satisfying one need at a time, and humans cannot satisfy higher-order needs until lower-order needs have been satisfied (Maslow, 1943). It is evident that Maslow’s model has a defined hierarchical structure whereas Murray’s list of needs has no hierarchical structure. The physiological needs are the first group of needs that need to be satisfied (Maslow, 1943). Maslow (1943) viewed this group of needs as maintaining a physical state of homeostasis. If the physiological needs are not satisfied, then there may as well be no other existing needs (Maslow, 1943). The physiological needs are followed by the safety needs, the love needs, the esteem needs, and then the need for self-actualization (Maslow, 1943). The need for self-actualization relates to the notion of destiny, or that one is doing things that they are meant to do so that they can obtain an optimal level of happiness (Maslow, 1943). One misconception of Maslow’s
model is that people need to be 100 percent satisfied in a group of needs before moving to the
next group. However, Maslow (1943) stated in his original document that this is unrealistic.
Maslow (1943) would agree that someone can be 50% satisfied in the physiological needs
category and 5% satisfied in the esteem category, for example. He would disagree that those
percentages could be switched around for the two needs categories (Maslow, 1943).

Although researchers and the general public have accepted Maslow’s theory of
motivation, others have discovered multiple deficiencies within this theory. First, Maslow (1943)
suggested that humans are born with innate needs and that the environment drives which needs
will manifest. It is safe to say that lower-level needs, such as the need for food and water, are
innate in all humans. There is not sufficient evidence supporting that higher-order needs, such as
esthetic, intellectual, or self-actualization needs, are innate in humans (Neher, 1991). Higher-
order needs may manifest from cultural and environmental pressures rather than from birth
(Neher, 1991). Second, researchers have refuted the specific order in how humans move up the
hierarchy of needs (e.g., Neher, 1991). Humans may suffer from homelessness, illnesses, and
stretches of time without food, but these suffering humans can still develop and maintain positive
social bonds (Neher, 1991). Research throughout the 1960’s, 70’s, and 80’s has found partial to
no support for the hierarchy of needs and for the decrease of importance of needs as they are

Unlike Maslow’s (1938) need model, more recent need theories have less structure in
relation to how needs are manifested and satisfied. In 1969, Alderfer developed and tested the
existence, relatedness, and growth (E.R.G.) need model as an alternative to Maslow’s model.
Alderfer (1969) stated that humans have three core needs that are the basic elements of
motivation. Existence needs encompass the physiological and material needs for survival
(Alderfer, 1969). Relatedness needs encompass all social needs, similar to Maslow’s love and esteem needs (Alderfer, 1969). Growth needs encompass needs such as personal development, productivity, and fulfillment, replacing Maslow’s self-actualization need (Alderfer, 1969).

Further, E.R.G. theory is unique in that it contains several propositions for the relationship between needs and satisfaction (Alderfer, 1969). In this theory, level of desire can be viewed as a moderator and mediator between need frustration and need satisfaction (Alderfer, 1969). For example, the less needs are satisfied, the more they will be desired (Alderfer, 1969). Overall, Alderfer (1969) constructed a dynamic theory of three encompassing needs that can have complex relationships and are not separate from one another.

Researchers have supported and refuted various components of E.R.G. theory since its inception (e.g., Salancik & Pfeffer, 1977). One major issue with attitude research and assessing needs is the methodology. Salancik and Pfeffer (1977) have questioned E.R.G. theory methods and went as far as questioning need theories in general. After pointing out methodological issues within need theory research, they stated that “one must begin to question the concept of a need” (Salancik & Pfeffer, 1977). Alderfer (1977) has suggested that methodological issues are not specific to psychological needs theories and that these issues are prevalent across motivational theories. One could suggest that Alderfer’s (1977) three needs are too broad and lack specificity. A psychological need such as “growth” may be ambiguous, and the reliability of the data is questionable, similar to the issue with Maslow’s need for self-actualization (e.g., Salancik & Pfeffer, 1977).

Motivation-hygiene theory, or Herzberg’s two-factor theory, was published in 1959. The general concept of motivation-hygiene theory is that there are two factors that have an effect predominantly on job satisfaction (Herzberg, Mausner, & Snydermann, 1959). It is important to
note that this theory has been studied extensively in organizational contexts, similar to E.R.G theory (e.g., Alderfer, 1969; Herzberg et al., 1959). Originally, Herzberg, Mausner, and Snyderman (1959) proposed that motivation factors and hygiene factors have separate direct effects on satisfaction and dissatisfaction; therefore, satisfaction and dissatisfaction cannot be measured on the same continuum. Motivation factors include the need for growth or the need for self-actualization, which are intrinsic (Herzberg, Mausner, & Snydermann, 1959). Hygiene factors include salary, company policy, work relationships, and administrative procedures, which are extrinsic (Herzberg, Mausner, & Snydermann, 1959). Herzberg, Mausner, & Snydermann (1959) stated that motivation factors can increase job satisfaction, but their absence would not result in dissatisfaction. Acceptable levels of hygiene factors do not increase job satisfaction, but a low level of hygiene factors would result in dissatisfaction (Herzberg et al., 1959).

King (1970) suggested that the lack of specificity within Herzberg’s et al. (1959) model led to inadequate interpretations by other researchers. King (1970) tested five distinct versions of the two-factor theory. King (1970) found no support for three of the versions, and he criticized the data supporting the remaining two versions due to self-report measure error. More importantly, King (1970) found evidence for a singular satisfaction-dissatisfaction continuum. Thus, increases or decreases in motivation and hygiene factors can both result in satisfaction and dissatisfaction (King, 1970). Although there are limitations, Herzberg’s (1959) model aided in future research on extrinsic and intrinsic motivation, and his theoretical framework continues to be used.

Terror management theory (TMT) and self-determination theory (SDT) are two recent motivation theories that have built on previous decades of research (Deci & Ryan, 1985; Greenberg, Solomon, & Pyszczynski, 1986). Both theories sought to further refine previous
models to better understand why humans are motivated to satisfy certain needs (Deci & Ryan, 1985; Greenberg, Solomon, & Pyszczynski, 1986).

Over multiple decades, research relating to autonomy has emerged largely from self-determination theory (SDT; e.g., Deci & Flaste, 1995). Further, research on motivation, specifically, effects of extrinsic and intrinsic motivation influenced the development of SDT (e.g., Deci, 1971). At its center, SDT is a human motivation and human need theory (Deci & Ryan, 1985). Deci and Ryan (1985) proposed that the components of self-determination theory (competence, relatedness, and autonomy) positively correlate with an individual’s overall well-being. An individual needs to be self-governing, needs to foster positive relationships, and needs to accomplish goals, if they want to fall on the positive end of the well-being continuum (Deci & Ryan, 1985). Further, Deci and Ryan (1985) posited that an intrinsically motivated person will strive to satisfy the three needs. If a person experiences lower levels of well-being, then that person is likely to report that they are experiencing lower levels of autonomy, relatedness, and competence (e.g., Deci & Flaste, 1995). Thus, a person who experiences higher levels of these three constructs will experience higher levels of well-being throughout their life (e.g., Deci & Ryan, 1985). Psychological research on autonomy expanded in the 1970’s, 80’s, and 90’s, in contexts including children’s development, education, healthcare and well-being, equality, and work (e.g., Deci & Ryan, 1985).

Although SDT and research on autonomy has been well-established in the literature, other researchers have stated that SDT is a limited human need theory and that there are other theories that are not as limiting (e.g., Van Lange, Higgins, & Kruglanski, 2021). Humans need food and water to survive. There is not much debate about that statement. A psychological need
is a more ambiguous concept than a physical need. Moreover, there is the argument that autonomy is an ill-defined construct that is too difficult to measure (Greenberg et al., 1991).

Further, other researchers have stated that SDT is an idealistic theory that does not capture the dark sides of human nature (e.g., Greenberg et al., 1991). Many people may want to experience greater autonomy, relatedness, and competence within different contexts of life, but this may not be realistic. Greenberg, Pyszczynski, and Solomon (1991) proposed that terror management theory (TMT) better captures human reality and social behavior. TMT stated that motivation and behavior stem largely from people’s biological instinct to survive and evade death (Greenberg et al., 1986). Moreover, this theory suggested that all humans have a great amount of anxiety because of inevitable death, and satisfying the need for self-esteem helps humans cope with this anxiety (Greenberg et al., 1986). Further, humans cope with this overwhelming anxiety by accepting values, morals, and behaviors of others in their culture, regardless of whether the practices are positive or negative (Greenberg et al., 1991). Unlike SDT, TMT stated that humans internalize self-defense mechanisms to protect themselves, the difference being that there is only one form of internalization (Greenberg et al, 1986). SDT and TMT are two theories that have been studied extensively during similar time periods. SDT researchers have challenged TMT by suggesting that self-determination theory explores humans beyond growth and well-being (Ryan & Deci, 2000) and that SDT has uncovered a variety of “dark sides” of human behavior including alienation, ego-involvement, violence, damaging introjections, anxiety, fear, hate, and depression (Ryan & Deci, 2000).

These two theories overlap in certain aspects of why and how humans are motivated and behave. However, these theories are separate in their overall goal. Terror management theory is concerned with human mortality and the anxiety, coping, and behavior that comes with
inevitable death (Greenberg, 1991). Self-determination theory is concerned with needs and goals within one’s life, and the fear, sadness, and negative consequences that come with not fulfilling psychological needs and goals (Ryan & Deci, 2000). Having said that, my study will study autonomy from a self-determination theory perspective. That is, I will examine how fulfilling one’s need for autonomy in the right environment can lead to greater well-being. Before reviewing that literature, I will review how researchers have challenged the concepts of need theories and autonomy.

**Debates Related to Need Theories and Autonomy**

Researchers have challenged the construct of autonomy as being irrelevant and redundant with other streams of research (e.g., Taylor, 2005; Wegner, 2002). Autonomy is presented as a universal psychological need within self-determination theory (Deci & Ryan, 1985). With that said, it is important to note that researchers have not included autonomy in all psychological need theories (e.g., Andersen, Chen, & Carter, 2000). Opposing researchers have posited that more than the three psychological needs identified in self-determination theory are required for an encompassing theory (e.g., Andersen, Chen, & Carter, 2000). Specifically, Andersen et al. (2000) claimed that autonomy, relatedness, and competence are not accounting for all psychological needs. Andersen et al. (2000) have proposed safety, security, growth, and meaningfulness as primary constructs for bolstering SDT. First, Andersen et al. (2000) stated that safety and security are needed to achieve well-being and that the two constructs should be added to the SDT needs model. On the other hand, Deci and Ryan (2000) disregarded the distinction between safety and security and stated that security is a physical need whereas SDT is focused on psychological needs. Further, Deci and Ryan (2000) suggested that although psychological safety/security is not a psychological need, it may be an outcome of satisfying or not satisfying
the three core needs posited in SDT. Second, in SDT, researchers have examined the concept of meaning relative to integration (e.g., Deci & Ryan, 2000). An individual who is integrating behaviors, goals, and interests, can be interpreted as someone who is adding meaning to their life (Deci & Ryan, 2000). Lastly, Andersen et al. (2000) proposed that growth is another need that should be included within need theories. Ryan and Deci (2000) portrayed growth in relation to intrinsic motivation, high performance, and goal attainment within SDT. Since the inception of self-determination theory, many researchers have found consistent evidence for autonomy being a need and a distinct construct from other needs (e.g., Deci et al., 2017).

Although autonomy is a well-established need in the literature, there are researchers who have questioned the importance of autonomy altogether (e.g., Taylor, 2005). Wegner (2002) wrote that people may be unconsciously primed to initiate certain behaviors to satisfy certain needs. Further, Wegner (2002) posited that theories such as self-determination theory may not be self-determined, and he implied that humans are largely unaware of why they engage in certain behaviors. Researchers have stated that autonomy is a construct to closely related to choice, will, and freedom (Wegner, 2002; Wilson, 2002). Wegner (2002) and Wilson (2002) claimed that autonomy research is cluttering the literature. In contrast, Deci and Ryan (2006) stated that autonomy is a distinct construct that has important practical significance in psychology.

**Vague definitions.** The proliferation of terms in the need literature is an issue when determining what construct is or is not a need. Murray (1938) clearly stated that being autonomous includes being independent. In contrast, Deci and Flaste (1995) stated that independence is an entirely separate construct, and they suggested that a highly autonomous person can be highly interdependent. Specifically, Deci and Ryan (1985) suggested that a highly autonomous individual can be highly dependent on those with whom they have positive social
relationships. This distinction led to cross-cultural research that found autonomy is not solely an individualistic need (e.g., Deci, Olafsen, & Ryan, 2017). Deci et al. (2017) replicated U.S. studies in countries like Turkey, China, South Korea, and Russia. Researchers have found consistent significant relationships between high levels of autonomy and high levels of positive outcomes (e.g., Deci et al., 2017). Autonomy may be a universal need, but cultures may value the need differently. Overall, need theories began with longer lists of specific needs (e.g., Murray, 1938) and evolved into theories with fewer and broader needs (e.g., Deci & Ryan, 1985). I could propose that agency, truth, humility, and social engagement are needs, but adding more needs to recent theories will bring researchers back into the period of Murray and Maslow.

Although there are researchers who have questioned the importance of the autonomy literature, there are arguably far more researchers who have supported and recognized the importance of autonomy. Hackman and Oldham’s (1980) job characteristics theory stated that autonomy is a key work characteristic that predicts outcomes such as satisfaction and performance. Further, Hackman and Oldham (1980) posited that job characteristics, such as autonomy, enrich jobs, which results in employees who are satisfied, perform well, take pride in their work, and experience growth. Since then, many researchers have found consistent data supporting main effects between autonomy and positive outcomes (e.g., Deci & Ryan, 1985, 2000; Hackman & Oldham, 1980). In the following, I will discuss these findings in detail.
Findings and Unanswered Questions within the Autonomy, Intrinsic Motivation, and Autonomy Support literature

In the following section, I will discuss significant findings, research issues, and unanswered questions in the autonomy, intrinsic motivation, and autonomy support literature.

Autonomy

Critical Evaluation

Over the past decades, researchers have uncovered multiple positive outcomes from higher levels of autonomy, and there is little to no debate regarding these relationships (e.g., Deci & Ryan, 1985; Morgenson et al., 2005). The relationship between autonomy and well-being and between autonomy and satisfaction are arguably two of the most well-supported relationships in the autonomy literature (e.g., Morgenson et al., 2005). Other outcomes include higher performance and goal attainment (e.g., Deci & Ryan, 2000). An employee who is experiencing optimal levels of well-being is most likely not experiencing adverse mental health issues such as excessive stress, anxiety, and depression. As a note, researchers have defined work-related stress in relation to the intensity and frequency of stressful events (Motowildo, Packard, & Manning, 1986). Further, researchers have defined anxiety as a state of uncertainty, dread, or unfamiliarity with the environment (e.g., Motowildo, Packard, & Manning, 1986). Psychologists have studied autonomy in a variety of contexts (e.g., Strauss & Ryan, 1987). One outcome of autonomy, well-being, can be defined as a state of being content and healthy, including psychological health and physical health (Strauss & Ryan, 1987). The general hypothesis is that the healthiest people are the ones who want to grow, contribute to their family and community, and develop positive relationships (Strauss & Ryan, 1987).
**Healthcare.** Researchers have conducted a wide array of autonomy related studies in the healthcare context, which has led to consistent support for higher levels of autonomy predicting improved mental and physical health (e.g., Deci & Ryan, 1985). The specific studies presented below show how researchers have applied autonomy in the earlier healthcare-related studies and how that has influenced recent studies. Further, researchers have conducted studies on autonomy supportive healthcare practitioners, which will be discussed in a subsequent section.

For example, Strauss and Ryan (1987) conducted one of the first studies investigating the effects of autonomy on anorexia nervosa. The anorexic group, compared to the control group, exhibited a controlled style of behavior rather than an autonomous style (Strauss & Ryan, 1987). Moreover, analyses of the data showed that those with anorexia tended to have poorer “self-and-other differentiation,” experienced more conflict and anxiety, and exhibited less interpersonal expressive communication (Strauss & Ryan, 1987). The quasi-experimental design of this study is a limitation. Researchers could not conclude whether levels of perceived autonomy caused anorexic-like behaviors. With that said, this study was foundational for more recent research that investigated relationships between autonomy and well-being over longer periods of time (e.g., McGinnis, 1993; Silva et al., 2011).

Autonomy and well-being research quickly expanded into the healthcare setting largely in the late 1990’s and into the 2000’s (e.g., Williams, 2002). The American healthcare system is arguably on the forefront of biomedical research, and medical researchers have discovered effective treatments for countless illnesses and diseases. However, preventative illnesses due to poor behavior have cost the lives of millions of Americans. About two million Americans died in 1990 (McGinnis, 1993). Roughly 860,000 out of the two million people died due to tobacco use, diet and exercise issues, alcohol abuse, and preventable infections like HIV (McGinnis, 1993).
Americans have a high failure rate when attempting to lose weight, practice safe sex, or quit smoking when following their doctors’ advice and prescribed medications and daily regimes (McGinnis, 1993). Often, failure to achieve treatment goals lies not within the body of scientific knowledge but in the behavior of the patient (Williams, 2002). This observation led to research on how patients who feel in control of their treatment plan generally are more successful at following their plan. In general, researchers have found that autonomous patients, in contrast to patients who believed their behavior is controlled, achieve higher levels of positive outcomes, such as mental and physical health (e.g., McGinnis, 1993; Silva et al., 2011; Williams, 2002). Further into the 2000’s, researchers have conducted similar autonomy-related studies in the workplace and found results consistent with previous healthcare studies (e.g., Muller & Niessen, 2019).

**Work.** Deci and Ryan (1985) developed SDT within social psychology. However, the most recent studies that include SDT concepts, specifically autonomy, are within organizational contexts. I will apply SDT and autonomy in the organizational context. The following studies are included to show how researchers have recently applied SDT in the workplace, what issues they experienced, and what questions remain.

For example, Morgenson, Delaney-Klinger, and Hemingway (2005) sought to understand whether higher levels of job autonomy, cognitive ability, and related skill predicted job performance and role breadth. Past researchers have suggested that an individual who is taking on extra roles, or is experiencing greater role breadth, also is experiencing higher levels of job satisfaction (e.g., Hackman & Oldham, 1975). Moreover, when an employee is higher in autonomy, they will most likely seek new tasks and mastery of new skills, resulting in greater role breadth (e.g., Morgenson et al., 2005). In this study, researchers have found that higher
levels of autonomy predicted higher job satisfaction, performance, and role breadth (Morgeson et al., 2005).

The above study is limited because researchers solely investigated administrative positions (Morgenson et al., 2005). This brings into question the representativeness of the data. Administrative positions are arguably in a narrow-breadth job family with moderate-to-low complexity. Possibly, people in less complex positions may have greater capacity or desire to increase their role breadth. This may not be the same for people in highly complex positions. People in highly complex roles with high role breadth may experience higher satisfaction if they reduce role breadth by offloading uninteresting tasks. Moreover, performance within critical job tasks may increase if people in high complexity positions could narrow the scope of their job. Future studies could expand this study by investigating a wider array of job families and job complexities. The larger issue here is that people likely have different needs for autonomy, and different environments likely support different levels of autonomy. My study will contribute to the literature by increasing understanding of potential interactive relationships between autonomy, autonomy supportive environments, and positive and negative outcomes.

Kim and Stoner (2008) conducted one of the earlier studies that examined interactive effects between autonomy and negative outcomes in the workplace. Specifically, Kim and Stoner (2008) hypothesized that job autonomy would be negatively related to burnout, role stress, and turnover intention. Kim and Stoner (2008) reported that autonomy moderated the relationship between role stress and burnout. That is, someone who has high stress and low autonomy is more likely to quit their job rather than someone who is high in autonomy (Kim & Stoner, 2008). Overall, this study found that workers can deal with high levels of stress and have little intention to quit, if they have greater autonomy (Kim & Stoner, 2008).
**Issues and Unanswered Questions**

The previous findings suggest that increased work autonomy relates to an increase in positive outcomes and relates to a decrease in negative outcomes (e.g., Deci & Ryan, 1985, 2000; Kim & Stoner, 2008; Morgenson et al., 2005). Thus, research has revealed a positive linear relationship between autonomy and outcomes, such as satisfaction, well-being, motivation, and performance (e.g., Deci & Ryan, 1985, Deci & Ryan, 2000). However, there may be cases in which people have too much autonomy in their work. If these cases exist, then researchers may have to rethink their ideas about the relationship between autonomy and positive and negative outcomes. Research has not yet examined curvilinear relationships between these main effects. In my study, I will examine curvilinear relationships between autonomy and satisfaction, well-being, stress, and anxiety. Further, I will examine whether intrinsic motivation and autonomy support moderate the relationship between autonomy and outcomes. In the following, I will review the intrinsic motivation and autonomy support literature prior to proposing my hypotheses and theoretical underpinnings.
**Intrinsic Motivation**

**Critical Evaluation**

Similar to autonomy, researchers have found that higher levels of intrinsic motivation relate to higher levels of positive outcomes (e.g., Deci, 1971). Deci (1971) stated that his early work on intrinsic and extrinsic motivation led into the development of self-determination theory (Deci & Ryan, 1985). In the following, I will review important findings from the intrinsic motivation literature.

Deci conducted a study in 1971 on forms of motivation, which turned into a seminal study that influenced the development of self-determination theory. I will review this article in detail to show how this study affected recent applications of SDT and how these applications have affected my hypotheses involving autonomy and intrinsic motivation. Deci (1971) suggested that external rewards can decrease one’s intrinsic motivation. Prior to Deci’s study, Festinger and deCharms’ research throughout the 1950’s and 1960’s similarly theorized that when an intrinsically motivated person is exposed to external rewards, the locus of control shifts from personal interest and self-determination to the person being a “pawn” to the external rewards (deCharms, 1968; Festinger, 1976). Deci (1971) hypothesized that the removal of the external reward would cause an individual’s motivation to decrease below the initial level.

Deci (1971) conducted laboratory and field studies to test how external rewards affected an individual’s level of intrinsic motivation. Deci (1971) predicted that the introduction and removal of money (external reward) would ultimately decrease intrinsic motivation and that the introduction and removal of positive feedback and reinforcement (external reward) would ultimately not decrease intrinsic motivation. The results supported the hypotheses. In Study 1, participants in the experimental group and the control were instructed to complete puzzle

21
configurations in 13 minutes followed by an eight-minute free-choice period, which allowed students to choose between continuing to complete puzzles or reading various magazines (Deci, 1971). The experimental group had no external reward (money) in Session 1, an external reward in Session 2, and the external reward was removed in Session 3. The control group received no external rewards across the three sessions. Deci (1971) found that experimental group increased their free time spent from Session 1 (no external reward) to Session 2 (external reward) and then decreased their free time spent from Session 2 (external reward) to Session 3 (external reward removed). In contrast, the control group who received no external reward spent a similar amount of time completing puzzle configurations in the free-choice period across the three sessions. In field studies replications (i.e., Studies 2 and 3), Deci (1971) also found that the introduction of positive feedback and reinforcement increased intrinsic motivation. However, Deci (1971) found that intrinsic motivation did not significantly decrease when positive feedback and reinforcement were removed.

**Issues and Unanswered Questions**

One issue with Deci’s (1971) study was that he suggested that free time spent is a valid measure of intrinsic motivation. Specifically, Deci (1971) suggested that the longer participants worked on puzzles, the more intrinsically motivated they were. However, an intrinsically motivating task for one person may not be intrinsically motivating for another person. Issues such as this one shifted researchers from examining free time spent in the lab to examining more specific variables over longer periods of time. For example, Sheldon and Elliot (1998) allowed participants to set their own intrinsically motivating goals and examined which variables led to participants either achieving or not achieving their goals.
Deci’s (1971) findings influenced my proposal to examine complex relationships between autonomy, intrinsic motivation, and outcomes. Deci showed how the introduction and removal of external rewards can have a significant effect on one’s level of intrinsic motivation (Deci, 1971). Deci (1971) found that external rewards, such as money, can be beneficial and extrinsically motivating. However, without intrinsic motivation and internal rewards, motivation, interest, satisfaction, and productivity will most likely decrease over time (Deci, 1971). In general, research has shown effects of intrinsic motivation on outcomes (e.g., Deci & Ryan, 1985; Sheldon & Elliot, 1998). I suggest that intrinsic motivation may have more complex relationships with other predictors, such as autonomy, which may alter researchers’ perspectives on findings from past studies, such as Deci’s (1971) study. With that said, research on intrinsic motivation did not end here. There is a vast body of research on intrinsic motivation. For example, researchers have expanded on this study by investigating field contexts, and those findings have supported that higher intrinsic motivation is related to positive outcomes, such as satisfaction and well-being (e.g., Deci & Ryan, 2002; Elliot & Dweck, 1988; Plant & Ryan, 1985). Future directions of motivation research could expand on how individual and cultural differences affect intrinsic and extrinsic motivation.

To conclude, research on motivation has led to well-established results relating to effects of internal and external rewards (Deci & Ryan, 1985; Deci & Flaste, 1995). A critical finding is that higher intrinsic motivation is associated with higher positive outcomes, and lower intrinsic motivation is associated with lower interest, enjoyment, satisfaction, and performance (Deci, 1971; Deci & Flaste, 1995; Deci & Ryan, 1985). I would agree that intrinsic motivation is necessary for reaching higher levels of positive outcomes. However, research has not examined
intrinsic motivation as a moderator between autonomy and criterion variables. Next, I will review autonomy support before discussing interactive effects in my proposed model.

**Autonomy Support**

**Critical Evaluation**

Research has found that autonomy supportive environments allow people to satisfy their need for autonomy, leading to increased satisfaction, goal attainment, and well-being (e.g., Deci & Ryan, 1985; Morgenson, Delaney-Klinger, and Hemingway, 2005; Sheldon & Elliot, 1998). Further, a lack of autonomy support, or too many external controls, is associated with increased stress, anxiety, and ill-being (e.g., Deci & Ryan, 1985; Sheldon & Elliot, 1998; Morgenson, Delaney-Klinger, & Hemingway, 2005; Williams et al., 1998). Similar to autonomy, researchers have expanded autonomy support studies to healthcare and more recently, organizational contexts. Below, I have outlined what researchers have observed in these settings and what is still unknown.

Deci and Ryan (2002) hypothesized that an autonomy-supportive practitioner-patient relationship would lead to better success in following prescribed regimes. For example, an autonomy-supportive doctor would not order or control the behavior of their patient, but they would facilitate and include the patient in the planning process (e.g., Deci & Ryan, 2002). William et al. (1998) conducted a transitional study that influenced later healthcare and organizational autonomy support studies. William et al. (1998) examined the effect of having an autonomy-supportive physician for predicting actual medical adherence. At the time of this study, it was estimated that only 50% of patients were taking the correct amount of medication in the United States (William et al., 1998). In this study, an autonomy-supportive practitioner was defined as someone who acknowledges feelings, reduces external controls, and offers choice
The data showed that autonomy predicted medication adherence, and perceptions of an autonomy-supportive practitioner were significantly related to medication adherence (William et al., 1998).

Although researchers have found significant results for autonomy-support predicting medication adherence (e.g., William et al. 1998), there are real-world application issues. First, minute clinics and newly created web-based medical services are designed to rapidly move people through the system. Doctors may simply not have enough time or resources to offer choices, acknowledge feelings, ask additional questions, and collaborate with their patients. Second, psychological and medical professionals may agree that an autonomy-supportive practitioner is more effective than a controlling practitioner. With that said, there is a gap between this scientific knowledge and medical school education. Future research ought to investigate the extent to which medical students are being trained to be autonomy-supportive practitioners, if at all.

More recently, researchers have conducted longitudinal studies to better assess the beneficial effects of autonomy support (e.g., Silva et al., 2011). For example, Silva et al. (2011) investigated obese women over three years to determine whether autonomy supportive interventions increased perceived autonomy support and in turn exercise behavior. Exercise behavior related to the intensity and duration of exercise, which was found to predict actual weight loss (Silva et al., 2011). Autonomy supportive interventions included increasing a person’s autonomy support by acknowledging feelings, allowing choice, and including participants in planning process (Silva et al., 2011). Researchers have found that autonomous regulating behaviors are significant mediators when it comes to positive lifestyle change and long-term weight loss (e.g., Silva et al., 2011). Researchers have found consistent data
supporting the beneficial outcomes of autonomy supportive environments (e.g., Ryan & Deci, 1997, 2006; Silva et al., 2011)

**Issues and Unanswered Questions**

Research has found that autonomy supportive environments allow people to be autonomous, which leads to improved mental and physical well-being (e.g., Deci & Ryan, 1985; Silva et al., 2011; Williams et al., 1998). Thus, organizations have the potential to improve their employees’ well-being by creating environments that allow them to be autonomous (e.g., Ryan & Deci, 2000; Kim & Stoner, 2008). I suggest that organizations should understand that their employees are individuals who vary in their need for autonomy, and they vary in the amount of autonomy support they require. Hobfoll’s (1989) conservation of resources theory provides evidence for autonomy support as a moderator of the relationship between autonomy and positive and negative outcomes. Conservation of resource theory stated that individuals who maintain high levels of resource will have the ability to successfully navigate stressful conditions, which may result in increased positive outcomes. However, someone who has insufficient levels of resources will experience increased stress and anxiety. I consider autonomy support to be a resource (Hobfoll, 1989). In my study, I will examine the interaction between autonomy and autonomy support, which will aid in understanding how this relationship may lead to functional or dysfunctional outcomes. In the next section, I will propose a model that will account for three important gaps that I have mentioned previously. Moreover, I will discuss theoretical explanations that support the purposes behind my hypotheses.

**Reasons for Present Study**

Overall, researchers have studied autonomy in a variety of contexts over the past century (e.g., Murray, 1938; Ryan & Deci, 2017). There are several reasons for why future research on
autonomy may help researchers better understand the true nature of the construct. I will attempt to address the following gaps with my study. First, I will examine whether established main effects are involved in more complex relationships. Second, I will examine the extent to which psychological constructs such as need for autonomy, objective autonomy, autonomy support, overlap. Third, I will examine certain individual differences, specifically, how aspects of the individual match or mismatch with aspects of the environment.

**Research Questions**

I posed two research questions. Prior research has not addressed whether autonomy, autonomy support, and intrinsic motivation account for unique incremental variance over each other and over related constructs. Thus, there was not research evidence to support a specific prediction. However, examining unique incremental variance will help researchers and organizational leaders better understand which individual needs and behaviors are important for increasing satisfaction and well-being and to what extent their effects are overlapping versus independent.

**Research Question:** Do autonomy, autonomy support, and intrinsic motivation account for unique incremental variance over each other and over related constructs?

**Complex Interactive Effects Including Autonomy, Intrinsic Motivation, and Autonomy Support**

In the following section, I will review important issues in the literature and explain how my model will address these issues. Researchers have found that autonomy relates negatively to negative outcomes, such as stress, anxiety, and burnout, and relates positively to positive outcomes, such as job satisfaction and well-being (e.g., Deci & Ryan, 2000, Deci & Ryan, 2017). Researchers have not examined curvilinear relationships between autonomy and criterion
variables, yet curvilinear relationships may be the case in certain environments. Further, researchers have begun to investigate more complex mediated and moderated relationships to better understand the nature of autonomy (e.g., Ghanayem, Srulovici, & Zlotnick, 2020). I will test the presence of interactions to better understand the nature of autonomy and related variables (e.g., Aiken & West, 1991; Barron & Kenny, 1986; Dawson, 2014). My study will contribute to the literature by examining whether levels of autonomy support and intrinsic motivation moderate the relationship between autonomy and criterion variables. That is, I will examine whether autonomy support and intrinsic motivation affect the strength of relationships between autonomy and positive outcomes, i.e., well-being and satisfaction. Moreover, I will examine whether autonomy support and intrinsic motivation affect the strength of relationships between autonomy and negative outcomes, i.e., stress and anxiety. Also, I will examine whether relationships between these predictors and outcomes are curvilinear. Thus, I will examine more complex relationships involving autonomy in an attempt to better understand the role of autonomy in employees’ well-being and other organizational outcomes.

Theoretical Underpinnings and Hypotheses

Intrinsic Motivation as a Moderator

Intrinsic Motivation and Positive Outcomes. I predict that intrinsic motivation will strengthen the relationship between autonomy and positive outcomes, such as satisfaction and well-being. As mentioned above, researchers have found consistent evidence that higher autonomy is associated with higher satisfaction and well-being and lower stress and anxiety (e.g., Deci & Ryan, 2000; Hackman & Oldham, 1980). With that said, a person may have all the autonomy they want in a position. However, if they have no interest in or enjoyment of the task at a hand, then having low or high levels of autonomy might be irrelevant for predicting
satisfaction and well-being. Highly intrinsically motivated employees enjoy and have interest in their work, and they will be more willing in general to put forth cognitive effort in their work. Thus, the expected beneficial effects (satisfaction and well-being) associated with higher autonomy likely will improve with increasing levels of intrinsic motivation.
**Figure 1**

*Intrinsic Motivation and Positive Outcomes*

![Graph showing the relationship between intrinsic motivation and satisfaction and well-being](image)

*Note.* X axis represents predictor variable, Y axis represents outcome variables.

**Hypotheses 1a and 1b:** Intrinsic motivation moderates relationships between autonomy and a) satisfaction and b) subjective well-being.

**Intrinsic Motivation and Negative Outcomes.** Lower intrinsic motivation may lead to higher stress and anxiety. Rotter’s (1966) theory on locus of control stated that people with higher internal locus of control believe that they have high levels of control over the outcomes in their life. In general, people with higher internal locus of controls experience more beneficial outcomes (Rotter, 1966). People who have a higher need for autonomy likely also believe they have higher perceived control in their environment whether they do or do not. In contrast, an employee who has little interest in their work tasks but has a high level of autonomy may experience cognitive dissonance (Festinger, 1957). Festinger (1957) described cognitive dissonance as contradictory feelings, actions, and beliefs, and posited that cognitive dissonance may result in increased negative outcomes, such as stress. Highly autonomous employees most likely believe they have a high level of perceived control over their environment (e.g., Deci &
Ryan, 1985; Seligman, 1975). However, if employees are not intrinsically motivated to complete the tasks they need to complete, then they may believe their behavior is dictated by external controls. Specifically, they may complete tasks due to perceived external pressure from their supervisor, out of fear of being punished or losing their position, rather than completing tasks due to being intrinsically motivated. Cognitive dissonance between perceived personal control and perceived external control might result in increased levels of stress and anxiety (Festinger, 1957; Seligman, 1975). Thus, the expected decrease in negative outcomes (stress and anxiety) associated with higher autonomy likely will weaken with decreasing levels of intrinsic motivation. Further, higher levels of intrinsic motivation will inoculate people against detrimental effects of cognitive dissonance, resulting in lower levels of stress and anxiety, regardless of level of autonomy.

Figure 2

*Intrinsic Motivation and Negative Outcomes*

*Note.* X axis represents predictor variable, Y axis represents outcome variables.
Hypotheses 1c and 1d: Intrinsic motivation moderates relationships between autonomy and c) anxiety and d) stress.

Autonomy Support as a Moderator

I predict that autonomy support will moderate the relationship between autonomy and criterion variables. As mentioned above, Hobfoll’s (1989) conservation of resource theory provides evidence for autonomy support as a moderator of relationships between autonomy and positive and negative outcomes. If levels of autonomy and autonomy support match, then that person will experience optimal levels of satisfaction and well-being. Indeed, a person with a lower need for autonomy and lower autonomy support, or a person with a higher need for autonomy and higher autonomy support, most likely will experience higher levels of satisfaction and well-being. If there is not a match, then a person likely will put forth additional resources to attempt to correct the mismatch. Putting forth additional internal resources might lead to decreased satisfaction and well-being and increased stress and anxiety (e.g., Hobfoll, 1989). The job demands-resources model (Demerouti & Bakker, 2001) leads to similar conclusions. That is, analogous to conservation of resources theory, the job demands-resources model stated that there are a wide array of positive and negative outcomes that result from matching versus mismatching resources and demands (Demerouti & Bakker, 2001). For example, too much of a resource (e.g., autonomy support) might overwhelm an employee who has a lower need for autonomy. Alternatively, too little of a resource (autonomy support) might not sufficiently support the individual’s need for autonomy. Both cases likely result in higher stress and anxiety. Thus, a matched level of autonomy and autonomy support likely will result in higher satisfaction and well-being and lower stress and anxiety (e.g., Deci & Ryan, 1985; Hobfoll, 1989).
Figure 3

**Autonomy Support and Positive Outcomes**

![Graph showing the relationship between autonomy support and positive outcomes](image)

*Note.* X axis represents predictor variable, Y axis represents outcome variables.

**Hypotheses 2a and 2b:** Autonomy support moderates relationships between autonomy and a) satisfaction and b) well-being.

Figure 4

**Autonomy Support and Negative Outcomes**

![Graph showing the relationship between autonomy support and negative outcomes](image)

*Note.* X axis represents predictor variable, Y axis represents outcome variables.
**Hypotheses 2c and 2d:** Autonomy support moderates relationships between autonomy and c) anxiety and d) stress.

**Curvilinear Effects on Model**

As I have alluded to earlier, there may be situations in which individuals experience too much of a good thing. Warr (1987) proposed that too much of a beneficial job characteristic, such as autonomy, may result in harmful outcomes related to mental and physical health. Specifically, Warr (1987) hypothesized that mental health variables, such as employee well-being, might be compromised with increases in job characteristics. Warr (1987) stated that there is an optimal amount of “job vitamins” (characteristics), i.e., job characteristics that are related to job-related mental health, including autonomy, competence, aspiration, integrated functioning, and well-being. The Vitamin Model challenged past job characteristics models such as Hackman and Oldham’s (1980) Job Characteristics Model, which proposed a linear relationship between autonomy and beneficial employee outcomes.

Similar to Warr (1987), I recognize that there are situations in which individuals may be experiencing too much of a certain variable, whether that be autonomy, autonomy support, or intrinsic motivation. These variables might not have a linear relationship with criterion variables. Increasing levels of autonomy, autonomy support, and intrinsic motivation might result in a diminishing beneficial effect on satisfaction and subjective well-being. Once an individual reaches optimal levels of autonomy, autonomy support, and intrinsic motivation, further increases in these variables might not lead to further increases in satisfaction and well-being. Warr’s (1987) vitamin model stated that there is an appropriate amount of job characteristics and proposed that too much of a good thing may lead to dysfunctional outcomes (quadratic relationship). However, most likely there are few people who suffer from having too much
autonomy or too much enjoyment. Most likely, there are other job characteristics that may need to be considered to achieve higher levels of satisfaction and well-being or there may be a diminishing return effect (Edwards, 2008). Thus, other job characteristics, such as task variety or safety, may need to be included to continuously reach higher levels of satisfaction and well-being.

Further, person-environment fit theory stated that aspects of the individual match or do not match with certain environments (Edwards, 2008). Optimal “matching” of individual aspects and environmental aspects should be associated with positive outcomes (e.g., well-being), and poorer matches should be associated with negative outcomes (Edwards, 2008). Individual aspects include needs, values, goals, interests, characteristics, and expectations (Edwards, 2008). Too little or too much of these aspects might negatively influence the optimal relationship between individual aspects and certain environments (Edward, 2008). Deviating from the optimal levels may result in an increase in negative outcomes such as stress and anxiety (Edwards, 2008). With that said, lower levels of autonomy, autonomy support, and intrinsic motivation might not lead to respective increases in stress and anxiety. There are many other factors and job characteristics that may be accountable for further increases in stress and anxiety, such as role overload or abusive coworkers. Overall, too much of a good thing might result in diminishing increases in satisfaction and well-being. Moreover, too much of a good thing might result in diminishing decreases in stress and anxiety. In other words, increases in autonomy might have diminishing beneficial effects on reducing stress and anxiety.
Figure 5

*Curvilinear Effects on Positive Outcomes*

Note. X axis represents predictor variable, Y axis represents outcome variables. IM = intrinsic motivation, AS = autonomy support.
**Figure 6**

Curvilinear Effects on Negative Outcomes

Note. X axis represents predictor variable, Y axis represents outcome variables. IM = intrinsic motivation, AS = autonomy support.

**Hypothesis 3a-3d:** Autonomy has a positive curvilinear relationship with a) satisfaction and b) well-being and a negative curvilinear relationship with c) anxiety and d) stress.

**Hypothesis 4d-4d:** Autonomy support has a positive curvilinear relationship with a) satisfaction and b) well-being and a negative curvilinear relationship with c) anxiety and d) stress.

**Hypothesis 5a-5d:** Intrinsic motivation has a positive curvilinear relationship with a) satisfaction and b) well-being and a negative curvilinear relationship with c) anxiety and d) stress.
Method

In this section, I will review the method for Study 1 (student sample) and Study 2 (Mechanical Turk sample; https://www.mturk.com/; Aguinis, Villamor, & Ramani, 2020). Except for the participants and design sub-section, I included information for Study 1 and Study 2 together because the measures, procedures, proposed analyses, and expected results are the same for both studies. However, I excluded measures for counterproductive work behavior, growth-need-strength, and the comprehensive health rating to lower the item count for Study 2. It was apparent that these measures were not critical exploratory measures in terms of theoretical underpinnings, and my analyses resulted in weak bivariate correlations with other exploratory and primary measures. I have indicated where there are minor wording changes in items or survey instructions to make the measure more appropriate for use with each sample.

Participants and Design

Study 1

For Study 1, I recruited students through a midwestern university to complete an online survey study using SONA. The age range of the participants fell between 18-26 years old. Participants needed to be at least 18 years old to complete the survey study, and they had to be working at least part-time (at least 15 hours/week). Participants needed to be working in their current position for at least 6 months Participants had to speak and read English to be included. Further, participants were required to have corrected to normal vision to be included in my study. I collected demographic data on gender, age, ethnicity, year in school, international status, industry, work modality, number of hours worked per week, and number of months worked with current employer. I needed a sample of at least \( N = 434 \) to detect an effect size of .03 (\( f^2 \)), which
is near to the standard change in delta of .02. This was indicated by a G*Power analysis (F test, linear multiple regression, a priori, $\alpha = .05$, power = .80).

**Study 2**

For Study 2, I solicited participants through Mechanical Turk (MTurk), an online survey administration platform. The age range of the participants fell between 18-65 years old. Participants needed to be at least 18 years old to complete the survey study, and they had to be working a full-time position (at least 35 hours/week). Participants needed to be working in their current position for at least 6 months. Participants had to be American-English speakers and readers to be included. Further, participants were required to have corrected to normal vision to be included in my study. I collected demographic data on gender, age, country of residence, ethnicity, citizenship, education level, work modality, years of work experience, industry, and number of hours worked per week. I needed a sample of at least $N = 434$ to detect an effect size of .03 ($f^2$), which is near to the standard change in delta of .02 (e.g., a Cohen’s D). This was indicated by a G*Power analysis (F test, linear multiple regression, a priori, $\alpha = .05$, power = .80).

**Measures**

**Demographics**

For Study 1, I collected demographic data on gender, age, ethnicity, year in school, international status, industry, work modality, number of hours worked per week, and number of months worked with current employer. For Study 2, I collected demographic data on gender, age, country of residence, ethnicity, citizenship, education level, work modality, years of work experience, industry, and hours worked per week. (see Appendix A).
Predictors

Autonomy, Competence, and Relatedness. I used the Basic Psychological Need Satisfaction Scale (BPNS) to measure autonomy (Deci, Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001; Ilardi, Leone, Kasser, & Ryan, 1993; Kasser, Davey, & Ryan, 1992). Researchers developed the BPNS scale to measure the three universal psychological needs posited within SDT (Deci & Ryan, 1985). Although relatedness and competence are not included in my model, I used the entire 21 item scale to enable testing relatedness and competence in exploratory analyses. Participants responded using a seven-point scale ranging from 1 = not at all true to 7 = very true. Items 5, 11, and 20 (for autonomy) were reverse scored by subtracting the participant’s response from eight. Items 3, 14, and 19 (for competence) were reverse scored by subtracting the participant’s response from eight. Items 7, 16, and 18 (for relatedness) were reverse scored by subtracting the participant’s response from eight. After reverse-scoring, item scores were averaged to create the score for each of the three subscales. Higher scores indicated higher levels of autonomy, competence, and relatedness. An example item for autonomy was “I feel I can make a lot of inputs to deciding how my job gets done.” An example item for competence was “When I am working I often do not feel very capable.” An example item for relatedness was “People at my job are pretty friendly towards me.” I rewrote the items by replacing “work” with “my job.” I revised the items to include “my job” rather than “work” because “work” is more ambiguous than “my job” and rewording helped me maintain consistency across measures.

Researchers have found evidence of criterion-related validity for the BPNS, and they have found that items load appropriately onto factors across a variety of contexts, including Spanish workers, French adults, and German children (Abós Catalán, Sevil Serrano, Julián...
Clemente, Martín-Albo, & García-González, 2017; Deci, Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001; Sturm, Bachner, Haug, & Demetriou, 2020; Vanhove-Meriaux, Martinent, & Ferrand, 2019). The internal consistency reliability was adequate (competence $\alpha = .73$, relatedness $\alpha = .84$, autonomy $\alpha = .79$; Deci, Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001; see Appendix B).

**Factual Autonomy.** I used Spector and Fox’s (2003) Factual Autonomy Scale to measure a more objective form of autonomy. The scale contains 10 items measured on a five-point scale ranging from 1 = never to 5 = extremely often or always. All items were reverse scored by subtracting a participant’s response by six. A higher overall score indicated a higher level of autonomy. After reverse-scoring, items were averaged to create scale scores. An example item was “How often does someone tell you what you are to do?” Researchers have found evidence for superior convergent validity compared to the Job Diagnostic Survey (Hackman & Oldham, 1975; Spector & Fox, 2003). The internal consistency reliability for the scale was adequate ($\alpha = .87$; Spector and Fox, 2003; see Appendix C).

**Job Diagnostic Survey.** I used Idaszak and Drasgow’s (1987) modification of the Job Diagnostic Survey (Hackman & Oldham, 1975) to measure autonomy as a job dimension. The autonomy subscale contains three items measured on a seven-point scale ranging from 1 = very inaccurate to 7 = very accurate. No items were reverse scored. A higher score indicated a higher level of autonomy. Items were averaged to create scale scores. An example item was “The job gives me a chance to use my personal initiative or judgement in carrying out the work.” Researchers have found evidence that items load appropriately onto the factor for samples including students and American workers (e.g., Hackman & Oldham, 1975, Idaszak & Drasgow,
1987). The internal consistency reliability was adequate (α = .80; Idaszak & Drasgow, 1987; see Appendix D).

One-Item Autonomy Scale. I used Campion’s (1988) Multimethod Job Design Questionnaire to measure autonomy as a job dimension. The autonomy subscale contains one item measured on a five-point scale ranging from 1 = strongly disagree to 5 = strongly agree. A higher score indicated a higher level of autonomy. The item was “The job allows freedom, independence, or discretion in work scheduling, sequence, methods, procedures, quality control, or other decision making.” Although I am using one item from the questionnaire, researchers have found evidence for items loading appropriately onto their respective factors for samples with American workers (e.g., Edwards, Scully, & Brtek, 1999; see Appendix E).

Autonomy Support. I used Deci and Ryan’s (1987) Work Climate Questionnaire to measure autonomy support. The climate questionnaire contains 15 items measured on a seven-point scale ranging from 1 = strongly disagree to 7 = strongly agree. Item 13 was reverse scored by subtracting the participant’s response by eight. A higher score indicated a higher level of autonomy support. After reverse-scoring, items scores were averaged to create scale scores. An example item was “My supervisor listens to how I would like to do things” (Deci & Ryan, 2000). I reworded an item by replacing “work” with “my job.” I revised the items to include “my job” rather than “work” because “work” is more ambiguous than “my job” and rewording helped me maintain consistency across measures. Researchers have found evidence that items load appropriately onto the factor for samples including American managers and employees, teachers and students, and doctors and patients (Deci, Connell, & Ryan, 1989; Deci & Ryan, 1987; Gillet, Vallerand, & Lafrniere, 2012; Williams, Lynch, McGregor, Ryan, Sharp, & Deci, 2006).
internal consistency reliability for the scale was adequate ($\alpha = .80$; Baard & Deci, 2004; see Appendix F).

**Intrinsic Motivation.** McAuley, Wraith, and Duncan’s (1991) scale was used to measure intrinsic motivation. Participants responded to the 21 items on a seven-point scale ranging from $1 = \text{strongly disagree}$ to $7 = \text{strongly agree}$. The scale contained five facets of intrinsic motivation: interest/enjoyment, effort/importance, competence, pressure/tension, choice. Items 7, 8, 9, 10, 13, 14, 17, 18, and 21 were reverse scored. A higher score indicated a higher level of intrinsic motivation. Based on the recommendation of the researchers, scores from each of the five facets were summed together to form a composite intrinsic motivation score. An example item for interest-enjoyment was “I enjoy participating in my job” An example item for perceived competence was “I think I am pretty good at my job.” An example item for effort-importance was “I put a lot of effort into my job.” An example item for pressure-tension was “I feel very tense while working at my job.” An example item for choice was “I work in my job because I have no other choice.” ($\alpha = .85$; McAuley, Wraith, & Duncan, 1991). I reworded the items to refer to work contexts rather than sport contexts. McAuley, Duncan, and Tammen (1989) found support for the hypothesized item structure across a variety of tasks. McAuley, Wraith, and Duncan (1991) conducted a CFA using a sample of students with the 27 original items. McAuley, Wraith, and Duncan (1991) used item-reduction techniques, which resulted in the removal of six items. Researchers found support for the five-factor model and for a composite score of intrinsic motivation (e.g., McAuley, Duncan, & Tammen, 1989; McAuley, Wraith, & Duncan, 1991). I will run analyses examining each of these five factors as moderators as well as the composite score. The internal consistency reliabilities for the five factors were .92
Outcomes

**Job Satisfaction.** I used Cammann, Fichman, Jenkins, and Klesh’s (1979) Michigan Organizational Assessment Questionnaire (MOAQ) job satisfaction scale to measure participants’ job satisfaction. The MOAQ measures global job satisfaction using three items. Participants recorded their answers using a seven-point scale ranging from 1 = strongly disagree to 7 = strongly agree. Item 2 was reverse scored by subtracting the scores from eight before averaging participants’ overall scores. A higher score indicated a higher level of job satisfaction. An example item was “All in all I am satisfied with my job.” Researchers have conducted EFA’s and CFA’s that have indicated that the three items appropriately load onto the global factor for a variety of samples, including American working adults (e.g., Bowling & Hammond, 2008; Brooke, Russell, & Price, 1988; Mathieu & Farr, 1991). The internal consistency reliability was adequate ($\alpha = .85$; Cammann, Fichman, Jenkins, & Klesh, 1979; see Appendix H).

**Subjective Well-being.** I used Diener, Emmons, Larsen, and Griffin’s (1985) Satisfaction with Life Scale to measure global subjective well-being. Participants recorded their answers to the five-item scale using a seven-point scale ranging from 1 = strongly disagree to 7 = strongly agree. I averaged participants’ item scores to create a scale score. A higher score indicated a higher level of subjective well-being. An example item was “In most ways my life is close to my ideal.” Researchers have found that the Satisfaction with Life Scale is a unidimensional measure, and they have conducted CFAs with American working adults and students, which revealed that items appropriately loaded onto the factor (Diener et al., 1985; Lewis, Bunting, Shevlin, & Joseph, 1995; Slocum-Gori, Zumbo, Michalos, & Diener, 2008). The
internal consistency reliability was adequate ($\alpha = .87$; Diener, Emmons, Larsen, & Griffin, 1985; see Appendix I).

**Anxiety.** I used Jaworek, Marek, and Karwowski’s (2020) Affective Feelings scale to measure anxiety. This 24-item scale measures work-related feelings of happiness, dejection, and anger also. Participants recorded their answers to the eight-item anxiety scale using a four-point scale ranging from 1 = almost never to 4 = almost always. No items were reversed scored. A higher score indicated a higher level of work-related anxiety. An example item was “I feel uncertain at my job.” I reworded the items by replacing “work” with “my job.” I revised the items to include “my job” rather than “work” because “work” is more ambiguous than “my job” and rewording helped me maintain consistency across measures. Jaworek, Marek, and Karwowski (2020) demonstrated that items loaded onto four factors (anxiety, happiness, dejection, and anger) using EFA and CFA for a sample of employed Polish adults. The internal consistency reliability was adequate ($\alpha = .84$; Jaworek, Marek, & Karwowski, 2020; see Appendix J).

**Burnout.** I used Demerouti, Mostert, and Bakker’s (2010) scale to assess psychological strain, a result of excessive stress. It is important to note that burnout is a psychological strain, and burnout may manifest when an individual experiences excessive stress (Demerouti, Mostert, & Bakker, 2010). Participants recorded their answers to the 16-item scale using a four-point scale ranging from 1 = Strongly agree to 4 = Strongly disagree. Items 1, 5, 7, 10, 13, 14, 15, and 16 were reverse scored. I averaged item scores to create subscale scores. A higher score indicated a higher level of burnout. An example item for exhaustion was “There are days when I feel tired before I arrive at my job.” An example item for disengagement was “Over time, one can be disconnected from this type of job.” I reworded the items by replacing “work” with “my job.” I revised the items to include “my job” rather than “work” because “work” is more
ambiguous than “my job” and rewording helped me maintain consistency across measures. Halbesleben and Demerouti (2005) provided evidence of reliability, two factors, and construct validity using test-retest, MTMM, and confirmatory factor analyses for samples of American adult workers and fire department employees. I will run analyses examining each of the two factors as outcomes as well as the composite burnout score. The internal consistency was .87 for exhaustion and .83 for disengagement (Halbesleben & Demerouti, 2005; see Appendix K).

**Exploratory**

I used the following measures to enable explanation of potential post hoc examinations.

**Stressors.** Bowling, Khazon, Alacron, Blackmore, Bragg, Hoepf, Barelka, Kennedy, Wand, and Li’s (2017) scales were used to measure role ambiguity and role conflict. Participants recorded their answers to both six-item subscales using a seven-point scale ranging from 1 = strongly disagree to 7 = strongly agree. For both subscales, Items 4, 5, and 6 were reverse scored by subtracting eight prior to averaging participants’ respective scores. I averaged items scores to create subscale scores. For both scales, a higher score indicated a higher level of role ambiguity or role conflict. An example item for role ambiguity was “I am not sure what is expected of me at my job.” An example item for role conflict was “I have to deal with conflicting demands at my job.” I reworded the items by replacing “work” with “my job.” I revised the items to include “my job” rather than “work” because “work” is more ambiguous than “my job” and rewording helped me maintain consistency across measures. Bowling et al. (2017) demonstrated test-retest reliability and found improved factor loadings compared to previous scales across five studies including American workers and MBA students. The internal consistency reliability was .91 for role ambiguity and .89 for role conflict (Bowling et al., 2017; see Appendix L).
I used Spector and Jex’s (1998) Quantitative Workload Inventory to measure role overload. Participants recorded their answers to the five-item scale by indicating how frequently each work experience occurred using a five-point scale ranging from 1 = never to 5 = several times per day. No items were reverse scored. I averaged item scores to create scale scores. A higher score indicated a greater workload. An example item was “How often if there a great deal to be done?” Many researchers have used and validated Spector’s stressors and strain scales (e.g., Baka & Bazinska, 2016). Baka and Bazinska (2016) found evidence for unidimensionality by conducting a CFA and PCA, and demonstrated test-retest reliability with multiple samples of Polish workers in a variety of occupations. The internal consistency was .86 (Baka & Bazinska, 2016; see Appendix M).

Strains. I used Spector and Jex’s (1998) Physical Symptoms Inventory to measure physical strains that may have resulted from workplace stressors. Participants recorded their answers the 13-item scale by indicating how frequently they experienced each physical symptom using a five-point scale ranging from 1 = not at all to 5 = every day. No items were reverse scored. I averaged items scores to create scale scores. A higher score indicated a higher frequency of physical strains. An example item was “acid indigestion or heartburn.” Liu, Spector, and Shi (2007) found evidence of appropriate factor loadings for samples of American and Chinese employees for a variety of stressor and strain scales, including the physical symptoms inventory. The internal consistency reliability for U.S. employees was .77 and for Chinese employees it was .84 (Liu, Spector, & Shi, 2007; see Appendix N).

Growth-Need-Strength. I used Hackman and Oldham’s (1974) Job Diagnostic Survey to measure growth-need-strength. Participants recorded their answers to the six-item subscale using a seven-point scale ranging from 1 = would like to have only a moderate amount (or less)
to 7 = would like having this extremely much. No items were reverse scored. Before averaging, I subtracted three from each item score which resulted in a scale ranging from one to seven. I averaged items to create scale scores. An example item was “Chance to exercise independent thought and action in my job.” Researchers have found evidence for items appropriately loading onto a factor by conducting EFA’s and CFA’s with samples of students and American workers (e.g., Shalley, Gilson, & Blum, 2009). The internal consistency reliability was adequate ($\alpha = .88$, Hackman & Oldham, 1974; see Appendix O).

**Organizational Citizenship Behaviors (OCB).** I used Fox, Spector, Goh, Bruursema, and Kessler’s (2012) scale to measure OCB. Participants recorded their answers to the 20-items using a five-point scale ranging from 1 = never to 5 = every day. No items were reverse scored. I averaged item scores to create scale scores. Higher scores indicated higher levels OCBs. An example item was “took time to advise, coach, mentor a co-worker.” Fox et al. (2012) conducted CFA’s and EFA’s with American graduate students and employees, and they found that items were distinct from CWB items and loaded onto a single factor. The internal consistency reliability was .89 (Fox et al.; see Appendix P).

**Counterproductive Workplace Behaviors (CWB).** I used Bennet and Robinson’s (2000) scale to measure CWB. Participants recorded their answers to the seven-item subscale for interpersonal deviance and the 12-item subscale for organizational deviance using a seven-point scale ranging from 1 = never to 7 = daily. No items were reverse scored. I averaged item scores to create scale scores. Higher scores indicated higher frequencies of individual and organizational CWBs for the respective subscales. An example item for individual CWB was “made fun of someone at work.” An example item for organizational CWB was “taken property from work without permission.” Bennett and Robinson (2000) examined working MBA students
and found that a two-factor structure had sufficient fit using exploratory and confirmatory factor analyses. The internal consistency reliability was .81 for organizational deviance and .78 for interpersonal deviance. I will run exploratory analyses examining each of the two factors as outcomes as well as the composite CWB score. Although Bennett and Robinson (2000) found support for a two-factor model, they write that investigating the complete construct may give researchers a better idea of the prevalence of CWB (Bennett & Robinson, 2000; see Appendix Q).

**Cognitive Dissonance.** I used Bashore’s (2017) scale to measure cognitive dissonance. Participants recorded their answers to the five-item scale using a seven-point graphic rating scale ranging from 1 = very uncomfortable to 7 = very comfortable. I averaged scores, and a higher score indicated less cognitive dissonance. An example item was “not at all stressed to very stressed.” The internal consistency reliability was .79 (see Appendix R).

**Locus of Control.** I used Spector’s (1988) Work Locus of Control Scale to measure the extent participants believed they have control over outcomes in their lives. Participants recorded their answers to the 16-item scale using a five-point scale ranging from 1 = disagree very much to 5 = agree very much. Internally worded items are 1, 2, 3, 4, 7, 11, 14, and 15, and they were reverse scored by subtracting from seven. I averaged item scores to create scale scores. A higher score indicated a higher level of externality. An example item was “A job is what you make of it.” Researchers have found support for items loading onto a single factor (e.g., Qiang Wang, Bowling, & Eschleman, 2021; Spector 1988, 1992). The internal consistency reliability was adequate ($\alpha = .86$; Spector, 1992; see Appendix S).

**Big Five Personality Factors.** I used Donnellan, Oswald, Baird, and Lucas’s (2006) short form of Golberg’s (1999) International Personality Item Pool (IPIP) to measure
extraversion, agreeableness, conscientiousness, openness, and emotional stability. Participants recorded their answers to the 20 items (4 items per factor) using a five-point scale ranging from 1 = very inaccurate to 5 = very accurate. All negatively keyed items were reversed scored. I averaged item scores to create scale scores. Higher scores indicated higher levels of the respective personality traits. An example item for extraversion was “Don’t talk a lot.” An example item for conscientiousness was “Get chores done right away.” An example item for agreeableness was “Sympathize with others’ feelings.” An example item for neuroticism was “Get upset easily.” An example item for openness to experience was “Have a vivid imagination.” Many researchers have found evidence for criterion-related validity for the IPIP, and they have found evidence for the items loading appropriately on their respective factors for students and American workers (e.g., Donnellan et al., 2006, Gow, Whiteman, Pattie, & Deary, 2004; Socha, Cooper, & McCord, 2010). I will run exploratory analyses examining each of the five factors as outcomes. The internal consistency reliabilities were adequate (ranging from $\alpha = .70$ - .82 for the five traits; International Personality Item Pool, 2001; see Appendix T).

**Social Desirability.** I used Hart, Ritchie, Hepper, and GeBauer’s (2015) Balanced Inventory of Desirable Responding short form to measure social desirability. Participants recorded their answers to the 16-item scale using an eight-point scale ranging from 1 = totally disagree to 8 = totally agree. Items 1, 3, 5, 8, 9, 11, 12, and 13 were reverse scored by subtracting scores from nine. I averaged item scores to create scale scores. A higher score indicated higher social desirability. An example item for self-deception enhancement was “Not always honest.” An example item for impression management was “Don’t gossip.” Hart et al. (2015) have conducted confirmatory factor analysis and demonstrated that the items appropriately load onto two factors (self-deception enhancement and impression management) in relation to a diverse
pool of adults from the US, Australia, Canada, Europe, and East Asia. I will run exploratory analyses examining each of the two factors as outcomes as well as a composite score. The internal consistency reliabilities were .64 for self-deception enhancement and .73 for impression management (see Appendix U).

**Leadership Behavior Description Questionnaire (LBDQ-XII).** I used the revised 20-item LBDQ-XII scale to measure leadership behavior (Fleishman, 1957; Schriesheim & Stogdill, 1975). The measure has two subscales: leader consideration (10 items) and initiating structure (10 items). Participants recorded their answers by selecting a letter from A = always (5) to E = never (1). Items 12, 13, and 14 were reverse scored. Items scores are summed to create an overall raw score for each participant. Higher scores indicated higher levels of leader consideration and initiating structure. An example item for initiating structure was “My supervisor makes their attitudes clear to the group.” An example item for leader consideration was “My supervisor treats all group members as their equals.” I reworded the items by replacing “he/his” with “my supervisor/their.” Numerous researchers have examined the factor structure of this measure using CFAs, and their results have supported the hypothesized two-factor structure using American managers and employees (e.g., Schriesheim & Stogdill, 1975; Szilagyi & Keller, 1976). The internal consistency reliability was .89 for leader consideration and .87 for initiating structure (Szilagyi & Keller, 1976; see Appendix V).

**General Health Score.** I used a single-item measure to assess overall health (DeSalvo, Bloser, Reynolds, He, & Muntner, 2005). Participants recorded their answer to the item using a five-point scale ranging from 1 = poor to 5 = excellent. A higher score indicated a greater degree of overall health. The question was “In general, how would you rate your current health.”. DeSalvo et al. (2005) conducted a meta-analysis with 21 articles and found that there is a
significant correlation between the overall health measure and increased risk of death. Specifically, they found that people who reported “poor” health had a 1.74 times increased risk of death compared to the participants who selected “excellent” for their health (DeSalvo et al., 2005; see Appendix W).

**Insufficient Effort Responding (IER) Descriptions**

One limitation was that I collected data for Study 1 and Study 2 using self-report measures. A proportion of participants may have responded carelessly when completing the survey. IER assessments and instructions were more extensive for Study 2, the MTurk sample. I describe those first for Study 2 and then modifications made in Study 1.

For Study 2, I collected data using MTurk. The reasonable cost of data, the speed data can be collected, and the diverse applicant pool are advantageous (Aguinis, Villamor, & Ramani, 2020). However, bots, carelessness, attrition, MTurk communities, and self-selection bias are threats to internal and external validity (Aguinis, Villamor, & Ramani, 2020). Carelessness, attrition, interaction between participants, and self-selection bias may have had negative effects also on the data collected for Study 1 (student sample). To mitigate these risks, I implemented warnings, bogus items, instructed response items, and monitored time spent on each page.

For Study 2, I first provided a warning message before participants started the survey (Huang et al., 2012). The warning stated “Please read each question carefully and respond truthfully. The researcher will have the ability to screen out participants based on insufficient effort or attention and automated responding. Participants who engage in these behaviors will have their surveys terminated, their data removed, and will NOT be paid.” Second, I included three bogus items and two instructed-response items throughout the survey. An example bogus item was “My birthday is on February 30th.” Response options for this item ranged from 1 =
strongly disagree to 7 = strongly agree. Selecting anything other than “strongly disagree” as a response for this item reflected failure of this attention check and resulted in participant removal. Two instructed-response items instructed participants to select a specific option to that item (Bowling et al., 2016; see Appendix X). I removed any participants who failed to respond with an answer other than the instructed response. If participants failed these checks, the survey was ended, they were not paid, and they were thanked for their time. I set up MTurk to immediately remove participants who failed to correctly answer the bogus items and instructed response items. Third, I removed participants who responded in less than two seconds on average per item, per page (Huang et al., 2012). MTurk does not have the capability to implement this check in real time, so I removed participants who responded quicker than two seconds after data collection. Fourth, I included open-ended questions to better detect sophisticated bots. I removed participants who used ‘nonsense’ answers to complete these demographic questions. For example, I removed a participant who responded with “ALASKA” to “What is your primary language?”

For Study 1, I implemented similar IER checks but with a few notable differences. I modified the warning message because students were not paid, and participants were not immediately removed from the study if they failed an IER check. The warning message stated “Please read each question carefully and respond truthfully. The researcher will have the ability to screen out participants based on insufficient effort or attention and automated responding.” I still included three bogus items and two instructed response items, but I did not screen out participants until after data was collected. Similar to Study 2, participants who failed to correctly answer one or more of the five questions had their data removed from analyses. Further, I
removed participants who responded in less than two seconds on average per page after data was collected.

During data collection, I conducted regular checks to gain a better understanding of the quality of the data (Aguinis, Villamor, & Ramani, 2020). Overall, these checks were intended to reduce issues that are common for both self-report studies and MTurk samples.

**Procedure**

The study survey was administered and submitted online. I created the survey using Qualtrics, an online survey platform company. Participants in Study 1 (student sample) and Study 2 (Mechanical Turk sample) read and agreed to an informed consent form prior to beginning the study (see Appendix Y). Participants who chose not to consent were exited from the survey. Participants who completed the study were debriefed at the end of survey (see Appendix Z). Survey constructs were assessed in the following order: demographics, primary predictor variables (autonomy, autonomy support, intrinsic motivation), primary outcome variables (job satisfaction, subjective well-being, anxiety, burnout), then exploratory variables (role ambiguity, role conflict, role overload, physical strain, growth-need-strength, OCB, CWB, cognitive dissonance, locus of control, big 5 personality factors, social desirability, and general health score).
Results and Discussion

Study 1 (Student Sample) Results and Discussion

In the following, I will review the descriptive statistics, hypothesis tests, and exploratory tests, and I will discuss the results for Study 1 (student sample).

Data Cleaning and Scale Construction

Initially, 198 students attempted the survey. I removed 39 participants who did not fully complete the survey, leaving 159 responses. I removed 31 participants who failed to meet the eligibility criteria, leaving 128 responses. I removed an additional 12 participants who failed three or more of the five insufficient effort attention checks. The resulting final sample included 116 data points. I constructed scales as described in the method section.

Sample Characteristics

Of the 116 participants, 20.6% were male, 79.3% were female, and two students selected “other.” The distribution of races was as follows: 72.4% White/Caucasian, 14.6% African American, 4.3% Asian/Pacific Islander, 2.5% Hispanic, and one participant who selected “choose not to answer.” The average age of the sample was 20.74 years old with a standard deviation of 4.03 years. Also, 97.4% of the participants were undergraduates, with one high school student, one graduate student, and one who selected “other.” The most common majors were psychology, nursing, elementary education, and criminal justice, respectively. The most common industries were accommodations and food services, healthcare and social assistance, and retail trade, respectively. The majority, 97.4% of participants, reported that they complete their work “fully in-person,” 8.6% reported “hybrid,” and 2.5% reported “fully online.” Lastly, 63.7% of participants reported having “medium autonomy,” 24.1% reported having “high autonomy,” and 12.0% reported having “low autonomy.”
Exploratory Factor Analyses for Primary Predictors and Outcomes

I selected measures that are well-established in the literature and have acceptable psychometric properties (e.g., Deci & Ryan, 1985; Spector, 1993). I conducted exploratory factor analyses on each of the primary predictors and outcomes (see Appendix AA). In general, the psychometric properties observed in the current sample were consistent with psychometric properties reported in the literature for these measures. Although some measures showed evidence of poor item fit with expected factors, this result may be due to the low power within the observed data rather than inadequacies in the scales.

Descriptive Statistics for Primary Predictors and Outcomes

Table 1 contains means, standard deviations, alphas, and bivariate correlations for primary predictors and outcomes. Autonomy is significantly related to outcomes in the expected direction. The only non-significant bivariate correlation was between anxiety and well-being, which was unexpected ($r = -.09$). It is important to note that three correlations may have indicated evidence of multicollinearity. Job satisfaction and intrinsic motivation correlated highly ($r = .81, p < .001$), Stress, operationalized as burnout, was correlated with job satisfaction at ($r = -.74, p < .001$) and intrinsic motivation ($r = -.79, p < .001$).
### Table 1

**Descriptive Statistics for Primary Predictors and Outcomes in Study 1**

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### Descriptive Statistics for Autonomy Measures

Table 2 contains means, standard deviations, alphas, and bivariate correlations for the primary autonomy measure (BPNS autonomy) and three exploratory autonomy measures. All autonomy measures correlated moderately. There was no clear evidence of multicollinearity.
Table 2

Descriptive Statistics for Autonomy Measures in Study 1

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Descriptive Statistics for Exploratory Measures.

Table 3 contains means, standard deviations, alphas, and bivariate correlations for exploratory measures. A substantial number of the bivariate correlations were not significant. The five-factor personality measure was unrelated to other exploratory measures with a few exceptions. For example, neuroticism correlated with social desirability (r = -.44, p < .001) and physical symptoms (r = -.44, p < .001). There is a pattern of relationships between behavioral-focused measures, including organizational citizenship behavior, physical symptoms, and quantitative workload. Organizational citizenship behaviors positively correlated with physical symptoms (r = .24, p < .01) and with quantitative workload (r = .42, p < .001). Table 4 contains bivariate correlations between primary and exploratory variables.
Table 3

*Descriptive Statistics for Exploratory Measures in Study 1*

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*Note.* N = 116. Coefficient alpha appears in parentheses on the diagonal. Italicized p < .05. Italicized and bold p < .01. Bold p < .001. OCB = organizational citizenship behavior, CWB = counterproductive work behavior, WLCS = work locus of control, LBDQ = leadership behavior, GNS = growth-need-strength, RA = role ambiguity, RC = role conflict, PSI = physical symptoms, QWI = quantitative workload, SD = social desirability, CD = cognitive dissonance, IPIPA = agreeableness, IPIPC = conscientiousness, IPIPE = extraversion, IPIPN = neuroticism, IPIPO = openness, CHR – comprehensive health.
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<td>-.13</td>
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<td>IPIPC</td>
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<td>IPIPE</td>
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<td>.21</td>
<td>.39</td>
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<td>-.27</td>
</tr>
</tbody>
</table>

*Note.* $N = 116$. Coefficient alpha appears in parentheses on the diagonal. Primary predictors and outcomes are on the labeled columns. Italicized $p < .05$. Italicized and bold $p < .01$. Bold $p < .001$. JDS = job diagnostic survey, FAS = factual autonomy, ONE = one-item autonomy, OCB = organizational citizenship behavior, CWB = counterproductive work behavior, WLCS = work locus of control, LBDQ = leader behavior, GNS = growth-need-strength, RA = role ambiguity, RC = role conflict, PSI = physical symptoms, QWI = quantitative workload, SD = social desirability, CD = cognitive dissonance, IPIPA = agreeableness, IPIPC = conscientiousness, IPIPE = extraversion, IPIPBN = neuroticism, IPIPO = openness, CHR = comprehensive health, AUT = autonomy, IM = intrinsic motivation, AS = autonomy support, JS = job satisfaction, SWB = subjective well-being, OLBI = stress, ANX = anxiety.
Study 1 (Student Sample): Hypothesis Testing

Intrinsic Motivation as a Moderator (Hypothesis 1). I predicted that intrinsic motivation would moderate the relationship between Deci and Ryan’s (1985) autonomy measure (BPNS autonomy) and study outcomes i.e., job satisfaction, subjective well-being, stress, and anxiety. To test this, I regressed the four outcomes in turn onto BPNS autonomy, intrinsic motivation, and the interaction term (BPNS autonomy x intrinsic motivation). Further, I tested the three additional exploratory autonomy scales as the predictor. I reported results for the four autonomy measures for each of the four outcomes in turn.

For job satisfaction, I expected to see a stronger positive relationship between autonomy and satisfaction at higher levels of intrinsic motivation, and I expected to see no relationship between autonomy and satisfaction at lower levels of intrinsic motivation (see Figure 1). The results indicated that intrinsic motivation moderated the relationship between autonomy and satisfaction for the BPNS autonomy and JDS autonomy scales (see Table 5, Figures 7 and 8). For the BPNS and JDS autonomy scales, autonomy was lower and was positively related to satisfaction when intrinsic motivation was lower, which was not the expected relationship (BPNS: $b = .36, SE = .10, p < .001$; JDS: $b = .18, SE = .06, p = .005$). When intrinsic motivation was higher, job satisfaction was higher regardless of the level of autonomy, which was not the expected relationship (BPNS: $b = .00, SE = .12, p = .98$; JDS: $b = -.05, SE = .06, p = .40$). This provided no support for Hypothesis 1.
Table 5

Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of Relationships between Four Autonomy Scales and Job Satisfaction in Study 1

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Sat.</td>
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<td>1.31</td>
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<td>3.65</td>
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<td>.67***</td>
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</tr>
<tr>
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<td>Intrinsic Motivation</td>
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<td>.35</td>
<td>6.05</td>
<td>&lt;.001</td>
<td>.67***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
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<td>.07</td>
<td>-3.04</td>
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<td>.03</td>
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<tr>
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<td>.004</td>
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</tr>
<tr>
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<td>.03</td>
<td>.68***</td>
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<td>-.54</td>
<td>.58</td>
<td>.00</td>
<td>.65***</td>
</tr>
<tr>
<td></td>
<td>1. One-Item Autonomy</td>
<td>.55</td>
<td>.35</td>
<td>1.55</td>
<td>.12</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Intrinsic Motivation</td>
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<td>6.56</td>
<td>&lt;.001</td>
<td>.66***</td>
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</tr>
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<td>2. Interaction Term</td>
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<td>.06</td>
<td>-1.27</td>
<td>.20</td>
<td>.01</td>
<td>.67***</td>
</tr>
</tbody>
</table>

Note. N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Figure 7

Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Job Satisfaction in Study 1

Note. Int. Motivation = Intrinsic Motivation.
Figure 8

Intrinsic Motivation as a Moderator of the Relationship between Job Diagnostic Autonomy and Job Satisfaction in Study 1

Note. Int. Motivation = Intrinsic Motivation.
For well-being, I expected to see a stronger positive relationship between autonomy and well-being at higher levels of intrinsic motivation, and I expected to see no relationship between autonomy and well-being at lower levels of intrinsic motivation (see Figure 1). The results indicated that intrinsic motivation moderated the relationship between autonomy and well-being for the BPNS autonomy and 1-item autonomy scales (see Table 6, Figures 9 and 10). For the BPNS scale, results indicated that the positive relationship between autonomy and well-being was stronger at higher levels of intrinsic motivation, which was the expected relationship \( (b = .65, SE = .22, p = .004) \). At lower levels of intrinsic motivation, autonomy was lower and there was not a relationship between autonomy and well-being, which was the expected relationship \( (b = .14, SE = .17, p = .39) \). However, this relationship resulted in a crossover interaction which was not the expected relationship. For the 1-item autonomy measure, results indicated that autonomy was higher and positively related to well-being at higher levels of intrinsic motivation, which was the expected relationship \( (b = .27, SE = .14, p < .05) \). At lower levels of intrinsic motivation, there was not a relationship between autonomy and well-being, which was the expected relationship \( (b = -.16, SE = .14, p = .26) \). This provided partial support for Hypothesis 1.
### Table 6

**Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of Relationships between Four Autonomy Scales and Subjective Well-Being in Study 1**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well-Being</td>
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<td>-1.83</td>
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</tr>
<tr>
<td></td>
<td>Intrinsic Motivation</td>
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<td>.62</td>
<td>-1.93</td>
<td>.05</td>
<td>.09**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>.30</td>
<td>.12</td>
<td>2.38</td>
<td>.01</td>
<td>.04</td>
<td>.13***</td>
</tr>
<tr>
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<td>1. Job Diagnostic Survey</td>
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<td>-.61</td>
<td>.54</td>
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</tr>
<tr>
<td></td>
<td>Intrinsic Motivation</td>
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<td>.45</td>
<td>.37</td>
<td>.71</td>
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<tr>
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<td>2. Interaction Term</td>
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<td>.09</td>
<td>.63</td>
<td>.52</td>
<td>.01</td>
<td>.07*</td>
</tr>
<tr>
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<td>.93</td>
<td>-.23</td>
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</tr>
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<td>.58</td>
<td>.26</td>
<td>.79</td>
<td>.08*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
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<td>.17</td>
<td>-.45</td>
<td>.65</td>
<td>.00</td>
<td>.08*</td>
</tr>
<tr>
<td></td>
<td>1. One-Item Autonomy</td>
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<td>.59</td>
<td>-2.16</td>
<td>.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intrinsic Motivation</td>
<td>-.42</td>
<td>.39</td>
<td>-1.06</td>
<td>.28</td>
<td>.07*</td>
<td></td>
</tr>
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<td>.26</td>
<td>.11</td>
<td>2.30</td>
<td>.02</td>
<td>.04</td>
<td>.11**</td>
</tr>
</tbody>
</table>

*Note. N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.*
**Figure 9**

*Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Well-Being in Study 1*

Note. Int. Motivation = Intrinsic Motivation.
Figure 10

*Intrinsic Motivation as a Moderator of the Relationship between One-Item Autonomy and Well-Being in Study 1*

*Note.* Int. Motivation = Intrinsic Motivation.
For stress, I expected to see a positive relationship between autonomy and stress at lower levels of intrinsic motivation, and I expected to see no relationship between autonomy and stress at higher levels of intrinsic motivation (see Figure 2). The results indicated that intrinsic motivation did not moderate relationships with any of the four autonomy measures (see Table 7). There was no evidence that intrinsic motivation played a role in the relationship between autonomy and stress. This failed to provide support for Hypothesis 1.

Table 7

Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationships between the Four Autonomy Scales and Stress (Operationalized as Burnout) in Study 1

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
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<tr>
<td></td>
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<td>-3.08</td>
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<td>***</td>
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<tr>
<td></td>
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<td>.91</td>
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<td></td>
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<tr>
<td></td>
<td>Intrinsic Motivation</td>
<td>-.33</td>
<td>.10</td>
<td>-3.27</td>
<td>.001</td>
<td>.57</td>
<td>***</td>
</tr>
<tr>
<td></td>
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<td>.02</td>
<td>-.51</td>
<td>.61</td>
<td>.00</td>
<td>.57</td>
</tr>
<tr>
<td></td>
<td>1. Factual Autonomy</td>
<td>.31</td>
<td>.55</td>
<td>.57</td>
<td>.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intrinsic Motivation</td>
<td>1.52</td>
<td>.34</td>
<td>4.38</td>
<td>&lt;.001</td>
<td>.65</td>
<td>***</td>
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<tr>
<td></td>
<td>2. Interaction Term</td>
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<td>.10</td>
<td>-.54</td>
<td>.58</td>
<td>.00</td>
<td>.65</td>
</tr>
<tr>
<td></td>
<td>1. One-Item Autonomy</td>
<td>.00</td>
<td>.13</td>
<td>.06</td>
<td>.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intrinsic Motivation</td>
<td>-.31</td>
<td>.08</td>
<td>-3.57</td>
<td>&lt;.001</td>
<td>.59</td>
<td>***</td>
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<td>2. Interaction Term</td>
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<td>.02</td>
<td>-.66</td>
<td>.50</td>
<td>.00</td>
<td>.59</td>
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</tbody>
</table>

Note. N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
For anxiety, I expected to see a positive relationship between autonomy and anxiety at lower levels of intrinsic motivation, and I expected to see no relationship between autonomy and anxiety at higher levels of intrinsic motivation (see Figure 2). The results indicated that intrinsic motivation moderated the relationship between autonomy and anxiety for the BPNS autonomy scale (see Table 8, Figure 11). Contrary to my prediction, I observed significant negative relationships between autonomy and anxiety. Further, I observed higher anxiety and a stronger negative relationship between autonomy and anxiety at lower levels of intrinsic motivation ($b = -.33, SE = .06, p < .001$), relative to higher levels of intrinsic motivation ($b = -.15, SE = .08, p = .006$). This failed to provide support for Hypothesis 1.

Table 8

Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationship between the Four Autonomy Scales and Anxiety in Study 1

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
<th>$R^2$</th>
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<td>Anxiety</td>
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<td>&lt;.001</td>
<td>.46***</td>
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<tr>
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<td>-3.37</td>
<td>.001</td>
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<td>.48***</td>
</tr>
<tr>
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<td>2. Interaction Term</td>
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<td>.04</td>
<td>2.39</td>
<td>.01</td>
<td>.02</td>
<td>.48***</td>
</tr>
<tr>
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<td>.39***</td>
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<td>.03</td>
<td>1.34</td>
<td>.18</td>
<td>.01</td>
<td>.40***</td>
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<td>.06</td>
<td>1.25</td>
<td>.21</td>
<td>.01</td>
<td>.38***</td>
</tr>
<tr>
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<td>1. One-Item Autonomy</td>
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<td>-1.78</td>
<td>.07</td>
<td></td>
<td>.38***</td>
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<td>.15</td>
<td>-4.07</td>
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<td>.38***</td>
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<td>.04</td>
<td>1.42</td>
<td>.15</td>
<td>.02</td>
<td>.40***</td>
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</table>

Note. $N = 116$. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and SE values are from the last (second) step of each hierarchical regression analysis.
Figure 11

Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Anxiety in Study 1

Note. Int. Motivation = Intrinsic Motivation.
**Autonomy Support as a Moderator (Hypothesis 2).** I predicted that autonomy support would moderate the relationship between autonomy and study outcomes i.e., job satisfaction, subjective well-being, stress, and anxiety. To test this, I regressed the four outcomes in turn onto autonomy, autonomy support, and the interaction term (autonomy x autonomy support). Further, I tested the three additional exploratory autonomy scales as the predictor. I reported results for the four autonomy measures for each of the four outcomes in turn.

For job satisfaction, I expected to see a positive relationship between autonomy and satisfaction at higher levels of autonomy support, and I expected to see a negative relationship between autonomy and satisfaction at lower levels of autonomy support (see Figure 3). The results indicated that autonomy support did not moderate relationships with any of the four autonomy measures (see Table 9). There was no evidence that autonomy support played a role in the relationship between autonomy and job satisfaction. This failed to provide support for Hypothesis 2.
Table 9

Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Job Satisfaction in Study 1

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Sat.</td>
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<td>1.97</td>
<td>.05</td>
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<td>.46</td>
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<td>.06</td>
<td>-2.0</td>
<td>.04</td>
<td>.00</td>
<td>.00</td>
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<tr>
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<td>.34</td>
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<td>&lt;.001</td>
<td>.42</td>
<td>.42</td>
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</table>

Note. N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
For well-being, I expected to see a positive relationship between autonomy and well-being at higher levels of autonomy support, and I expected to see a negative relationship between autonomy and well-being at lower levels of autonomy support (see Figure 3). The results indicated that autonomy support did not moderate relationships with any of the four autonomy measures (see Table 10). There was no evidence that autonomy support played a role in the relationship between autonomy and well-being. This failed to provide support for Hypothesis 2.

Table 10

*Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Subjective Well-Being in Study 1*

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well-Being</td>
<td>1. BPNS Autonomy Support</td>
<td>-.34</td>
<td>.50</td>
<td>-.69</td>
<td>.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>.13</td>
<td>.09</td>
<td>1.50</td>
<td>.13</td>
<td>.02</td>
<td>.10**</td>
</tr>
<tr>
<td></td>
<td>1. Job Diagnostic Support</td>
<td>.00</td>
<td>.24</td>
<td>.03</td>
<td>.97</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>.00</td>
<td>.04</td>
<td>.09</td>
<td>.92</td>
<td>.00</td>
<td>.04</td>
</tr>
<tr>
<td></td>
<td>1. Factual Autonomy Support</td>
<td>.25</td>
<td>.49</td>
<td>.52</td>
<td>.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>-.01</td>
<td>.09</td>
<td>-.18</td>
<td>.85</td>
<td>.00</td>
<td>.05*</td>
</tr>
<tr>
<td></td>
<td>1. One-Item Autonomy Support</td>
<td>-.06</td>
<td>.36</td>
<td>-.16</td>
<td>.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>.02</td>
<td>.06</td>
<td>.39</td>
<td>.69</td>
<td>.00</td>
<td>.04</td>
</tr>
</tbody>
</table>

*Note.* N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
For stress, I expected to see a positive relationship between autonomy and stress at lower levels of autonomy support, and I expected to see a negative relationship between autonomy and stress at higher level of autonomy support (see Figure 4). The results indicated that autonomy support did not moderate relationships with any of the four autonomy measures (see Table 11). There was no evidence that autonomy support played a role in the relationship between autonomy and well-being. This failed to provide support for Hypothesis 2.

Table 11

Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Stress (Operationalized as Burnout) in Study 1

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>1. BPNS Autonomy Support</td>
<td>-.12</td>
<td>.12</td>
<td>-1.01</td>
<td>.31</td>
<td>.50***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Autonomy Support</td>
<td>-.03</td>
<td>.09</td>
<td>-3.8</td>
<td>.01</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>-.01</td>
<td>.02</td>
<td>-7.4</td>
<td>.00</td>
<td>.50***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Job Diagnostic</td>
<td>-.01</td>
<td>.06</td>
<td>-3.0</td>
<td>.76</td>
<td>.41***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Autonomy Support</td>
<td>-.12</td>
<td>.05</td>
<td>-2.14</td>
<td>.03</td>
<td>.01</td>
<td>.42***</td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>-.00</td>
<td>.01</td>
<td>-7.1</td>
<td>.47</td>
<td>.00</td>
<td>.42***</td>
</tr>
<tr>
<td></td>
<td>1. Factual Autonomy</td>
<td>-.07</td>
<td>.13</td>
<td>-.58</td>
<td>.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Autonomy Support</td>
<td>-.20</td>
<td>.08</td>
<td>-2.60</td>
<td>.01</td>
<td>.38***</td>
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</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
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<td>.02</td>
<td>.27</td>
<td>.78</td>
<td>.00</td>
<td>.38***</td>
</tr>
<tr>
<td></td>
<td>1. One-Item Autonomy</td>
<td>-.04</td>
<td>.09</td>
<td>-.47</td>
<td>.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Autonomy Support</td>
<td>-.13</td>
<td>.05</td>
<td>-2.24</td>
<td>.02</td>
<td>.42***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>-.01</td>
<td>.01</td>
<td>-4.9</td>
<td>.62</td>
<td>.00</td>
<td>.42***</td>
</tr>
</tbody>
</table>

Note. N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
For anxiety, I expected to see a positive relationship between autonomy and anxiety at lower levels of autonomy support, and I expected to see a negative relationship between autonomy and anxiety at higher level of autonomy support (see Figure 4). The results indicated that autonomy support moderated the relationship between autonomy and anxiety for the BPNS autonomy scale (see Table 12, Figure 12). Contrary to my prediction, I observed higher anxiety and a significant negative relationship between autonomy and anxiety at lower levels of autonomy support ($b = -.38$, $SE = .07$, $p < .001$). I observed a weaker significant negative relationship between autonomy and anxiety at higher levels of autonomy support, which was the expected relationship ($b = -.15$, $SE = .07$, $p < .001$). This provided partial support for Hypothesis 2.

Table 12

Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Anxiety in Study 1

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>1. BPNS Autonomy</td>
<td>-.67</td>
<td>.17</td>
<td>-3.87</td>
<td>&lt;.001</td>
<td>.49***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Autonomy Support</td>
<td>-.49</td>
<td>.13</td>
<td>-3.69</td>
<td>&lt;.001</td>
<td></td>
<td>.52***</td>
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<td>2. Interaction Term</td>
<td>.07</td>
<td>.03</td>
<td>2.49</td>
<td>.01</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Job Diagnostic</td>
<td>-.20</td>
<td>.09</td>
<td>-2.29</td>
<td>.02</td>
<td>.42***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Autonomy Support</td>
<td>-.37</td>
<td>.08</td>
<td>-4.51</td>
<td>&lt;.001</td>
<td></td>
<td>.43***</td>
</tr>
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<td>.02</td>
<td>.01</td>
<td>1.62</td>
<td>.10</td>
<td>.01</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Factual Autonomy</td>
<td>-.27</td>
<td>.18</td>
<td>-1.46</td>
<td>.14</td>
<td>.39***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Autonomy Support</td>
<td>-.44</td>
<td>.11</td>
<td>-3.93</td>
<td>&lt;.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>.05</td>
<td>.03</td>
<td>1.45</td>
<td>.14</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. One-Item Autonomy</td>
<td>-.28</td>
<td>.13</td>
<td>-2.12</td>
<td>.03</td>
<td>.40***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Autonomy Support</td>
<td>-.40</td>
<td>.08</td>
<td>-4.79</td>
<td>&lt;.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>.04</td>
<td>.02</td>
<td>1.81</td>
<td>.07</td>
<td>.02</td>
<td>.42***</td>
</tr>
</tbody>
</table>

Note. $N = 116$. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and $SE$ values are from the last (second) step of each hierarchical regression analysis.
Figure 12

Autonomy Support as a Moderator of the Relationship between BPNS Autonomy and Anxiety in Study 1

Curvilinear Effects Between Autonomy and Primary Outcomes (Hypothesis 3). I predicted that autonomy has a positive curvilinear relationship with job satisfaction and well-being and has a negative curvilinear relationship with stress and anxiety. I expected to see a stronger beneficial effect of BPNS autonomy on job satisfaction and well-being at lower levels and smaller beneficial effects at higher levels of BPNS autonomy (see Figure 5). Also, I expected to see a stronger beneficial effect of autonomy on stress and anxiety at lower levels and smaller beneficial effects at higher levels of autonomy (see Figure 6). To test this, I regressed the four outcomes in turn onto the autonomy linear and quadratic term. I found evidence for curvilinear relationships between BPNS autonomy and outcomes i.e., job satisfaction, well-being, and anxiety (see Table 13). For job satisfaction, I found evidence for diminishing beneficial effects at higher levels of autonomy (see Figure 13). For well-being, I found evidence for higher well-being at both lower levels and higher levels of autonomy, which was not the expected relationship (see Figure 14). For anxiety, I found evidence for diminishing beneficial effects at higher levels of autonomy (see Figure 15). Thus, I found partial support for Hypothesis 3.
Table 13

Hierarchical Regression Analyses Examining the Curvilinear Effects between Autonomy and Four Outcomes (Hypothesis 3) in Study 1

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>$b$</th>
<th>SE</th>
<th>$t$</th>
<th>$p$</th>
<th>Δ$R^2$</th>
<th>$R^2$</th>
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</thead>
<tbody>
<tr>
<td>Job Sat.</td>
<td>1. BPNS Autonomy</td>
<td>.80</td>
<td>.09</td>
<td>8.13</td>
<td>&lt;.001</td>
<td>.42***</td>
<td>.45***</td>
</tr>
<tr>
<td></td>
<td>2. BPNS Autonomy$^2$</td>
<td>-.16</td>
<td>.07</td>
<td>-2.30</td>
<td>.02</td>
<td>.03</td>
<td>.03</td>
</tr>
<tr>
<td>Well-Being</td>
<td>1. BPNS Autonomy</td>
<td>.50</td>
<td>.12</td>
<td>3.97</td>
<td>&lt;.001</td>
<td>.08**</td>
<td>.13***</td>
</tr>
<tr>
<td></td>
<td>2. BPNS Autonomy$^2$</td>
<td>.22</td>
<td>.09</td>
<td>2.45</td>
<td>.01</td>
<td>.05</td>
<td>.13***</td>
</tr>
<tr>
<td>Stress</td>
<td>1. BPNS Autonomy</td>
<td>-.29</td>
<td>.03</td>
<td>-8.74</td>
<td>&lt;.001</td>
<td>.44***</td>
<td>.44***</td>
</tr>
<tr>
<td></td>
<td>2. BPNS Autonomy$^2$</td>
<td>.01</td>
<td>.02</td>
<td>.75</td>
<td>.45</td>
<td>.00</td>
<td>.44***</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1. BPNS Autonomy</td>
<td>-.38</td>
<td>.04</td>
<td>-7.84</td>
<td>&lt;.001</td>
<td>.41***</td>
<td>.43***</td>
</tr>
<tr>
<td></td>
<td>2. BPNS Autonomy$^2$</td>
<td>.07</td>
<td>.03</td>
<td>2.13</td>
<td>.03</td>
<td>.02</td>
<td>.02</td>
</tr>
</tbody>
</table>

Note. $N = 116$. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and SE values are from the last (second) step of each hierarchical regression analysis.
Figure 13

The Curvilinear Relationship between BPNS Autonomy and Job Satisfaction in Study 1
Figure 14

The Curvilinear Relationship between BPNS Autonomy and Well-Being in Study 1
Figure 15

The Curvilinear Relationship between BPNS Autonomy and Anxiety in Study 1
Curvilinear Effects Between Autonomy Support and Primary Outcomes

(Hypothesis 4). I predicted that autonomy support has a positive curvilinear relationship with job satisfaction and well-being and has a negative curvilinear relationship with stress and anxiety. I expected to see a stronger beneficial effect of autonomy support on job satisfaction and well-being at lower levels and smaller beneficial effects at higher levels of autonomy support (see Figure 5). Also, I expected to see a stronger beneficial effect of autonomy support on stress and anxiety at lower levels and smaller beneficial effects at higher levels of autonomy support (see Figure 6). To test this, I regressed the four outcomes in turn onto the autonomy support linear and quadratic term. I found evidence for curvilinear relationships between autonomy support and outcomes i.e., well-being and anxiety (see Table 14). For well-being, I found evidence for diminishing beneficial effects at higher levels of autonomy support (see Figure 16). For anxiety, I found evidence for diminishing beneficial effects at higher levels of autonomy support (Figure 17). Thus, I found partial support for Hypothesis 4.
Table 14

Hierarchical Regression Analyses Examining the Curvilinear Effects between Autonomy Support and Four Outcomes (Hypothesis 4) in Study 1

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Sat.</td>
<td>1. Autonomy Support</td>
<td>.58</td>
<td>.08</td>
<td>6.49</td>
<td>&lt;.001</td>
<td>.31***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Autonomy Support²</td>
<td>.09</td>
<td>.10</td>
<td>.92</td>
<td>.35</td>
<td>.01</td>
<td>.32***</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well-Being</td>
<td>1. Autonomy Support</td>
<td>.34</td>
<td>.10</td>
<td>3.19</td>
<td>.001</td>
<td>.04*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Autonomy Support²</td>
<td>.28</td>
<td>.12</td>
<td>2.21</td>
<td>.02</td>
<td>.04</td>
<td>.08**</td>
</tr>
<tr>
<td>Stress</td>
<td>1. Autonomy Support</td>
<td>-.21</td>
<td>.02</td>
<td>-7.31</td>
<td>&lt;.001</td>
<td>.37***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Autonomy Support²</td>
<td>-.03</td>
<td>.03</td>
<td>-.91</td>
<td>.36</td>
<td>.01</td>
<td>.38***</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1. Autonomy Support</td>
<td>-.24</td>
<td>.04</td>
<td>-6.02</td>
<td>&lt;.001</td>
<td>.39***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Autonomy Support²</td>
<td>.10</td>
<td>.04</td>
<td>2.17</td>
<td>.03</td>
<td>.02</td>
<td>.42***</td>
</tr>
</tbody>
</table>

Note. N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Figure 16

The Curvilinear Relationship between Autonomy Support and Well-Being in Study 1
Figure 17

The Curvilinear Relationship between Autonomy Support and Anxiety in Study 1
Curvilinear Effects Between Intrinsic Motivation and Primary Outcomes

(Hypothesis 5). I predicted that intrinsic motivation has a positive curvilinear relationship with job satisfaction and well-being and has a negative curvilinear relationship with stress and anxiety. I expected to see a stronger beneficial effect of intrinsic motivation on job satisfaction and well-being at lower levels and smaller beneficial effects at higher levels of intrinsic motivation (see Figure 5). Also, I expected to see a stronger beneficial effect of intrinsic motivation on stress and anxiety at lower levels and smaller beneficial effects at higher levels of intrinsic motivation (see Figure 6). To test this, I regressed the four outcomes in turn onto the intrinsic motivation linear and quadratic term. I found evidence for curvilinear relationships between intrinsic motivation and outcomes i.e., job satisfaction and well-being (see Table 15). For job satisfaction, I found evidence for diminishing beneficial effects at higher levels of intrinsic motivation (see Figure 18). Similar to Hypothesis 3 for well-being, although I found evidence for a positive relationship, I observed unexpected evidence for increasing beneficial effects at higher levels of intrinsic motivation, rather than the diminishing beneficial effects at higher levels (see Figure 19). Thus, I found partial support for Hypothesis 5.
Table 15

Hierarchical Regression Analyses Examining the Curvilinear Effects between Intrinsic Motivation and Four Outcomes (Hypothesis 5) in Study 1

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>( b )</th>
<th>( SE )</th>
<th>( t )</th>
<th>( p )</th>
<th>( \Delta R^2 )</th>
<th>( R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Sat.</td>
<td>1. Int. Motivation</td>
<td>1.28</td>
<td>.09</td>
<td>14.19</td>
<td>&lt;.001</td>
<td>.65**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Int. Motivation(^2)</td>
<td>-.18</td>
<td>.06</td>
<td>-2.95</td>
<td>.003</td>
<td>.03</td>
<td>.68***</td>
</tr>
<tr>
<td>Well-Being</td>
<td>1. Int. Motivation</td>
<td>.52</td>
<td>.15</td>
<td>3.35</td>
<td>.001</td>
<td>.06**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Int. Motivation(^2)</td>
<td>.22</td>
<td>.10</td>
<td>2.11</td>
<td>.03</td>
<td>.03</td>
<td>.10**</td>
</tr>
<tr>
<td>Stress</td>
<td>1. Int. Motivation</td>
<td>-.41</td>
<td>.03</td>
<td>-11.74</td>
<td>&lt;.001</td>
<td>.55***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Int. Motivation(^2)</td>
<td>.01</td>
<td>.02</td>
<td>.41</td>
<td>.67</td>
<td>.00</td>
<td>.55***</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1. Int. Motivation</td>
<td>-.47</td>
<td>.06</td>
<td>-7.59</td>
<td>&lt;.001</td>
<td>.36***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Int. Motivation(^2)</td>
<td>.05</td>
<td>.04</td>
<td>1.25</td>
<td>.21</td>
<td>.01</td>
<td>.37***</td>
</tr>
</tbody>
</table>

Note. \( N = 116 \). *\( p < .05 \); **\( p < .01 \); ***\( p < .001 \). All \( b \) and \( SE \) values are from the last (second) step of each hierarchical regression analysis.
Figure 18

The Curvilinear Relationship between Intrinsic Motivation and Job Satisfaction in Study 1
Figure 19

*The Curvilinear Relationship between Intrinsic Motivation and Well-Being in Study 1*
Exploratory Analyses. I conducted exploratory analyses to better understand the nature of the results for Hypotheses 1-5.

Exploratory 1: Interest-Enjoyment Subfactor as a Moderator. Researchers have found evidence supporting both a general one-factor and a five-factor solution for intrinsic motivation. The five-factor solution has revealed the following facets: interest/enjoyment, effort/importance, competence, pressure/tension, choice (McAuley, Wraith, & Duncan, 1991). I tested my hypotheses with the composite intrinsic motivation scale. However, the interest-enjoyment (IM-IE) items may similarly represent enjoyment in one’s work, relative to items relating to other facets in the composite scale. I examined interest-enjoyment as a moderator of the relationship between BPNS autonomy and primary outcome variables, and I expected a similar prediction as stated in Hypothesis 1. Interest-enjoyment significantly moderated the relationship between BPNS autonomy and anxiety ($b = .07, SE = .03, p = .04$). Contrary to my prediction in Hypothesis 1, I observed significant negative relationships between autonomy and anxiety. Further, I observed higher anxiety and a stronger negative relationship between autonomy and anxiety at lower levels of interest-enjoyment ($b = -.40, SE = .06, p < .001$), relative to higher levels of interest-enjoyment ($b = -.24, SE = .08, p < .001$; see Appendix AB). Overall, the intrinsic motivation composite and enjoyment subscale resulted in similar relationships with outcomes.

Exploratory 2: Work-Locus of Control as Primary Predictor. I used Deci and Ryan’s (1985) BPNS autonomy scale as my primary predictor in tests of hypotheses, along with three other exploratory autonomy measures (e.g., Spector, 1998). However, autonomy is most likely a sub-concept of a broader control-related concept. That is, autonomy is simply perception of control over the self and the surrounding environment. Researchers have developed many
control-related variables to date (e.g., locus of control, Rotter, 1966). Thus, I tested Spector’s (1988) Work-Locus of Control measure as the primary predictor with autonomy support and intrinsic motivation as moderators along with four outcome variables. To the extent that WLCS is similar in content, I expected to observe a similar relationship to that observed when using autonomy as a predictor. I found no evidence that autonomy support or intrinsic motivation moderated the relationship between Work-Locus of Control and the four primary outcome variables, which was unexpected (see Appendix AC).

**Exploratory 3: Leadership Behavior as Moderator.** I used Deci and Ryan’s (1987) Work Climate Questionnaire to measure autonomy support. Autonomy support is most likely a measure capturing the extent to which a leader is supportive. Thus, I tested the revised Leadership Behavior Description Questionnaire (LBDQ-XII; Fleishman, 1957; Schriesheim & Stogdill, 1975) to determine the extent to which leader support would moderate the relationship between autonomy and the four primary outcomes. To the extent that leader support is similar in content, I expected to observe a similar relationship to that observed when using autonomy support as a moderator. I found evidence supporting LBDQ-XII as a moderator of the relationship between BPNS autonomy and anxiety ($b = .13, SE = .06, p = .04$), but I did not find support for the other three outcome variables. Contrary to my prediction, I observed higher anxiety and a significant negative relationship between autonomy and anxiety at lower levels of leader support ($b = -.38, SE = .06, p < .001$). However, I observed a weaker significant negative relationship between autonomy and anxiety at higher levels of leader support, which was the expected relationship ($b = -.19, SE = .07, p < .001$; see Appendix AB). The relationship observed for the composite leader behavior scale as a moderator was similar to the relationship observed with autonomy support as a moderator.
Further, I tested the leader consideration subscale to determine whether there was a similar pattern of relationships because initiating structure most likely does not play a role in leader support. I found evidence supporting leader consideration as a moderator of the relationship between BPNS autonomy and anxiety \( (b = .12, SE = .05, p = .02) \). Contrary to my prediction, I observed higher anxiety and a significant negative relationship between autonomy and anxiety at lower levels of leader consideration \( (b = -.38, SE = .06, p < .001) \). However, I observed a significant negative relationship between autonomy and anxiety at higher levels of leader consideration, which was the expected relationship \( (b = -.19, SE = .07, p < .001) \); (see Appendix AD). The relationship observed for consideration as a moderator was similar to the relationship observed for autonomy support as a moderator. Overall, autonomy support and leader behavior resulted in similar relationships with outcomes.

**Exploratory 4: Quantitative Workload, Physical Symptoms, and OCB as Outcome Variables.** I predicted that autonomy and primary moderators would have interactive effects on job satisfaction, subjective well-being, stress (operationalized as burnout), and anxiety. These outcomes are common workplace attitudes that researchers have studied extensively (e.g., Deci & Ryan, 2017). However, it is possible that intrinsic motivation or autonomy support would moderate autonomy relationships with variables with a more behavioral focus. Thus, I tested moderator effects on behavioral exploratory measures, including quantitative workload, physical symptoms, and OCB. I found no support for intrinsic motivation and autonomy support moderating relationships between autonomy and behavioral-focused outcomes (see Appendix AE).

**Exploratory 5: The Factual Autonomy Scale and Objective Outcomes.** Spector and Fox (2003) developed an autonomy scale that they proposed captured a more behavioral dimension
of autonomy. Perhaps, the Factual Autonomy Scale interacts with more behavioral focused measures. I tested whether intrinsic motivation and autonomy support moderated the relationship between the Factual Autonomy Scale and quantitative workload, physical symptoms, and OCB. I found no support for intrinsic motivation and autonomy support moderating the relationship between factual autonomy and objective-focused outcomes (see Appendix AF). Although I did not observe significant interactions, I did find an unexpected pattern of relationships between OCB, physical symptoms, quantitative workload, role conflict, and factual autonomy. Specifically, there was a significant relationship between OCB and physical symptoms \( (r = .24, p < .01) \), quantitative workload \( (r = .42, p < .001) \), role conflict \( (r = .18, p < .05) \), and the factual autonomy scale \( (r = -.21, p < .05) \). I will discuss the implications relating to these relationships in the general discussion section.

**Unique Incremental Variance.** I conducted analyses to examine whether there were additive effects between primary predictors and outcomes. I tested the incremental variance for each of the primary predictors (BPNS autonomy, autonomy support, and intrinsic motivation) accounting for variance in each of the four primary outcomes in turn. For job satisfaction, intrinsic motivation accounted for unique variance over BPNS autonomy and autonomy support. For subjective well-being, none of the three predictors accounted for unique incremental variance. For stress (operationalized as burnout), all three predictors accounted for unique incremental variance. For anxiety, all three predictors accounted for unique incremental variance (see Appendix AG).

**Study 1 Discussion**

The purpose of my study was to better understand the extent to which individual features i.e., intrinsic motivation, and situational factors i.e., autonomy support influence the relationship
between autonomy and both beneficial and negative outcomes (Hypotheses 1 and 2). Further, I
examined whether increasing levels of predictors resulted in diminishing beneficial effects on
outcomes (Hypotheses 3, 4, and 5). Overall, I found partial support for Hypothesis 1, no support
for Hypothesis 2, and partial support for Hypothesis 3. For Hypothesis 1, higher intrinsic
motivation predicted higher satisfaction regardless of level of autonomy and beneficially
strengthened the relationship between autonomy and well-being. Higher intrinsic motivation
resulted in lower anxiety and a weaker negative relationship between autonomy and anxiety
compared to lower levels of intrinsic motivation. For Hypothesis 2, the only significant reaction
was higher levels of autonomy support resulted in lower anxiety and a weaker negative
relationship between autonomy and outcomes compared to lower levels of autonomy support.
For Hypothesis 3, I observed several significant curvilinear relationships between primary
predictors and outcomes that were in the expected direction. There were significant interactions
that did not reflect the predicted patterns, but results reflected interpretable patterns of
relationships within the data. My results raise theoretical issues relating to the importance of
intrinsic motivation, the weaker role of autonomy support, the impact of autonomy support on
undergraduate’s anxiety, the presence of curvilinear relationships, the differences between
outcomes, and the differences between autonomy scales. My results raise practical issues relating
to aligning undergraduate employees with enjoying tasks and hiring and training autonomy
supportive managers. In the following, I review the theoretical issues, the practical issues, and
the limitations for Study 1 (undergraduate sample). I will review the directions for future
research in the General Discussion section because the directions are similar for both studies.

*Unexpected Importance of Intrinsic Motivation as a Moderator*
The first issue raised by my results was the unexpected role that intrinsic motivation played as a moderator. Many researchers have found consistent support for autonomy being a critical predictor of stronger beneficial outcomes (e.g., Deci & Ryan, 1985; Kim & Stoner, 2008). I found main effects between autonomy and outcomes that were consistent with previous research. For Hypothesis 1, majority of the interactions did not result in the expected relationships. However, I found that higher intrinsic motivation resulted in higher job satisfaction regardless of level of autonomy. Undergraduate employees seem to be satisfied with their work when they enjoy their work, regardless of whether they perceive themselves as having lower or higher control over their work. Intrinsic motivation accounted for an additional 24% unique variance in job satisfaction beyond that accounted for by autonomy and autonomy support. This provides support for the notion that the extent to which undergraduates enjoy their work plays a critical role in whether they will be satisfied with their work, regardless of level of control over their work or autonomy support from their manager. Undergraduate employees might be working in more structured positions in which tasks are regimented, so the important factor might not be how much autonomy employees have when completing tasks but rather the extent to which employees enjoy their tasks.

**Weaker Role of Autonomy Support as a Moderator**

The second issue raised by my results was the weaker role that autonomy support played as a moderator. Similar to autonomy, researchers have found consistent evidence for autonomy support predicting stronger beneficial outcomes (e.g., Silva et al., 2011). I found main effects between autonomy support and outcomes that were consistent with past research. For Hypothesis 2, I predicted that employees would experience higher levels of job satisfaction and well-being when their level of autonomy matched with their level of autonomy support. I found evidence for
one significant interaction, and it was not the expected relationship. Intrinsic motivation played a more important role as a moderator between autonomy and outcomes compared to autonomy support. Perhaps, autonomy support is capturing a narrower aspect of one’s work compared to the more comprehensive intrinsic motivation items. The autonomy support scale captures the extent to which a leader is autonomy supportive, but there are other factors that may influence one’s perception of autonomy support, e.g., support from coworkers, clients, and other situational factors. Undergraduates might experience less autonomy support due to the regimented nature of their work tasks. Undergraduates might place more weight and value on how much they enjoy and have interest in their work compared to how much control they have over their work. Further, undergraduates might be in structured jobs that simply prevent managers from allowing higher levels of autonomy. Thus, autonomy support might not be as relevant a moderator between autonomy and outcomes for undergraduate working populations.

**Important Role of Support in Reducing Undergraduates’ Anxiety**

The third issue raised by my results is the important role autonomy support plays in reducing anxiety. Researchers have found support for autonomy support having a beneficial effect on level of anxiety (e.g., Sheldon & Elliot, 1998; Morgenson, Delaney-Klinger, & Hemingway, 2005). Although autonomy support played a weaker role as a moderator in Study 1, it had a positive impact on undergraduate employees. For anxiety, autonomy support accounted for unique incremental variance over and above autonomy and intrinsic motivation. Undergraduates are generally less experienced than permanent full-time employees. The presence of a supportive and engaged leader might be more important than enjoyment or control in reducing levels of work anxiety. I conducted an exploratory analysis with leader consideration as a moderator between BPNS autonomy and outcomes. The only significant interaction was
with anxiety as an outcome, and higher levels of leader consideration strengthened the negative relationship between autonomy and anxiety. This supports the idea that the presence of a supportive leader reduces undergraduates’ work-related anxiety.

**Presence of Curvilinear Relationships**

The fourth issue raised by my results is whether relationships between primary predictors and outcomes ought to be described as primarily linear or curvilinear relationships. Deci and Ryan (1985) predicted and found support for linear relationships between autonomy and outcomes. I found evidence for curvilinear relationships between autonomy, autonomy support, intrinsic motivation, and outcomes. For example, higher levels of BPNS autonomy and intrinsic motivation resulted in diminishing beneficial effects on job satisfaction. Higher levels of BPNS autonomy resulted in diminishing beneficial effects on anxiety. Overall, researchers have obtained conflicting evidence on whether these relationships can best be described as linear or curvilinear, and our mixed results did little to clarify this situation.

**Differences between Anxiety, Stress, and Well-being**

The fifth issue raised by my results is the unexpected differential relationships observed for stress versus anxiety as an outcome and the weak relationships observed for well-being as an outcome. Researchers have found similar main effects of predictors on stress and anxiety (Demerouti, Mostert, & Bakker, 2010; Jaworek, Marek, & Karwowski, 2020). However, unlike anxiety, stress was not involved in significant interactions. I expected to see similar patterns of relationships for stress and anxiety as outcomes because they are conceptually similar work-related outcomes. However, undergraduates may have reacted to and interpreted anxiety items differently than the way they reacted to burnout items. Although these scales contain work specific items, the nature of these items may have caused undergraduates to consider other areas
of their life, which possibly influenced their responses. That is, undergraduates might be more concerned with burnout in terms of school performance instead of work performance. The nature of undergraduate-level work positions might not be associated with high rates of burnout. Alternatively, the relationship between predictors and stress might be best characterized as a direct relationship. That is, higher levels of autonomy, autonomy support, and intrinsic motivation might result in lower stress (burnout) regardless of moderators.

Moreover, my predictors accounted for lower variance in well-being compared to the other three outcomes. None of the three predictors accounted for unique incremental variance in well-being, and the total variance accounted for was nine percent with all three predictors in the model. Nine percent is considerably lower than the variance accounted for in the other three outcomes. Possibly, well-being is capturing perceptions beyond the work context to a greater extent that the other outcomes. Thus, my predictors might have accounted for more variance in well-being if those items were specific to the work context. i.e., “workplace well-being.” An undergraduate may experience higher well-being in their life regardless of their work characteristics and attitudes towards their work. Overall, it is not clear why stress resulted in no significant interactions and why predictors accounted for low variance in well-being.

**Differences between Autonomy Measures**

The sixth issue raised by my results is the prevalence of autonomy measures in the literature and their differential effects in Study 1. BPNS autonomy, 1-item autonomy, and JDS autonomy measures are similar in that each was developed to measure perceptions of one’s level of work-specific autonomy (e.g., Deci & Ryan, 1985; Hackman & Oldham, 1975). In contrast, the Factual autonomy measure was developed to assess a more behavioral aspect of autonomy in one’s work (Spector & Fox, 2003). Factual autonomy as a predictor did not result in any
significant interactions with moderators and outcomes. This is not surprising because moderators and outcomes were not designed to capture behavioral aspects in work. To examine this issue, I conducted a post hoc test examining whether behavioral outcomes, such as quantitative workload, dysfunctional physical symptoms, and OCB would be involved in significant interactions, but I did not find support for these outcomes.

It is difficult to determine whether the differences observed for different autonomy measures are a result of low power or true differential undergraduate reactions to items in these scales. The BPNS resulted in the most consistent patterns across hypotheses, but it is not certain why this is. BPNS autonomy might more predictive because it is capturing a wider range of autonomy with a number of positively and negatively keyed items, compared to the 3-item JDS scale and 1-item scale.

**Practical Implications**

Organizational leaders want to retain healthy and highly motivated employees. However, turnover and mental health issues among Americans, especially within younger generations, are on the rise (National Alliance on Mental illness, 2021). Based on the results from Study 1, there are practical implications and strategies that organizational leaders could consider.

First, intrinsic motivation played a major role in how satisfied working undergraduates are with their work. Enjoyment in one’s work could compensate for lower levels of control over how and when the work gets completed. Leaders who employ undergraduates should focus on aligning individual interests with work tasks to maximize enjoyment. The nature of entry level positions likely does not allow for the level of control, choice, and responsibility that is found in more complex, higher level jobs that require more experience and education. With that said, our results suggested that employees with lower control can be satisfied with their work.
Second, undergraduates are generally new to the workforce, compared to full-time workers. Positions that are poorly defined and ambiguous might lead to higher levels of uncertainty and anxiety for undergraduate employees. Undergraduates might not have developed the knowledge and skills to handle higher levels of role ambiguity and uncertainty on their own. Leaders who are autonomy supportive do not micro-manage employees, but they offer guidance and resources when needed. Thus, managers ought to engage, support, and guide undergraduate employees, while allowing for employees to maintain a sense of control over their work, thus, reducing levels of anxiety. Leaders who are autonomy supportive and can strategically align workers to tasks they will enjoy will most likely have workers who experience higher levels of beneficial outcomes.

Limitations for Study 1

The primary limitation for Study 1 was insufficient sample size. I tested moderation using regression, which requires large samples to have sufficient power to detect significant effects. I analyzed data from 116 undergraduates. However, the power analysis suggested a sample size of 434 to detect an effect size of .03 ($f^2$). In contrast, Study 2 with an $N = 444$ provided sufficient power to detect posited moderator effects. Thus, it is difficult to determine whether differences between studies were due to substantive differences between undergraduate employees and permanent employees or the differences in effects were due to differences in sample size. Although Study 1 was underpowered, I did find partial support for hypotheses, main effects in the expected direction, and similar patterns of relationships between Study 1 and Study 2, which I will review in the following sections.
Conclusion

Overall, the main effects between primary predictors and outcomes were significant and in expected directions. The majority of interactions did not result in the expected relationships. However, I found consistent and interpretable relationships within the data. Specifically, a central theme implied by my results is that undergraduate employees may experience lower autonomy and autonomy support because of the regimented nature of their work, but intrinsic motivation can make up for this deficiency. In the following section, I will review and discuss the results for Study 2 (MTurk sample).
Study 2 (Mturk Sample) Results and Discussion

In the following section, I will review the descriptive statistics, hypothesis tests, and exploratory tests, and I will discuss the results for Study 1 (MTurk sample).

Decisions for Study 2 based on Study 1 Results

Study 1 and Study 2 procedures were similar. However, bots, careless responding, and fast response rates are prevalent issues for MTurk data collections (Aguinis, Villamor, & Ramani, 2020). To mitigate these issues for Study 2 (MTurk), I removed the following three exploratory measures to reduce total item count: growth-need-strength, counterproductive work behavior, and the comprehensive health score. I removed these three scales because I did not conduct any analyses with these three measures in Study 1, and they did not have discernable patterns with primary variables or other exploratory variables in Study 1.

Data Cleaning and Scale Construction

Initially, 982 employees attempted the survey. I removed 427 employees who completed the study faster than two seconds per item per page, leaving 555 responses. I removed an additional 98 participants who failed three or more of the five infrequency attention check items, leaving 457 responses. I removed 12 participants who selected “0-14” for number of hours worked per week. I removed one who chose “working less than 6 months.” The resulting final sample included 444 data points. I constructed scales as described in the method section.

Sample Characteristics

Of the 444 participants, 55.6% were male, 43.6% were female, and two employees selected “choose not to say.” The distribution of races was as follows: 84.6% White/Caucasian, 7.8% Native American, 2.7% African American, 2.2% Hispanic, 2% Asian/Pacific Islander, and .5% mixed. The average age of the sample was 34.42 years old with a standard deviation of 9.92
years. The most common industries were information, administrative and support services, healthcare and social assistance, and finance and insurance, respectively. The majority, 62.4% of participants, reported that they complete their work “fully in-person,” 30.2% reported “hybrid,” and 7.4% reported “fully online.” Lastly, 72.1% of participants reported having “medium autonomy,” 25.4% reported having “high autonomy,” and 2.4% reported having “low autonomy.”

Exploratory Factor Analyses for Primary Predictors and Outcomes

I selected measures that are well-established in the literature and have acceptable psychometric properties (e.g., Deci & Ryan, 1985; Spector, 1993). I conducted exploratory factor analyses on each of the primary predictors and outcomes (see Appendix AH). In general, the psychometric properties observed in the current sample were consistent with psychometric properties reported in the literature for these measures. However, the BPNS autonomy scale, the interest-enjoyment subfactor scale for intrinsic motivation, and the work locus of control scale each contained items that correlated poorly with the total scales. I removed the reverse-scored items that correlated poorly with the respective composite scale. I used the modified scales as primary measures to test hypotheses and exploratory analyses, but I reported results for the original and modified scales for Study 2 (see Appendix AI for original and modified item correlations).

Descriptive Statistics for Primary Predictors and Outcomes

Table 16 contains means, standard deviations, alphas, and bivariate correlations for primary predictors and outcomes. BPNS autonomy is significantly related to outcomes in the expected direction. The two non-significant bivariate correlation were between anxiety and well-being ($r = .08$), and between autonomy and anxiety ($-.08$), which was unexpected. The original
7-item BPNS autonomy scale correlated with anxiety (-.50, \( p < .001 \)). It is important to note that two correlations may have indicated evidence of multicollinearity. Autonomy and autonomy support correlated highly \( (r = .72, p < .001) \). Stress, operationalized as burnout, was correlated with job satisfaction at \( (r = -.72, p < .001) \).

**Table 16**

Descriptive Statistics for Primary Predictors and Outcomes in Study 2

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<tr>
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<th>( M )</th>
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<th>6</th>
<th>7</th>
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<tbody>
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<td>1.</td>
<td>AUT</td>
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</tr>
<tr>
<td>2.</td>
<td>AUTX</td>
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<td>.70</td>
<td>.65</td>
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<tr>
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<td>IM</td>
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<td>.45</td>
<td>.70</td>
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<td>4.</td>
<td>AS</td>
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<td>.72</td>
<td>.55</td>
<td>.56</td>
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<td>5.</td>
<td>SWB</td>
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<td>1.01</td>
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<td>.27</td>
<td>.28</td>
<td>.61</td>
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<td>JS</td>
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<td>.56</td>
<td>.41</td>
<td>.36</td>
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<td>-.14</td>
<td>.08</td>
<td>.45</td>
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<tr>
<td>8.</td>
<td>OLBI</td>
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<td>.37</td>
<td>-.35</td>
<td>-.63</td>
<td>-.72</td>
<td>-.41</td>
<td>-.48</td>
<td>-.48</td>
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</tbody>
</table>

*Note. N = 444. Coefficient alpha appears in parentheses on the diagonal. Italicized font \( p < .05 \). Italicized and bold \( p < .01 \). Bold \( p < .001 \). AUT = BPNS modified 4-item autonomy, AUTX = BPNS original 7-item autonomy. IM = intrinsic motivation, AS = autonomy support, SWB = subjective well-being, JS = job satisfaction, ANX = anxiety, OLBI = stress.*

**Descriptive Statistics for Autonomy Measures**

Table 17 contains means, standard deviations, alphas, and bivariate correlations for the modified primary autonomy measure (BPNS autonomy), original BPNS autonomy measure, and three exploratory autonomy measures. The factual autonomy scale did not positively correlate
with the other three autonomy scales except for the original 7-item scale \((r = .41, p < .001)\).

There was no evidence of multicollinearity.

**Table 17**

*Descriptive Statistics for Autonomy Measures in Study 2*

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<thead>
<tr>
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<th>4</th>
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</thead>
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<td>1. BPNS Autonomy</td>
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<td>(.74)</td>
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<td>2. BPNS Autonomy (original)</td>
<td>4.57</td>
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<td>.65</td>
<td>(.45)</td>
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<td>3. Job Diagnostic Autonomy</td>
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<td>.43</td>
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<tr>
<td>4. Factual Autonomy</td>
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<td>5. One-Item Autonomy</td>
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<td>.81</td>
<td>.37</td>
<td>.29</td>
<td>.55</td>
<td>-.02</td>
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</table>

*Note. N = 444. Coefficient alpha appears in parentheses on the diagonal. Italicized font \(p < .05\). Italicized and bold \(p < .01\). Bold \(p < .001\).*

**Descriptive Statistics for Exploratory Measures**

Table 18 contains means, standard deviations, alphas, and bivariate correlations for exploratory measures. The five-factor personality factors resulted in low reliabilities. One possible explanation for the low internal consistencies is related to the increase in careless responding when MTurk participants reached the end of my survey, which is where I placed the Big Five personality measure. Researchers have found evidence for higher levels of careless responding towards the end of surveys (Aguinis, Villamor, & Ramani, 2021). Another possible explanation relates to reverse-scored items. I used the IPIP-20, which has two reverse-scored items for each of the five factors. Although I removed participants who completed the survey faster than two seconds per item per page, I might not have excluded all careless responders. A
participant who carelessly responded may have not interpreted the reverse-scored items correctly, which most likely would have resulted in lower internal consistency.

Further, there is a pattern of relationships between behavioral-focused measures, including organizational citizenship behavior, physical symptoms, and quantitative workload. Organizational citizenship behaviors positively correlated with physical symptoms ($r = .44, p < .001$) and with quantitative workload ($r = .52, p < .001$). Table 19 contains bivariate correlations for all study variables.
Table 18

*Descriptive Statistics for Exploratory Measures in Study 2*

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<td>2. WLCS</td>
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<td>-.04</td>
<td>(.89)</td>
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<td>.50</td>
<td>-.37</td>
<td>.37</td>
<td>(.85)</td>
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<td>7. QWI</td>
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*Note.* N = 444. Coefficient alpha appears in parentheses on the diagonal. Italicized *p < .05*. Italicized and bold *p < .01*. Bold *p < .001*. OCB = organizational citizenship behavior, WLCS = work locus of control, LBDQ = leadership behavior, RA = role ambiguity, RC = role conflict, PSI = physical symptoms, QWI = quantitative workload, SD = social desirability, CD = cognitive dissonance, IPIPA = agreeableness, IPIPC = conscientiousness, IPIPE = extraversion, IPIPN = neuroticism, IPIPO = openness.
Table 19

Correlations between Primary Study Variables and Exploratory Study Variables in Study 2

<table>
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<tr>
<th>Variables: Exploratory:</th>
<th>Primary:</th>
<th>AUT</th>
<th>AUTX</th>
<th>IM</th>
<th>AS</th>
<th>JS</th>
<th>SWB</th>
<th>OLBI</th>
<th>ANX</th>
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<td>.55</td>
<td>.66</td>
<td>.33</td>
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<td>.51</td>
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<td>.35</td>
<td>.11</td>
<td>-.40</td>
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<td>IPIPC</td>
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<td>.40</td>
<td>.53</td>
<td>.29</td>
<td>.27</td>
<td>.11</td>
<td>-.46</td>
<td>-.44</td>
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</tr>
<tr>
<td>IPIPE</td>
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<td>.18</td>
<td>.19</td>
<td>.24</td>
<td>.21</td>
<td>.30</td>
<td>-.19</td>
<td>-.09</td>
<td></td>
</tr>
<tr>
<td>IPIPN</td>
<td>-.16</td>
<td>-.38</td>
<td>-.51</td>
<td>-.25</td>
<td>-.22</td>
<td>-.13</td>
<td>.39</td>
<td>.42</td>
<td></td>
</tr>
<tr>
<td>IPIPO</td>
<td>.15</td>
<td>.43</td>
<td>.53</td>
<td>.19</td>
<td>.34</td>
<td>-.03</td>
<td>-.46</td>
<td>-.58</td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 116. Coefficient alpha appears in parentheses on the diagonal. Primary predictors and outcomes are on the labeled columns. Italicized \( p < .05 \). Italicized and bold \( p < .01 \). Bold \( p < .001 \). JDS = job diagnostic survey, FAS = factual autonomy, ONE = one-item autonomy, OCB = organizational citizenship behavior, WLCS = work locus of control, LBDQ = leader behavior, RA = role ambiguity, RC = role conflict, PSI = physical symptoms, QWI = quantitative workload, SD = social desirability, CD = cognitive dissonance, IPIPA = agreeableness, IPIPC = conscientiousness, IPIPE = extraversion, IPIPN = neuroticism, IPIPO = openness, AUT = autonomy, AUTX = original autonomy, IM = intrinsic motivation, AS = autonomy support, JS = job satisfaction, SWB = subjective well-being, OLBI = stress, ANX = anxiety.
Study 2 (MTurk Sample): Hypothesis Testing

Intrinsic Motivation as a Moderator (Hypothesis 1). I predicted that intrinsic motivation would moderate the relationship between Deci and Ryan’s (1985) autonomy measure (BPNS autonomy) and study outcomes i.e., job satisfaction, subjective well-being, stress, and anxiety. To test this, I regressed the four outcomes in turn onto BPNS autonomy, intrinsic motivation, and the interaction term (BPNS autonomy x intrinsic motivation). Further, I tested the original 7-item BPNS autonomy measure and three additional exploratory autonomy scales as the predictor. I reported results for the four autonomy measures for each of the four outcomes in turn. The original 7-item BPNS scale resulted in similar patterns as the modified BPNS scale for Hypothesis 1 analyses (See Appendix AJ).

For job satisfaction, I expected to see a stronger relationship between autonomy and satisfaction at higher levels of intrinsic motivation, and I expected to see no relationship between autonomy and satisfaction at lower levels of intrinsic motivation (see Figure 1). The results indicated that intrinsic motivation moderated the relationship between autonomy and satisfaction for all four autonomy scales (see Table 20, Figures 20, 21, 22, and 23). Contrary to my prediction, I observed higher satisfaction and a significant negative relationship between BPNS autonomy and satisfaction at higher levels of intrinsic motivation ($b = -0.18$, $SE = 0.07$, $p = 0.01$). At lower levels of intrinsic motivation, I observed a significant positive relationship between BPNS autonomy and satisfaction, which was not the expected relationship ($b = 0.12$, $SE = 0.05$, $p = 0.02$). For the other three autonomy scales, autonomy was lower and positively related to satisfaction when intrinsic motivation was lower, which was not the expected relationship (JDS: $b = 0.24$, $SE = 0.04$, $p < 0.001$; FAS: $b = 0.25$, $SE = 0.07$, $p < 0.001$; 1-item: $b = 0.37$, $SE = 0.06$, $p < 0.001$). When intrinsic motivation was higher, job satisfaction was high regardless of the level of autonomy,
which was not the expected relationship (JDS: $b = -0.02, SE = 0.06, p = .07$; FAS: $b = -0.04, SE = 0.07, p = .52$; 1-item: $b = 0.10, SE = 0.06, p = .13$). This failed to provide support for Hypothesis 1.

Table 20

Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of Relationships between Four Autonomy Scales and Job Satisfaction in Study 2

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
<th>$R^2$</th>
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</thead>
<tbody>
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<td>.28</td>
<td>3.68</td>
<td>.001</td>
<td>.31***</td>
<td>.31***</td>
</tr>
<tr>
<td></td>
<td>Intrinsic Motivation</td>
<td>2.22</td>
<td>.38</td>
<td>5.79</td>
<td>&lt;.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>-.23</td>
<td>.06</td>
<td>-3.63</td>
<td>&lt;.001</td>
<td>.02</td>
<td>.33***</td>
</tr>
<tr>
<td></td>
<td>1. Job Diagnostic Survey</td>
<td>1.01</td>
<td>.22</td>
<td>4.42</td>
<td>&lt;.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intrinsic Motivation</td>
<td>1.90</td>
<td>.30</td>
<td>6.31</td>
<td>&lt;.001</td>
<td>.33***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>-.19</td>
<td>.05</td>
<td>-3.82</td>
<td>&lt;.001</td>
<td>.02</td>
<td>.35***</td>
</tr>
<tr>
<td></td>
<td>1. Factual Autonomy</td>
<td>1.15</td>
<td>.34</td>
<td>3.34</td>
<td>&lt;.001</td>
<td>.32***</td>
<td></td>
</tr>
<tr>
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<td>6.14</td>
<td>&lt;.001</td>
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</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>-.22</td>
<td>.07</td>
<td>-3.08</td>
<td>.002</td>
<td>.01</td>
<td>.33***</td>
</tr>
<tr>
<td></td>
<td>1. One-Item Autonomy</td>
<td>1.18</td>
<td>.31</td>
<td>3.75</td>
<td>&lt;.001</td>
<td>.35***</td>
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<td>.29</td>
<td>5.74</td>
<td>&lt;.001</td>
<td></td>
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<tr>
<td></td>
<td>2. Interaction Term</td>
<td>-.20</td>
<td>.06</td>
<td>-3.00</td>
<td>.002</td>
<td>.01</td>
<td>.36***</td>
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</table>

*Note. $N = 444$. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and $SE$ values are from the last (second) step of each hierarchical regression analysis.*
Figure 20

Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Job Satisfaction in Study 2

Note. Int. Motivation = Intrinsic Motivation.
Figure 21

*Intrinsic Motivation as a Moderator of the Relationship between Job Diagnostic Autonomy and Job Satisfaction in Study 2*

*Note.* Int. Motivation = Intrinsic Motivation.
Figure 22

_Intrinsic Motivation as a Moderator of the Relationship between Factual Autonomy and Job Satisfaction in Study 2_

*Note.* Int. Motivation = Intrinsic Motivation.
Figure 23

Intrinsic Motivation as a Moderator of the Relationship between One-Item Autonomy and Job Satisfaction in Study 2

Note. Int. Motivation = Intrinsic Motivation.
For well-being, I expected to see a stronger relationship between autonomy and well-being at higher levels of intrinsic motivation, and I expected to see no relationship between autonomy and well-being at lower levels of intrinsic motivation (see Figure 1). The results indicated that intrinsic motivation moderated the relationship between autonomy and well-being for the BPNS autonomy, JDS autonomy, and 1-item autonomy scales (see Table 21, Figures 24, 25, 26). Contrary to my prediction, I observed lower well-being and a positive relationship between autonomy and well-being at lower levels on intrinsic motivation for the three autonomy scales (BPNS: $b = .61, SE = .05, p < .001$; JDS: $b = .58, SE = .04, p < .001$; 1-item: $b = .56, SE = .07, p < .001$). At higher levels of intrinsic motivation, I observed a weaker positive relationship between autonomy and well-being, which was not the expected relationship (BPNS: $b = .21, SE = .07, p = .005$; JDS: $b = .22, SE = .06, p < .001$; 1-item: $b = .17, SE = .07, p < .001$). This failed to provide support for Hypothesis 1.
Table 21

Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of Relationships between Four Autonomy Scales and Subjective Well-Being in Study 2

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
<th>$R^2$</th>
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<td>4.71</td>
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<td>.29</td>
<td>.24***</td>
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<td>2. Interaction Term</td>
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<td>.06</td>
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<td>.03</td>
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<td>&lt;.001</td>
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<td>4.42</td>
<td>&lt;.001</td>
<td>.22</td>
<td>.33***</td>
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<td></td>
<td>2. Interaction Term</td>
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<td>.05</td>
<td>-3.82</td>
<td>&lt;.001</td>
<td>.05</td>
<td>.35***</td>
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<td>.16***</td>
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<td>.32</td>
<td>.16***</td>
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<td>2. Interaction Term</td>
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<td>.08</td>
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<td>.07</td>
<td>.19***</td>
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</table>

*Note. $N = 444$. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and $SE$ values are from the last (second) step of each hierarchical regression analysis.
Figure 24

*Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Well-Being in Study 2*

*Note.* Int. Motivation = Intrinsic Motivation.
Figure 25

*Intrinsic Motivation as a Moderator of the Relationship between JDS Autonomy and Well-Being in Study 2*

*Note.* Int. Motivation = Intrinsic Motivation.
Figure 26

Intrinsic Motivation as a Moderator of the Relationship between One-Item Autonomy and Well-Being in Study 2

Note. Int. Motivation = Intrinsic Motivation.
For stress, I expected to see a positive relationship between autonomy and stress at lower levels of intrinsic motivation, and I expected to see no relationship between autonomy and stress at higher levels of intrinsic motivation (see Figure 2). The results indicated that intrinsic motivation moderated the relationship between autonomy and stress for the BPNS autonomy, JDS autonomy, and 1-item autonomy scales (see Table 22; Figure 27, 28, and 29). Contrary to my prediction, I observed lower stress and a significant negative relationship between autonomy and stress at higher levels of intrinsic motivation for BPNS and 1-item autonomy (BPNS: $b = -.06$, $SE = .02$, $p = .006$; 1-item: $b = -.05$, $SE = .02$, $p = .01$). At lower levels of intrinsic motivation, I observed no relationship between autonomy and stress, which was not the expected relationship (BPNS: $b = .01$, $SE = .01$, $p = .56$; 1-item: $b = .00$, $SE = .01$, $p = .62$). For JDS autonomy, I observed lower stress and no relationship between autonomy and stress at higher levels of intrinsic motivation, which was the expected relationship ($b = -.02$, $SE = .01$, $p = .21$). At lower levels of intrinsic motivation, there was no relationship between autonomy and stress, which was the expected relationship ($b = .02$, $SE = .01$, $p = .11$). This provided partial support for Hypothesis 1.
Table 22

*Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationships between the Four Autonomy Scales and Stress (Operationalized as Burnout) in Study 2*

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<th>Outcome</th>
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<th>p</th>
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<th>R²</th>
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<td>.53***</td>
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<td>.53***</td>
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<td>.53***</td>
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<td>.53***</td>
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<td>.02</td>
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<td>.53***</td>
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<td>-2.20</td>
<td>.02</td>
<td>.01</td>
<td>.53***</td>
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<td>1. Factual Autonomy</td>
<td>.08</td>
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<td>.55***</td>
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<tr>
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<td>-3.16</td>
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<td></td>
<td>2. Interaction Term</td>
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<td>.02</td>
<td>-1.64</td>
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<tr>
<td></td>
<td>1. One-Item Autonomy</td>
<td>.19</td>
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<td>2.00</td>
<td>.04</td>
<td>.53***</td>
<td>.53***</td>
</tr>
<tr>
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<td>Intrinsic Motivation</td>
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<td>.08</td>
<td>-2.27</td>
<td>.02</td>
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<td>.53***</td>
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<td>2. Interaction Term</td>
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<td>.02</td>
<td>-2.23</td>
<td>.02</td>
<td>.00</td>
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</tr>
</tbody>
</table>

*Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.*
Figure 27

Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Stress in Study 2

Note. Int. Motivation = Intrinsic Motivation.
Figure 28

*Intrinsic Motivation as a Moderator of the Relationship between JDS Autonomy and Stress in Study 2*

*Note.* Int. Motivation = Intrinsic Motivation.
Figure 29

*Intrinsic Motivation as a Moderator of the Relationship between One-Item Autonomy and Stress in Study 2*

*Note.* Int. Motivation = Intrinsic Motivation.
For anxiety, I expected to see a positive relationship between autonomy and anxiety at lower levels of intrinsic motivation, and I expected to see no relationship between autonomy and anxiety at higher levels of intrinsic motivation (see Figure 2). The results indicated that intrinsic motivation moderated the relationship between autonomy and anxiety for factual autonomy (see Table 23, Figure 30). Contrary to my prediction, I observed lower anxiety and a significant negative relationship between autonomy and anxiety at higher levels of intrinsic motivation. Further, I observed higher anxiety and a stronger negative relationship between autonomy and anxiety at lower levels of intrinsic motivation ($b = -0.49, SE = 0.04, p < 0.001$), relative to higher levels of intrinsic motivation ($b = -0.31, SE = 0.04, p = 0.006$). This provided no support for Hypothesis 1.

Table 23

*Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationship between the Four Autonomy Scales and Anxiety in Study 2*

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>$P$</th>
<th>$\Delta R^2$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
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<td>.17</td>
<td>2.51</td>
<td>.01</td>
<td>.46***</td>
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</tr>
<tr>
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<td>Intrinsic Motivation</td>
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<td>.24</td>
<td>-2.04</td>
<td>.04</td>
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</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
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<td>.04</td>
<td>-1.39</td>
<td>.16</td>
<td>.04</td>
<td>.47***</td>
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<tr>
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<td>2.97</td>
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<td>.00</td>
<td>.47***</td>
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<td>-5.15</td>
<td>&lt;.001</td>
<td>.57***</td>
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</tr>
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<td>Intrinsic Motivation</td>
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<td>-6.42</td>
<td>&lt;.001</td>
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<tr>
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<td>2. Interaction Term</td>
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<td>.04</td>
<td>3.13</td>
<td>.001</td>
<td>.00</td>
<td>.57***</td>
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<td>.21</td>
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<tr>
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<td>.04</td>
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<td>.08</td>
<td>.01</td>
<td>.42***</td>
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</table>

Note. $N = 444$. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and $SE$ values are from the last (second) step of each hierarchical regression analysis.
Figure 30

*Intrinsic Motivation as a Moderator of the Relationship between Factual Autonomy and Anxiety in Study 2*

*Note.* Int. Motivation = Intrinsic Motivation.
Autonomy Support as a Moderator (Hypothesis 2). I predicted that autonomy support would moderate the relationship between autonomy and study outcomes, i.e., job satisfaction, subjective well-being, stress, and anxiety. To test this, I regressed the four outcomes in turn onto autonomy, autonomy support, and the interaction term (autonomy x autonomy support). Further, I tested the original 7-item BPNS autonomy measure and three additional exploratory autonomy scales as the predictor. I reported results for the four autonomy measures for each of the four outcomes in turn. The original 7-item BPNS scale resulted in similar patterns as the modified BPNS scale for Hypothesis 2 analyses (See Appendix AK).

For job satisfaction, I expected to see a positive relationship between autonomy and satisfaction at higher levels of autonomy support, and I expected to see a negative relationship between autonomy and satisfaction at lower levels of autonomy support (see Figure 3). The results indicated that autonomy support moderated the relationship between autonomy and satisfaction for the 1-item autonomy scale (see Table 24, Figure 31). I observed higher satisfaction and a positive relationship between autonomy and satisfaction at higher levels of autonomy support, which was the expected relationship \( (b = .33, SE = .07, p < .001) \). At lower levels of autonomy support, I observed no relationship between autonomy and anxiety, which was not the expected relationship \( (b = .04, SE = .06, p = .05) \). This provided partial support for Hypothesis 2.
Table 24

Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Job Satisfaction in Study 2

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>P</th>
<th>ΔR²</th>
<th>R²</th>
</tr>
</thead>
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<td>1.48</td>
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<td>.17</td>
<td>.17</td>
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<tr>
<td></td>
<td>2. Interaction Term</td>
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<td>.03</td>
<td>-1.85</td>
<td>.06</td>
<td>.00</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Job Diagnostic Autonomy</td>
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<td>-.95</td>
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<td>.18</td>
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<tr>
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<td>Support</td>
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<td>.15</td>
<td>.80</td>
<td>.42</td>
<td>.17</td>
<td>.18</td>
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<td></td>
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<td>.03</td>
<td>1.79</td>
<td>.07</td>
<td>.01</td>
<td>.18</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>1. Factual Autonomy Support</td>
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<td>.32</td>
<td>.61</td>
<td>.53</td>
<td>.26</td>
<td>.26</td>
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<td></td>
<td>Support</td>
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<td>.17</td>
<td>2.05</td>
<td>.04</td>
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<td>2. Interaction Term</td>
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<td>.05</td>
<td>.65</td>
<td>.51</td>
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<td>1. One-Item Autonomy Support</td>
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<td>.16</td>
<td>-1.11</td>
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<td>.18</td>
<td>.21</td>
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</tbody>
</table>

Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Figure 31

Autonomy Support as a Moderator of the Relationship between 1-Item Autonomy and Job Satisfaction in Study 2

Note. Aut. Support = autonomy support.

For well-being, I expected to see a positive relationship between autonomy and well-being at higher levels of autonomy support, and I expected to see a negative relationship between autonomy and well-being at lower levels of autonomy support (see Figure 3). The results indicated that autonomy support moderated the relationship between autonomy and well-being for the BPNS autonomy, JDS autonomy, and 1-item autonomy scale (see Table 25, Figures 32, 33, and 34). Contrary to my prediction, I observed lower well-being and a significant positive
relationship between autonomy and anxiety when autonomy support was lower, which was not the expected relationship for the three autonomy scales (BPNS: $b = .20$, $SE = .04$, $p = .001$; JDS: $b = .21$, $SE = .05$, $p < .001$; 1-item: $b = .22$, $SE = .05$, $p < .001$). When autonomy support was higher, well-being was higher regardless of the level of autonomy, which was not the expected relationship for the three autonomy scales (BPNS: $b = -.03$, $SE = .06$, $p = .61$; JDS: $b = .04$, $SE = .05$, $p = .05$; 1-item: $b = .06$, $SE = .06$, $p = .31$). This failed to provide support for Hypothesis 2.

Table 25

Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Subjective Well-Being in Study 2

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>$P$</th>
<th>$\Delta R^2$</th>
<th>$R^2$</th>
</tr>
</thead>
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<td>Well-Being</td>
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<td>.18</td>
<td>4.39</td>
<td>&lt;.001</td>
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<td>.37***</td>
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<tr>
<td></td>
<td>Autonomy Support</td>
<td>1.27</td>
<td>.17</td>
<td>7.36</td>
<td>&lt;.001</td>
<td>.02</td>
<td>.39***</td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
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<td>.02</td>
<td>-4.06</td>
<td>&lt;.001</td>
<td>.02</td>
<td>.39***</td>
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<tr>
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<td></td>
<td>.38***</td>
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<td>Autonomy Support</td>
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<td>.13</td>
<td>7.55</td>
<td>&lt;.001</td>
<td>.02</td>
<td>.40***</td>
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<tr>
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<td>-3.75</td>
<td>&lt;.001</td>
<td>.02</td>
<td>.40***</td>
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<tr>
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<td>.29</td>
<td>-.56</td>
<td>.57</td>
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<td></td>
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<tr>
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<td>.15</td>
<td>4.39</td>
<td>&lt;.001</td>
<td>.02</td>
<td>.38***</td>
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<td>.05</td>
<td>-.03</td>
<td>.96</td>
<td>.00</td>
<td>.38***</td>
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<tr>
<td></td>
<td>1. One-Item Autonomy</td>
<td>.61</td>
<td>.19</td>
<td>3.06</td>
<td>.002</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Autonomy Support</td>
<td>.96</td>
<td>.14</td>
<td>6.78</td>
<td>&lt;.001</td>
<td>.01</td>
<td>.39***</td>
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<tr>
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<td>2. Interaction Term</td>
<td>-.08</td>
<td>.03</td>
<td>-2.41</td>
<td>.01</td>
<td>.01</td>
<td>.39***</td>
</tr>
</tbody>
</table>

Note. $N = 444$. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and $SE$ values are from the last (second) step of each hierarchical regression analysis.
Figure 32

Autonomy Support as a Moderator of the Relationship between BPNS Autonomy and Well-Being in Study 2

Figure 33

Autonomy Support as a Moderator of the Relationship between JDS Autonomy and Well-Being in Study 2

Figure 34

*Autonomy Support as a Moderator of the Relationship between 1-item Autonomy and Well-Being in Study 2*


For stress, I expected to see a positive relationship between autonomy and stress at lower levels of autonomy support, and I expected to see a negative relationship between autonomy and stress at higher level of autonomy support (see Figure 4). The results indicated that autonomy support moderated the relationship between autonomy and well-being for all four autonomy scales, each in a different relationship (see Table 26, Figures 35, 36, 37, and 38). For BPNS autonomy, I observed lower stress and a significant negative relationship between autonomy and
stress when autonomy support was higher, which was the expected relationship ($b = -.09, SE = .02, p = .001$). When autonomy support was lower, there was no relationship between autonomy and stress ($b = .00, SE = .02, p = .72$). For JDS autonomy, I observed higher stress and no relationship between autonomy and stress at lower levels of autonomy support, which was not the expected relationship ($b = .04, SE = .02, p = .06$). At higher levels of autonomy support, I observed lower stress and no relationship between autonomy and stress, which was not the expected relationship ($b = -.04, SE = .02, p = .08$). For factual autonomy, I observed lower stress and a significant negative relationship between autonomy and stress at higher levels of autonomy support, which was the expected relationship ($b = -.25, SE = .02, p < .001$). At lower levels of autonomy support, there was a weaker negative relationship between autonomy and stress, which was not the expected relationship ($b = -.15, SE = .02, p < .001$). For 1-item autonomy, I observed lower stress and a significant negative relationship between autonomy and stress at higher levels of autonomy support, which was the expected relationship ($b = -.06, SE = .02, p = .02$). At lower levels of autonomy support, there was a significant positive relationship between autonomy and stress, which was the expected relationship ($b = .05, SE = .02, p = .02$). This provided partial support for Hypothesis 2.
Table 26

Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Stress (Operationalized as Burnout) in Study 2

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
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<td>.17</td>
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<tr>
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<td>.01</td>
<td>-3.38</td>
<td>&lt;.001</td>
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<td>.19</td>
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<tr>
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<td>.17</td>
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<td>.20</td>
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<td>.37</td>
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<td>-3.05</td>
<td>.002</td>
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<tr>
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<td>1. One-Item Autonomy Support</td>
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<td>.08</td>
<td>4.03</td>
<td>&lt;.001</td>
<td>.16</td>
<td>.16</td>
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<tr>
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<td>2. Interaction Term</td>
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<td>.01</td>
<td>-4.17</td>
<td>&lt;.001</td>
<td>.03</td>
<td>.20</td>
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</table>

Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Autonomy Support as a Moderator of the Relationship between BPNS Autonomy and Stress (Operationalized as Burnout) in Study 2

Figure 36

Autonomy Support as a Moderator of the Relationship between JDS Autonomy and Stress (Operationalized as Burnout) in Study 2

Figure 37

Autonomy Support as a Moderator of the Relationship between Factual Autonomy and Stress (Operationalized as Burnout) in Study 2

Note. Aut. Support = autonomy support.
For anxiety, I expected to see a positive relationship between autonomy and anxiety at lower levels of autonomy support, and I expected to see a negative relationship between autonomy and anxiety at higher level of autonomy support (see Figure 4). The results indicated that autonomy support moderated the relationship between autonomy and anxiety for the BPNS autonomy, JDS autonomy, and 1-item autonomy scales (see Table 27, Figures 39, 40, and 41). For BPNS autonomy, I observed no relationship between autonomy and anxiety at lower levels of autonomy support ($b = .11, SE = .05, p = .05$) or at higher levels of autonomy support ($b =$
-.04, \(SE = .06, p = .46\), which was not the expected relationship. For JDS and 1-item autonomy, I observed higher anxiety and a significant positive relationship between autonomy and anxiety at lower levels of autonomy support, which was the expected relationship (JDS: \(b = .13, SE = .04, p = .004\), 1-item: \(b = .13, SE = .05, p = .01\)). At higher levels of autonomy support, I observed no relationship between autonomy and anxiety, which was not the expected relationship (JDS: \(b = .00, SE = .05, p = .87\), 1-item: \(b = -.06, SE = .05, p = .25\)). This provided partial support for Hypothesis 2.

**Table 27**

*Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationships between the Four Autonomy Scales and Anxiety in Study 2*

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>(\Delta R^2)</th>
<th>(R^2)</th>
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<td>Anxiety</td>
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<td>3.04</td>
<td>.002</td>
<td>.02**</td>
<td>.04***</td>
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<td>.15</td>
<td>1.78</td>
<td>.07</td>
<td>.02</td>
<td>.02***</td>
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<td>.02</td>
<td>.04***</td>
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<tr>
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<td>.05***</td>
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<td>.12</td>
<td>.02</td>
<td>.05***</td>
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<td>.02</td>
<td>.05***</td>
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<td>.20</td>
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<td>.41***</td>
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<td>.41***</td>
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<td>.03</td>
<td>-1.58</td>
<td>.11</td>
<td>.00</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>1. One-Item Autonomy</td>
<td>.61</td>
<td>.17</td>
<td>3.39</td>
<td>&lt;.001</td>
<td>.41***</td>
<td>.41***</td>
</tr>
<tr>
<td></td>
<td>Autonomy Support</td>
<td>.26</td>
<td>.12</td>
<td>2.05</td>
<td>.04</td>
<td>.02**</td>
<td>.04***</td>
</tr>
<tr>
<td></td>
<td>2. Interaction Term</td>
<td>-.10</td>
<td>.03</td>
<td>-3.28</td>
<td>.001</td>
<td>.02</td>
<td>.04***</td>
</tr>
</tbody>
</table>

*Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.*
Figure 39

Autonomy Support as a Moderator of the Relationship between BPNS Autonomy and Anxiety in Study 2

Figure 40

Autonomy Support as a Moderator of the Relationship between JDS Autonomy and Anxiety in Study 2

Figure 41

Autonomy Support as a Moderator of the Relationship between 1-Item Autonomy and Anxiety in Study 2

Curvilinear Effects Between Autonomy and Primary Outcomes (Hypothesis 3). I predicted that autonomy has a positive curvilinear relationship with job satisfaction and well-being and has a negative curvilinear relationship with stress and anxiety. I expected to see a stronger beneficial effect of BPNS autonomy on job satisfaction and well-being at lower levels and smaller beneficial effects at higher levels of BPNS autonomy (see Figure 5). Also, I expected to see a stronger beneficial effect of autonomy on stress and anxiety at lower levels and smaller beneficial effects at higher levels of autonomy (see Figure 6). To test this, I regressed the four outcomes in turn onto the autonomy linear and quadratic term. I tested the original 7-item BPNS scale as well and found a similar pattern of relationships, except for anxiety as an outcome (see Appendix AL). I found evidence for curvilinear relationships between BPNS autonomy and outcomes i.e., job satisfaction, well-being, and stress (see Table 28). For job satisfaction and well-being, I found evidence for diminishing beneficial effects at higher levels of autonomy (see Figures 42 and 43). For stress, I found evidence for stronger beneficial effects at higher levels of autonomy, which was not the expected relationship (see Figure 44). Thus, I found partial support for Hypothesis 3.
### Table 28

*Hierarchical Regression Analyses Examining the Curvilinear Effects between Autonomy and Four Outcomes (Hypothesis 3) in Study 2*

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Sat.</td>
<td>1. BPNS Autonomy</td>
<td>.25</td>
<td>.05</td>
<td>4.65</td>
<td>&lt;.001</td>
<td>.07***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. BPNS Autonomy²</td>
<td>-0.08</td>
<td>.03</td>
<td>-2.38</td>
<td>.01</td>
<td>.01</td>
<td>.08***</td>
</tr>
<tr>
<td>Well-Being</td>
<td>1. BPNS Autonomy</td>
<td>.45</td>
<td>.04</td>
<td>9.40</td>
<td>&lt;.001</td>
<td>.23***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. BPNS Autonomy²</td>
<td>-0.12</td>
<td>.03</td>
<td>-4.09</td>
<td>&lt;.001</td>
<td>.03</td>
<td>.26***</td>
</tr>
<tr>
<td>Stress</td>
<td>1. BPNS Autonomy</td>
<td>-0.15</td>
<td>.01</td>
<td>-8.04</td>
<td>&lt;.001</td>
<td>.12***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. BPNS Autonomy²</td>
<td>-0.02</td>
<td>.01</td>
<td>-1.80</td>
<td>.007</td>
<td>.006</td>
<td>.13***</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1. BPNS Autonomy</td>
<td>-0.08</td>
<td>.04</td>
<td>-2.11</td>
<td>.03</td>
<td>.006*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. BPNS Autonomy²</td>
<td>-0.03</td>
<td>.02</td>
<td>-1.46</td>
<td>.14</td>
<td>.004</td>
<td>.01*</td>
</tr>
</tbody>
</table>

*Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.*
Figure 42

The Curvilinear Relationship between BPNS Autonomy and Job Satisfaction in Study 2
Figure 43

The Curvilinear Relationship between BPNS Autonomy and Well-Being in Study 2
Curvilinear Effects Between Autonomy Support and Primary Outcomes

(Hypothesis 4). I predicted that autonomy support has a positive curvilinear relationship with job satisfaction and well-being and has a negative curvilinear relationship with stress and anxiety. I expected to see a stronger beneficial effect of autonomy support on job satisfaction and well-being at lower levels and smaller beneficial effects at higher levels of autonomy support (see Figure 5). Also, I expected to see a stronger beneficial effect of autonomy support on stress and anxiety at lower levels and smaller beneficial effects at higher levels of autonomy support (see Figure 6). To test this, I regressed the four outcomes in turn onto the autonomy support linear
and quadratic term. I found evidence for a curvilinear relationship between autonomy support and outcomes i.e., well-being, stress, and anxiety (Table 29). For well-being, I found evidence for diminishing beneficial effects at higher levels of autonomy support (Figure 45). For stress and anxiety, I found evidence for lower levels of stress and anxiety at both lower levels and higher levels of autonomy support, which was not the expected relationship (see Figures 46 and 47). Thus, I found partial support for Hypothesis 4.

Table 29

Hierarchical Regression Analyses Examining the Curvilinear Effects between Autonomy Support and Four Outcomes (Hypothesis 4) in Study 2

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Sat.</td>
<td>1. Autonomy Support</td>
<td>.48</td>
<td>.05</td>
<td>8.28</td>
<td>&lt;.001</td>
<td>.17***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Autonomy Support²</td>
<td>.00</td>
<td>.02</td>
<td>.23</td>
<td>.81</td>
<td>.00</td>
<td>.17***</td>
</tr>
<tr>
<td>Well-Being</td>
<td>1. Autonomy Support</td>
<td>.56</td>
<td>.04</td>
<td>11.57</td>
<td>&lt;.001</td>
<td>.37***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Autonomy Support²</td>
<td>-.09</td>
<td>.01</td>
<td>-5.08</td>
<td>&lt;.001</td>
<td>.03</td>
<td>.40***</td>
</tr>
<tr>
<td>Stress</td>
<td>1. Autonomy Support</td>
<td>-.21</td>
<td>.02</td>
<td>-10.27</td>
<td>&lt;.001</td>
<td>.37***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Autonomy Support²</td>
<td>-.03</td>
<td>.00</td>
<td>-3.91</td>
<td>&lt;.001</td>
<td>.02</td>
<td>.38***</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1. Autonomy Support</td>
<td>-.22</td>
<td>.04</td>
<td>-5.03</td>
<td>&lt;.001</td>
<td>.02**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Autonomy Support²</td>
<td>-.07</td>
<td>.01</td>
<td>-4.65</td>
<td>&lt;.001</td>
<td>.06**</td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Figure 45

The Curvilinear Relationship between Autonomy Support and Well-Being in Study 2
Figure 46
The Curvilinear Relationship between Autonomy Support and Stress in Study 2
Figure 47

The Curvilinear Relationship between Autonomy Support and Anxiety in Study 2
Curvilinear Effects Between Intrinsic Motivation and Primary Outcomes

(Hypothesis 5). I predicted that intrinsic motivation has a positive curvilinear relationship with job satisfaction and well-being and has a negative curvilinear relationship with stress and anxiety. I expected to see a stronger beneficial effect of intrinsic motivation on job satisfaction and well-being at lower levels and smaller beneficial effects at higher levels of intrinsic motivation (see Figure 5). Also, I expected to see a stronger beneficial effect of intrinsic motivation on stress and anxiety at lower levels and smaller beneficial effects at higher levels of intrinsic motivation (see Figure 6). To test this, I regressed the four outcomes in turn onto the intrinsic motivation linear and quadratic term. I found evidence for curvilinear relationships between intrinsic motivation and all four outcomes (see Table 30). For job satisfaction and well-being, I found evidence for diminishing beneficial effects at lower levels of intrinsic motivation and a stronger negative relationship at higher levels of intrinsic motivation, which was not the expected relationship (Figures 48 and 49). For stress and anxiety, I found evidence for a stronger beneficial relationship at higher levels of intrinsic motivation, which was not the expected relationship (see Figure 50 and 51). Thus, I found no support for Hypothesis 5.
Table 30

Hierarchical Regression Analyses Examining the Curvilinear Effects between Intrinsic Motivation and Four Outcomes (Hypothesis 5) in Study 2

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>$b$</th>
<th>SE</th>
<th>$t$</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Sat.</td>
<td>1. Int. Motivation</td>
<td>1.10</td>
<td>.07</td>
<td>14.39</td>
<td>&lt;.001</td>
<td>.31***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Int. Motivation$^2$</td>
<td>-.14</td>
<td>.03</td>
<td>-4.81</td>
<td>&lt;.001</td>
<td>.03</td>
<td>.35***</td>
</tr>
<tr>
<td>Well-Being</td>
<td>1. Int. Motivation</td>
<td>.75</td>
<td>.08</td>
<td>8.84</td>
<td>&lt;.001</td>
<td>.08***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Int. Motivation$^2$</td>
<td>-.20</td>
<td>.03</td>
<td>-6.05</td>
<td>&lt;.001</td>
<td>.07</td>
<td>.15***</td>
</tr>
<tr>
<td>Stress</td>
<td>1. Int. Motivation</td>
<td>-.35</td>
<td>.02</td>
<td>-15.45</td>
<td>&lt;.001</td>
<td>.52***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Int. Motivation$^2$</td>
<td>-.02</td>
<td>.01</td>
<td>-3.00</td>
<td>.002</td>
<td>.01</td>
<td>.53***</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1. Int. Motivation</td>
<td>-.63</td>
<td>.05</td>
<td>-12.38</td>
<td>&lt;.001</td>
<td>.41***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Int. Motivation$^2$</td>
<td>-.04</td>
<td>.02</td>
<td>-2.00</td>
<td>.04</td>
<td>.005</td>
<td>.41***</td>
</tr>
</tbody>
</table>

Note. $N = 444$. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and $SE$ values are from the last (second) step of each hierarchical regression analysis.
Figure 48

The Curvilinear Relationship between Intrinsic Motivation and Job Satisfaction in Study 2
Figure 49

*The Curvilinear Relationship between Intrinsic Motivation and Well-being in Study 2*
Figure 50

The Curvilinear Relationship between Intrinsic Motivation and Stress in Study 2
Figure 51

The Curvilinear Relationship between Intrinsic Motivation and Anxiety in Study 2
**Exploratory Analyses.** I conducted exploratory analyses to better understand the nature of the results for Hypotheses 1-5.

**Exploratory 1: Interest-Enjoyment Subfactor as a Moderator.** Researchers have found evidence supporting both a general one-factor and a five-factor solution for intrinsic motivation. The five-factor solution has revealed the following facets: interest/enjoyment, effort/importance, competence, pressure/tension, choice (McAuley, Wrait, & Duncan, 1991). I tested my hypotheses with the composite intrinsic motivation scale. However, the interest-enjoyment (IM-IE) items may similarly represent enjoyment in one’s work, relative to items relating to other facets in the composite scale. I examined interest-enjoyment as a moderator of the relationship between BPNS autonomy and primary outcome variables. Interest-enjoyment significantly moderated the relationship between BPNS autonomy outcomes i.e., job satisfaction ($b = -.07$, $SE = .03$, $p = .009$), well-being ($b = -.12$, $SE = .03$, $p < .001$), and stress ($b = -.02$, $SE = .01$, $p = .04$).

For job satisfaction, I observed lower satisfaction and a significant positive relationship between autonomy and satisfaction when enjoyment was lower, which was not the expected relationship ($b = .15$, $SE = .06$, $p = .02$). When enjoyment was higher, job satisfaction was high regardless of the level of autonomy, which was not the expected relationship ($b = -.05$, $SE = .07$, $p = .52$). For well-being, I observed lower well-being and a significant positive relationship between autonomy and well-being at lower levels on enjoyment ($b = .30$, $SE = .05$). At higher levels of enjoyment, I observed no relationship between autonomy and well-being, which was not the expected relationship ($b = .04$, $SE = .06$, $p = .05$). For stress, I observed lower stress and a significant negative relationship between autonomy and stress at higher levels of enjoyment, which was not the expected relationship ($b = -.10$, $SE = .02$, $p < .001$). At lower levels of enjoyment, there was no relationship between autonomy and stress ($b = -.04$, $SE = .02$, $p = .07$).
Overall, these interactions were not the expected relationships, but the interest-enjoyment subscale resulted in similar relationships as the composite intrinsic motivation measure. Further, I removed reverse-scored items that loaded poorly onto the subfactor resulting in a 4-item scale. I reported the results for the original interest-enjoyment scale. Both scales resulted in a similar pattern of relationships, except for anxiety as an outcome (see Appendix AM).

Exploratory 2: Work-Locus of Control as Primary Predictor. I used Deci and Ryan’s (1985) BPNS autonomy scale as my primary predictor in tests of hypotheses along with three other exploratory autonomy measures (e.g., Spector, 1998). However, Autonomy is most likely a sub-concept of a broader control-related concept. That is, autonomy is simply perception of control over the self and the surrounding environment. Researchers have developed many control-related variables to date (e.g., locus of control, Rotter, 1966). Thus, I tested Spector’s (1988) Work-Locus of Control measure as the primary predictor with autonomy support and intrinsic motivation as moderators along with four outcome variables. To the extent that WLCS is similar in content, I expected to observe a similar relationship to that observed when using autonomy as a predictor.

I observed that autonomy support moderated the relationship between control and job satisfaction ($b = -.10, SE = .04, p = .007$). For job satisfaction, I observed lower satisfaction and a significant positive relationship between control and satisfaction at lower autonomy support, which was not the expected relationship ($b = .30, SE = .06, p < .001$). At higher autonomy support, there was a weaker positive relationship between control and satisfaction, which was not the expected relationship ($b = .10, SE = .05, p = .003$). Intrinsic motivation moderated the relationship between control and outcomes i.e., well-being ($b = .18, SE = .04, p < .001$), and anxiety ($b = .16, SE = .02, p < .001$). For well-being, I observed higher satisfaction and a
significant negative relationship between control and satisfaction at higher levels of intrinsic motivation, which was not the expected relationship \((b = -0.12, SE = 0.04, p = 0.005)\). At lower levels of intrinsic motivation, there was no relationship between control and satisfaction, which was the expected relationship \((b = -0.02, SE = 0.06, p = 0.70)\). For anxiety, I observed higher anxiety and a significant negative relationship between control and anxiety and lower levels of intrinsic motivation, which was not the expected relationship \((b = -0.39, SE = 0.03, p < 0.001)\). At higher intrinsic motivation, there was a weaker significant negative relationship between control and anxiety, which was not the expected direction \((b = -0.18, SE = 0.02, p < 0.001)\). Overall, these interactions were not the expected relationships, but the control subscale resulted in similar relationships as the BPNS autonomy scale. Further, I removed reverse-scored items that loaded poorly onto the composite factor resulting in a 4-item scale. I reported the results for the original Work-Locus of Control scale. Both scales resulted in a similar pattern of relationships (see Appendix AN).

**Exploratory 3: Leadership Behavior as Moderator.** I used Deci and Ryan’s (1987) Work Climate Questionnaire to measure autonomy support. Autonomy support most likely is a measure capturing the extent to which a leader is supportive. Thus, I tested the revised Leadership Behavior Description Questionnaire (LBDQ-XII; Fleishman, 1957; Schriesheim & Stogdill, 1975) to determine the extent to which leader support would moderate the relationship between autonomy and the four primary outcomes. To the extent that leader support is similar in content, I expected to observe a similar relationship to that observed when using autonomy support as a moderator.

I found evidence supporting LBDQ-XII as a moderator of the relationship between BPNS autonomy and outcomes i.e., stress \((b = -0.11, SE = 0.02, p < 0.001)\) and anxiety \((b = -0.22, SE = 0.06,\)
For stress, I observed lower stress and a significant negative relationship between autonomy and stress at higher levels of leader support, which was the expected relationship ($b = -\.11, SE = .02, p < .001$). At lower levels of leader support, I observed no relationship between autonomy and stress, which was not the expected relationship ($b = -.01, SE = .02, p = .80$). For anxiety, I observed higher anxiety and a significant positive relationship between autonomy and anxiety at lower levels of leader support, which was the expected relationship ($b = .14, SE = .05, p = .005$). At higher levels of leader support, there was no relationship between autonomy and anxiety, which was not the expected relationship ($b = -.07, SE = .05, p = .16$). The relationship observed for composite leader behavior as a moderator was similar to the relationship observed with autonomy support as a moderator.

I tested the leader consideration subscale to determine if there was a similar pattern of relationships, because initiating structure most likely does not play a role in leader support. I found evidence supporting leader consideration as a moderator of the relationship between BPNS autonomy and outcomes i.e., well-being ($b = -.24, SE = .07, p = .002$), stress ($b = -.09, SE = .02, p < .001$), and anxiety ($b = -.24, SE = .06, p < .001$). For well-being, I observed higher well-being and a significant positive relationship between autonomy and well-being at higher levels of leader support, which was not the expected relationship ($b = .28, SE = .06, p < .001$). At lower levels of leader support, there was a stronger significant positive relationship between autonomy and well-being, which was not the expected relationship ($b = .52, SE = .05, p < .001$). For stress, I observed lower stress and a significant negative relationship between autonomy and stress at higher levels of leader support, which was the expected relationship ($b = -.10, SE = .02, p < \.001$). At lower levels of leader support, there was no relationship between autonomy and stress, which was not the expected relationship ($b = .00, SE = .02, p = .73$). For anxiety, I observed
lower anxiety and no relationship between autonomy and anxiety at higher levels of leader support, which was not the expected relationship ($b = -0.06, SE = 0.05, p = 0.25$). At lower levels of leader support, there was a significant positive relationship between autonomy and anxiety, which was the expected relationship ($b = 0.17, SE = 0.04, p < 0.001$). The relationship observed for consideration as a moderator was similar to the relationship observed for autonomy support as a moderator. Overall, some of the interactions did not result in the expected relationships, but there were similarities in relationships between autonomy support and leader behavior (see Appendix AO).

**Exploratory 4: Quantitative Workload, Physical Symptoms, and OCB as Outcome**

*Variables.* I predicted that autonomy and primary moderators would have interactive effects on job satisfaction, subjective well-being, stress (operationalized as burnout), and anxiety. These outcomes are common workplace attitudes that researchers have studied extensively (e.g., Deci & Ryan, 2017). However, it is possible that intrinsic motivation or autonomy support would moderate autonomy relationships with variables with a more behavioral focus. Thus, I tested moderator effects on behavioral exploratory measures, including quantitative workload, physical symptoms, and OCB. I found no support for intrinsic motivation as a moderator. I found that autonomy support moderated the relationship between autonomy and quantitative workload ($b = 0.08, SE = 0.03, p < 0.003$). Similar to Study 1, I did find an unexpected pattern of relationships between OCB, physical symptoms, quantitative workload, role conflict, and factual autonomy. Specifically, I observed a significant positive relationship between autonomy and workload at higher levels of autonomy support ($b = 0.22, SE = 0.06, p < 0.001$), which was not the expected relationships. At lower level of autonomy support, there was no relationship between autonomy...
and workload \((b = .06, \ SE = .05, \ p = .30)\), which was not the expected relationship. (see Appendix AP).

**Exploratory 5: The Factual Autonomy Scale and Objective Outcomes.** Spector and Fox (2003) developed an autonomy scale that they proposed captured a more behavioral dimension of autonomy. Perhaps, the Factual Autonomy Scale interacts with more behavioral focused measures. I tested whether intrinsic motivation and autonomy support moderated the relationship between the Factual Autonomy Scale and quantitative workload, physical symptoms, and OCB. I found no support for autonomy support as a moderator between factual autonomy and objective-focused outcomes. I found that intrinsic motivation moderated the relationship between factual autonomy and outcomes i.e., physical symptoms \((b = .27, \ SE = .06, \ p < .001)\) and OCB \((b = .16, \ SE = .05, \ p = .001)\). For physical symptoms, I observed lower physical symptoms and a significant negative relationship between autonomy and physical symptoms at higher levels of intrinsic motivation, which was the expected relationship \((b = -.44, \ SE = .06, \ p < .001)\). At lower levels of intrinsic motivation, there was a stronger negative relationship between autonomy and physical symptoms, which was not the expected relationship \((b = -.81, \ SE = .06, \ p < .001)\). For OCB, I observed lower OCB and a significant negative relationship between autonomy and OCB at lower levels of intrinsic motivation, which was not the expected relationship \((b = -.61, \ SE = .05, \ p < .001)\). At higher levels of intrinsic motivation, there was a weaker negative relationship between autonomy and OCB, which was the expected relationship \((b = -.39, \ SE = .05, \ p < .001)\). Further, there was a significant relationship between OCB and physical symptoms \((r = .44, \ p < .001)\), quantitative workload \((r = .53, \ p < .001)\), role conflict \((r = .12, \ p < .05)\), and the factual autonomy scale, which was unexpected \((r = -.43, \ p < .001; \ see \ Appendix \ AQ)\).
**Unique Incremental Variance.** I conducted analyses to examine whether there were additive effects between primary predictors on outcomes. I tested the incremental variance for each of the primary predictors (BPNS autonomy, autonomy support, and intrinsic motivation), accounting for variance in each of the four primary outcomes in turn. For job satisfaction, intrinsic motivation and autonomy support accounted for unique incremental variance. For subjective well-being, autonomy support and intrinsic motivation accounted for unique incremental variance. For stress (operationalized as burnout), intrinsic motivation accounted for unique incremental variance. For anxiety, all three predictors accounted for unique incremental variance (see Appendix AR).

**Study 2 Discussion and Comparisons with Study 1 Results**

I found evidence for similar patterns of relationship between predictors and outcomes across Study 1 (undergraduate sample) and Study 2 (Mturk sample). This is expected as I did not expect substantial differences between undergraduate employees and permanent employees. The psychological functions relating to autonomy, autonomy support, intrinsic motivation and outcomes do not vary greatly between undergraduate employees and permanent employees. However, I did find differences between Study 1 and Study 2. For Study 2, I found no support for Hypothesis 1, partial support for Hypothesis 2, and partial support for Hypotheses 3-5. For Hypothesis 1, intrinsic motivation moderated the relationship between autonomy and all four outcomes but in unexpected relationships. For Hypothesis 2, autonomy support moderated substantially more relationships between autonomy and all four outcomes compared to Study 1. For Hypothesis 3, I observed more significant curvilinear relationships between primary predictors and outcomes that were in the expected direction compared to Study 1. There were a greater number of significant interactions in Study 2, compared to Study 1, but not all reflected
the predicted patterns of relationships. There were interpretable and consistent patterns for the unexpected interactions. My results raise theoretical issues relating to the importance and similarities between intrinsic motivation and autonomy support, the unexpected role of factual autonomy, the presence of curvilinear relationships, relationships observed for stress for permanent workers, the role of work in predicting well-being, and consistent findings across autonomy scales. My results raise practical issues relating to aligning permanent employees with positions they enjoy but in which their leaders can provide higher autonomy support. In the following, I review the theoretical issues, the practical issues, and the limitations for Study 2 (MTurk sample). I will review future research directions in the General Discussion section.

**Importance and Similarities between Autonomy Support and Intrinsic Motivation**

The first issue raised by my results was the similar role that autonomy support and intrinsic motivation played as moderators, which is different than the weaker role autonomy support played in Study 1. Researchers have found support for the beneficial effects of these predictors (Kim & Stoner, 2008; Williams, et al., 1998), but researchers have not compared the roles of these predictors. For Hypothesis 1 and 2, many of the interactions were significant but they did not result in the expected relationships. For job satisfaction, intrinsic motivation accounted for 16% of the variance above and over autonomy and autonomy support. Autonomy support did capture some unique variance in job satisfaction unlike Study 1. This supports the notion that undergraduates rely heavily on intrinsic motivation for reaching higher satisfaction, but permanent employees seem to rely more equally on autonomy support and intrinsic motivation. Undergraduate employees are likely to work in more regimented positions, compared to permanent employees. Undergraduate employees seem to reach higher levels of beneficial outcomes mainly through interest and enjoyment. Permanent employees in more
complex positions with higher responsibility might rely more heavily on their leader to acknowledge and support their level of autonomy. Further, leaders of permanent employees most likely have more autonomy support to offer across a wider range of job aspects.

There might be cases in which permanent employees work in regimented positions. Similar to Study 1, leaders of employees who are in lower autonomy positions can make up for this deficiency by supporting whatever level of control they can within a position. For example, a railway worker needs to follow strict regulations and procedures, but a manager could support autonomy by creating opportunities for training and professional development. A strategic autonomy-supportive leader might manipulate an employee’s perception of autonomy, ultimately leading to stronger beneficial outcomes. That is, the objective level of autonomy remains constant while the perceived level of autonomy changes. An employee may have low control over their work tasks, yet their perception of how supportive their leader is can compensate, which could lead to higher levels of beneficial outcomes. For example, a railway worker might actual lower autonomy in terms strict standard operating procedures, but an autonomy-supportive leader could focus employees on the importance of and the ways in which employees have control over and responsibility for their work. Overall, patterns for intrinsic motivation and autonomy support as moderators were similar for permanent employees and part-time employees. Moreover, higher autonomy support and higher intrinsic motivation can compensate for lower levels of autonomy.

**Unexpected Role of Factual Autonomy**

The second issue raised by my results was the unexpected role of factual autonomy. Spector and Fox (2003) created a scale with a purpose to measure a more behavioral side of autonomy. I found distinctions between factual autonomy and the other three autonomy scales.
For example, although factual autonomy did not result in a significant interaction with autonomy support predicting anxiety, factual autonomy accounted for 41% of the variance whereas each of the other three scales accounted for 2% of the variance in anxiety. It is unclear why factual autonomy accounted for a substantial amount of variance in anxiety, compared to the other three scales. For job satisfaction and stress, factual autonomy accounted for significantly more variance than the other three autonomy scales even though it did not result in a significant interaction with autonomy support. Factual autonomy did not interact with autonomy support to the extent that the other three autonomy scales did, and factual autonomy resulted in substantially different main effects with outcomes. This suggests that permanent employees interpreted factual autonomy and perception of autonomy as distinct domains within the autonomy construct.

**Presence of Curvilinear Relationships**

The third issue raised by my results relates to curvilinear relationships. I found a greater number of curvilinear relationships in Study 2, but they did not all result in the expected relationships. For example, I found evidence for a quadratic relationship between intrinsic motivation and outcomes i.e., job satisfaction and well-being (see Figures 48 and 49). Although speculation, this might be evidence of having “too much of a good thing.” For example, very high intrinsic motivation in one’s work was associated with a decrease in one’s general life well-being. Permanent employees who experience too much enjoyment in their work might put forth too much cognitive effort and time in their work. They might be compromising other areas of their life because resources are limited. They might work to the point of being a ‘workaholic,’ and might not have sufficient time, effort, or resources for family, hobbies, travel, etc.
Differences between Original and Modified Scales. It is important to note that the modified 4-item BPNS autonomy scale did not result in a significant curvilinear relationship with anxiety, in contrast to the original 7-item BPNS scale (see Appendix AL). However, the original BPNS and modified BPNS scales resulted in a similar pattern of relationships with other study variables, except for anxiety. The modified scale did not correlate with anxiety \((r = -.08, p > .05)\) whereas the original BPNS scale did \((r = -.50, p < .001)\). This might be because Mturk participants were reacting differently to negatively coded items, compared to positively coded items, or this might be due to MTurk participants answering items too quickly. I addressed unacceptably fast response times by removing participants who answered faster than two seconds/item/page (Aguinis, Villamor, & Ramani, 2020). However, two seconds may not be sufficient to properly read and understand more complex reverse-coded items. Either way, Mturk participants clearly responded differently to reverse coded items, compared to the undergraduates, which can be seen in the differences in scale reliabilities’ and item loadings for the original and modified scales for Study 2 (see Appendix AI).

Relationships Observed for Stress for Permanent, Full-time Workers

The fourth issue raised by my results in Study 2 is the stronger effects predictors had on stress. In contrast to Study 1, intrinsic motivation and autonomy support altered the relationship between autonomy (except for factual autonomy) and stress. Although conceptually similar (Demerouti, Mostert, & Bakker, 2010; Jaworek, Marek, & Karwowski, 2020), stress and anxiety reflected different relationships. Stress correlated with other primary variables in the expected direction: autonomy \((r = -.35, p < .001)\), well-being \((r = -.41, p < .001)\), and job satisfaction \((r = -.48, p < .001)\). Anxiety did not correlate with these primary variables in the expected direction:
autonomy ($r = -.08, p > .05$), well-being ($r = .08, p > .05$), and job satisfaction ($r = -.14, p < .05$), yet anxiety resulted in the expected directions for the undergraduate sample in Study 1.

Possibly, work-specific burnout may be more salient for permanent, full-time employees, compared to undergraduates. This may explain why stress (burnout) did not result in any significant interactions for Study 1. Undergraduates might be more focused on their education, compared to their job. Burnout might be more related to their coursework, compared to their part-time work. In contrast, permanent, full-time workers might be more susceptible to work-specific burnout. In sum, because they are more experienced than undergraduate workers, perhaps permanent, full-time employees can handle uncertainty and ambiguity (anxiety) better but experience greater burnout, relative to undergraduate part-time workers.

**Importance of Work for Predicting General Well-Being**

The fifth issue that my results raised is related to the intersection between permanent employee’s work and general life well-being. Autonomy, autonomy support, and intrinsic motivation accounted for substantially more variance in well-being in Study 2, compared to the results in Study 1. Autonomy, autonomy support, and intrinsic motivation accounted for 38% (compared to the nine percent in Study 1), and autonomy support captured a significant amount of unique variance. Undergraduates are generally working part-time “side gigs” whereas full-time permanent employees spend much more of their daily life at work. Thus, work plays a larger role for full-time versus part-time workers in terms of whether one is experiencing higher of lower levels of general well-being. Autonomy support plays an important role in general life well-being for permanent employees. A leader who supports autonomy contributes significantly to permanent employees achieving higher levels of well-being both at and outside of work.
Consistent Findings across Autonomy Scales

The sixth issue raised by my results is the differences in the consistency of findings across the four autonomy scales between Study 1 and Study 2. Researchers developed the BPNS autonomy, 1-item autonomy, and JDS autonomy to assess perception of autonomy at work (e.g., Deci & Ryan, 1985; Hackman & Oldham, 1975). The three autonomy scales resulted in a more consistent pattern of relationships in Study 2, compared to Study 1. My results provide evidence suggesting that these three scales are capturing similar conceptual content for full-time workers in Study 2. The increased power in Study 2 (N = 444) might have contributed to the observed increase in consistency across measures also.

The Factual Autonomy Scale. It is not surprising that the Factual Autonomy Scale (Spector & Fox, 2003) resulted in fewer significant interactions than the other three scales, but it may be a stronger predictor for behavioral-focused outcomes. I conducted an exploratory test examining whether behavioral outcomes such as quantitative workload, physical symptoms, and OCB would result in significant interactions. I found that intrinsic motivation moderated the relationship between factual autonomy and outcomes i.e., physical symptoms and OCB, but it was not the expected relationship. Similar to Study 1, there were significant negative relationships between OCB and physical symptoms, quantitative workload, role conflict, and the factual autonomy scale.

Practical Implications

From an organizational perspective, it is clear from the results of both studies that leaders ought to focus attention and resources into aligning employees with work tasks that they will enjoy. Intrinsic motivation played a major role in altering the relationships between autonomy
and outcomes. Not every employee is going to achieve their desired level of autonomy in their work, but aspects such as enjoyment can compensate for low control.

Autonomy support played a larger role as a moderator compared to Study 1. Permanent employees in full-time positions with more responsibility, complexity, and ambiguity most likely require higher degrees of autonomy support from their leader because the nature of their positions allow for a greater level of individual autonomy. Autonomy supportive leaders allow their employees to use their own knowledge, skills, abilities, and other resources to navigate complex work tasks and situations, yet they engage and offer support when needed. Organizational executives ought to allocate resources to training managers to be autonomy supportive, which will most likely result in full-time employees experiencing higher levels of beneficial outcomes both within and outside of work.

Limitations for Study 2

Study 2 (Mturk) did not suffer from an insufficient sample size \((N = 444)\). I had sufficient power to detect moderation effects \((\Delta = .02)\). However, scales that contained multiple reverse-coded items resulted in substantially lower internal reliability ratings compared to Study 1 (e.g., BPNS autonomy, work-locus of control, and the IPIP). The drop in reliabilities is because of careless responding, MTurk participants reacting substantially differently to reverse-coded items than undergraduates, or a combination of the two. My cleaned data may contain careless responders and bots after removing MTurk participants based on several IER best practices. The presence of careless responders could have caused a drop in internal consistency because careless responders are not putting forth sufficient time and effort to read and interpret reverse-coded items. MTurk communities and ‘farms’ are set up to quickly complete studies to maximize monetary compensation. Mturk participants might have more pressure and incentive to complete
studies quickly relative to undergraduates because they are driven by monetary compensation (Aguinis, Villamor, & Ramani, 2020).

**Study 2 Conclusions**

The main effects between primary predictors and outcomes resulted in significant, expected relationships. There were some interactions that resulted in expected relationships, but other significant interactions did not. However, I found consistent and interpretable relationships within the data. Study 2 results were unique in that primary predictors accounted for more variance in well-being for permanent employees, and autonomy support played a larger role as a moderator between autonomy and outcomes. Permanent employees seemed to rely on both autonomy support and intrinsic motivation for reaching higher levels of beneficial outcomes. In the following section, I will discuss theoretical issues, the practical issues, the directions for future research, and the limitations for both studies.

**General Discussion**

The purpose of my study was to analyze how features of the individual, i.e., intrinsic motivation and the environment, i.e., autonomy support affect the relationship between autonomy and outcomes, i.e., general well-being, job satisfaction, stress (operationalized as burnout), and anxiety. Although not all interactions reflected expected relationships, I found interpretable and consistent interactions for both intrinsic motivation and autonomy support as moderators between autonomy and outcomes. Further, I found evidence for curvilinear relationships between primary predictors and outcomes. Researchers have found that higher levels of autonomy predict improved overall health (e.g., Deci & Ryan, 2000). My study contributed to the literature by showing that autonomy is involved in a more complex way with outcomes, i.e., autonomy effects are moderated by other factors. One’s level of autonomy clearly
played an important role in predicting higher or lower levels of outcomes, but this is not the entire picture. Intrinsic motivation and autonomy support can compensate for an employee who experiences lower autonomy. Researchers now have a better understanding for how these relationships build on SDT and related theories.

My results raise theoretical issues relating to SDT, the abundance of autonomy-related measures, Conservation of Resources and Person-Fit Theory, and curvilinear relationships. My results raise practical issues relating to how organizations can develop interventions to increase employee motivation, train leaders to be autonomy supportive, and create autonomy supportive environments. In the following I will review overall findings, theoretical and practical implications, future directions, and general limitations for both Study 1 (undergraduates) and Study 2 (MTurk).

**Theoretical Implications**

**Similarities and Differences Relating to Self-Determination Theory**

The first theoretical issue raised by my results is related to Deci and Ryan’s (1985) Self-Determination Theory. As mentioned in the introduction, my study examined autonomy as a psychological universal need as posited by Deci and Ryan (1985). Deci and Ryan’s (1985) work-autonomy scale was designed to measure the extent to which an employee is satisfying their need for autonomy. I found significant main effects between autonomy and both functional and dysfunctional outcomes, which provides evidence for autonomy being a critical predictor of beneficial outcomes. With that said, autonomy as a beneficial feature of work versus a universal need are substantially different models. I found evidence that the presence of other beneficial constructs, i.e., intrinsic motivation and autonomy support, can compensate for lower autonomy. My studies assessed American undergraduates and permanent employees. More cross-cultural
research could be conducted to better understand the interactive effects between autonomy, intrinsic motivation, autonomy support, and other predictors in different environments with different samples.

**Abundance of Autonomy and Control Related Measures**

The second theoretical issue raised by my results is related to the abundance of autonomy-related measures in the literature (e.g., Deci & Ryan, 2017). Even in a specific context such as work, a researcher could find several tests that are purportedly measuring the same conceptual construct but which have differential effects on outcomes. I stated in my introduction that autonomy-related measures are measures of control over thoughts, feelings, and behaviors, tailored to specific contexts. I expected BPNS autonomy, JDS autonomy, and the 1-item autonomy measure to show clear signs of multicollinearity because they were each measuring perception of job autonomy. However, my results did not show obvious signs of multicollinearity. BPNS autonomy was the most predictive in Study 1, but there were more similar relationships across the autonomy measures in Study 2. Further, the BPNS autonomy scale had more items and may have captured more of the domain of autonomy. Moreover, BPNS autonomy was the only autonomy scale that contained reverse scored items, which may be one reason for different relationships observed in Study 1 versus Study 2 and for the original versus the modified (reversed items removed) autonomy scale. A direction for future research would be to conduct a large-scale meta-analysis to analyze the convergent and divergent validity of autonomy and control-related scales in a large nomological network. Researchers would then have more information about different autonomy measures and more confidence that they are using the appropriate scale for the right context.
The Behavioral Measure of Autonomy: The Factual Autonomy Scale. The Factual Autonomy scale resulted in different relationships compared to the other three autonomy scales. This suggests Spector’s (2003) Factual Autonomy Scale was assessing a different part of the domain of autonomy, compared to the other three measures. For example, significant correlations between FAS, OCB, physical symptoms, quantitative workload, and role conflict suggested that employees might experience dysfunctional physical and mental effects from taking on too much responsibility in one’s work, i.e., too much autonomy. A direction for future research could be examining dysfunctional outcomes that result from going above and beyond in one’s work, similar to the notion of a “workaholic.”

Application of Conservation of Resources Theory and Person-Fit Theory

The third theoretical issue raised by my results is related to the Person-Fit Theory (Edwards, 2008) and Conservation of Resources Theory (Hobfall, 1989).

Person-Fit Theory. Edwards’ (2008) Person-Fit Theory stated that an optimal match between individual characteristics and characteristics of the environment would result in greater levels of beneficial outcomes, and a mismatch would result in greater levels of dysfunctional outcomes. I predicted an optimal match between employee autonomy and autonomy support an employee receives from their leader. Although I did not find support for the predicted disordinal interaction, that does not mean there is not an optimal match in some circumstances. There might be populations or specific work situations in which optimal matching is critical. For example, undergraduates who have just entered the workforce may experience anxiety and stress because of the increase in responsibility, ambiguity, and control one experiences in higher level jobs that require more training and education. An autonomy supportive leader could provide more control in the first six months of the job, for example, and then strategically allow the newer employee to
take on more autonomy as they gain experience. A direction for future research could be examining the matching of individual and situational factors for more specific populations and more specific types of positions.

**Conservation of Resources Theory.** Hobfoll’s (1989) Conservation of Resources Theory predicted that net gain of resources would result in beneficial outcomes and net loss of resources would result in dysfunctional outcomes. Resources in this theory is a broad concept that includes psychological and environmental aspects. Deci and Ryan (1985) stated that a person needs to be satisfying all three psychological needs to experience higher levels of beneficial outcomes. However, I found that intrinsic motivation and autonomy support can compensate for lower levels of autonomy. Further, I observed that intrinsic motivation and autonomy support captured unique variance in outcomes beyond that accounted for by autonomy. Thus, autonomy plays an important role in work outcomes, but there might be other resources beyond autonomy contributing to beneficial outcomes. A direction for future research could be to discover what other critical moderators or mediators can play a compensatory role for autonomy in work outcomes.

**A Better Understanding of the Nature of Curvilinear Relationships**

The fourth theoretical issue raised by my results relates to linear and curvilinear relationships between my primary predictors and outcomes. Although not all resulted in the expected relationship, I found evidence for curvilinear relationships between a majority of predictors and outcomes.

Overall, it is not certain whether researchers ought to characterize these relationships as primarily linear or curvilinear. A direction for future research is to further examine the underlying mechanisms for diminishing benefits for or dysfunctional outcomes of autonomy,
autonomy support, and intrinsic motivation. Further, I found evidence for both diminishing returns and quadratic relationships. Warr (1987) stated that an abundance of job characteristics might have a negative impact on employee mental health. Although Warr (1987) did not include intrinsic motivation in his model, I found that increases in intrinsic motivation resulted in detrimental effects on well-being for permanent employees. This provides support to Warr’s (1987) Vitamin Model. However, majority of the curvilinear relationships did not result in Warr’s (1987) hypothesized quadratic relationship. Perhaps too much intrinsic motivation can be dysfunctional at work. Future research could examine situations where an overabundance of a psychological need, or beneficial predictor, could be harmful in terms of work-life balance.

**Practical Implications**

*Importance of Motivating Employees by Influencing Enjoyment*

The first practical issue raised by my results relates to the importance of intrinsic motivation. Organizational leaders want to retain employees who are healthy, enjoy their work, and put extra cognitive effort into their work. However, turnover and health issues are prevalent in American workers (e.g., Deci & Ryan, 2002; National Alliance on Mental illness, 2021). I found that intrinsic motivation resulted in significant main effects for all four outcomes and accounted for significant levels of unique variance. However, higher autonomy alone may not be enough to retain or to motivate employees. Organizational leaders could alleviate employees’ stress and anxiety levels by increasing autonomy and internal motivation by providing feedback, allowing choice, acknowledging insight, and providing work tasks that are interesting and challenging. Why do some employees enjoy their work while others do not? This seems like a simple question on the surface but there are many individual differences and situational aspects
that factor into the equation. An idea for future research could be examining work enjoyment, specifically the alignment between aspects of the employee and aspects of work tasks.

**Creating Autonomy Supportive Environments**

The second practical issue raised by my results is the importance of autonomy supportive environments. Researchers have found beneficial mental and physical outcomes from working in autonomy supportive environments (e.g., Silva et al., 2011). However, many organizational leaders are unfamiliar with the term “autonomy support,” let alone understand how to implement transformational interventions. The findings from my study show the importance of autonomy support and other forms of supportive leadership. Unfortunately, there seems to be a gap between organizational researchers and organizational leaders. Researchers and practitioners could do more to help leaders foster autonomy for their employees. Further, researchers and practitioners could do more to help leaders create autonomy supportive environments (e.g., Williams et al., 1998). An autonomy supportive leader is one aspect of autonomy supportive environment. Relationships with clients, supportive coworkers, autonomy supportive training and development, and the physical space one operates within are a few examples that may affect employee’s perception of autonomy support in their work environment.

In sum, practitioners can help organizations build autonomy supportive environments by implementing autonomy-supportive training for leadership (Deci & Ryan, 2017). Practitioners could assess how different types of jobs and varying levels of experience affect the relationship between autonomy and outcomes in field settings. Researchers can examine whether these interventions have the intended psychological effect between autonomy and positive and negative outcomes. A direction for future research could be examining how other characteristics in the environment such as physical space, coworkers, teams, schedules, and work modalities,
influence levels of employee autonomy and autonomy support from the leader, i.e., major components of an autonomy supportive environment.

Limitations

It is important to note limitations that may have affected my data and my generalizations. I focus here on limitations not discussed extensively above (e.g., small sample size). For example, both Study 1 and Study 2 consisted of self-report measures, which may have posed a threat to construct validity in terms of common method variance. I attempted to reduce error variance from common method variance (CMV) by implementing numerous IER indices, and I removed participants who did not meet the IER criteria. Although CMV may be a threat to my study, the latent individual constructs of interest in my study are best measured through self-report data (Deci and Ryan, 1985). For example, a participant is going to best estimate the extent to which they are satisfying psychological needs and what their levels of anxiety and well-being are. Further, Spector’s (2003) Factual Autonomy Scale did result in significantly different patterns of relationships, so participants were responding to the perception-focused autonomy items differently than the behavioral-focused autonomy items.

I was not able to draw causal inferences due to a non-experimental design. Arguments can be made regarding the directions of pathways within my model. However, theoretical explanations provide support for these predictors and outcomes in the predicted directions (e.g., Deci & Ryan, 1985; Festinger; 1957; Hobfoll, 1989; Rotter, 1966; Seligman, 1975). My conclusions were based on multiple regression analyses and theoretical explanations. One thing that is beneficial is the amount of SDT-related research that researchers have conducted over the past decades (e.g., Deci & Ryan, 2017). Past research has provided support for autonomy predicting differences in outcomes. For example, researchers have studied the well-supported
relationship between higher autonomy predicting higher job satisfaction (e.g., Hackman & Oldham, 1980). With that said, more research is needed to better understand antecedents of autonomy, autonomy support, and autonomy supportive environments.

Further, insufficient effort responding may have posed issues to both internal and external validity. Although I removed corrupted data based on IER indices (Aguinis, Villamor, & Ramani, 2020), I cannot be certain of the extent to which some IER remained in my final dataset. There may have been participants who were careless but passed the IER checks. Regular participants on Mechanical Turk have learned how to spot and pass commonly used IER indices (Aguinis, Villamor, & Ramani, 2020).

Conclusion

The purposes of my study were to examine how intrinsic motivation and autonomy support strengthened the relationship between autonomy and outcomes and to examine curvilinear relationships between primary predictors and outcomes. I found evidence of the importance of higher intrinsic motivation and higher autonomy in higher beneficial outcomes and lower dysfunctional outcomes. The findings from my study are important in the sense that researchers now have a revised perspective on how they originally interpreted such well-supported findings between autonomy and outcomes. Autonomy is critical, but intrinsic motivation and autonomy support can beneficially compensate when an employee is experiencing lower autonomy. Beyond academics, organizational leaders can positively alter their employees’ motivation and autonomy support. Organizational leaders who understand the predictive ability of autonomy, autonomy support, and intrinsic motivations will allocate effort and resources to ensure that their employees experience optimal levels control, enjoyment, and
support within their work, ultimately leading to improved beneficial work and life outcomes for each employee.
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Appendix A

Demographic Questions – MTurk Screener Survey (Study 2)

1. What is your current age in years?
2. What is your gender?
   Male                Female              Other                  Choose Not To Answer
3. In which country do you currently reside?
4. What is your primary language?
5. Are you a citizen of the United States?    Yes      No
6. If you are not a United States citizen, have you resided in the United States for at least 10 years?    Yes      No
7. What is your ethnicity?
   African American  Asian  Hispanic   Native American
   Pacific Islander  White/Caucasian  Other: ___  Choose Not To Answer___
8. What is your highest education level completed?
   Less than High School    High School/GED    Some College    2-Year College Degree
   4-Year College Degree    Masters Degree    Doctoral Degree
   Professional Degree (JD,MD)  Other
9. How many years have you been working?
   Less than 6 months
   Between 6 months and 1 year
   More than 1 year but less than 2 years
   More than 2 years but less than 5 years
   More than 5 years
10. How many years have you been employed in your current position?
    Less than 6 months
    Between 6 months and 1 year
    More than 1 year but less than 2 years
    More than 2 years but less than 5 years
    More than 5 years
11. How many years have you been working in your current organization/company?
    Less than 6 months
    Between 6 months and 1 year
    More than 1 year but less than 2 years
    More than 2 years but less than 5 years
    More than 5 years
12. How many hours per week do you typically work for your current employer?
    0-14 hours    15-24 hours    25-34 hours    35 or more hours
13. What type of industry do you currently work in?
    a. Accommodation and Food Services
    b. Administrative and Support Services
    c. Agriculture, Forestry, Fishing, and Hunting
    d. Arts, Entertainment, and Recreation
    e. Construction
    f. Educational Services
    g. Finance and Insurance
h. Government
i. Health Care and Social Assistance
j. Information
k. Management of Companies and Enterprises
l. Manufacturing
m. Mining, Quarrying, and Oil and Gas Extraction
n. Other Services (Except Public Administration)
o. Professional, Scientific, and Technical Services
p. Real Estate and Rental and Leasing
q. Retail Trade
r. Transportation and Warehousing
s. Utilities
t. Wholesale Trade
u. Other

14. How much autonomy do you have in completing your work?
   High    Medium    Low

15. How do you complete your work?
   Fully in-person    Hybrid (in person and online)    Full online

16. Which of the following work modalities allows for the highest level of autonomy?
   Fully in-person    Fully remote    Hybrid (in-person and remote)    Other
Demographic Questions – Student Sample (Study 1)

1. What is your current age in years?
2. What is your gender? Male Female Other Choose not to answer
3. What is your ethnicity?
   - Black/African American
   - Asian/Pacific
   - Hispanic
   - Native American
   - White/Caucasian
   - Mixed
   - Other
   - Choose not to answer
4. Are you an international student? Yes No
5. What is your year in school?
   - High School Student
   - Freshman
   - Sophomore
   - Junior
   - Senior
   - Senior 5+ Years
   - Graduate Student
   - Non-degree seeking
   - Other
6. What is your major? (can write undecided):
7. How many years have you been working?
   - Less than 6 months
   - Between 6 months and 1 year
   - More than 1 year but less than 2 years
   - More than 2 years but less than 5 years
   - More than 5 years
8. How many months have you been working in your current organization/company?
   - Less than 6 months
   - Between 6 months and 12 months
   - Between 12 months and 18 months
   - Between 18 months and 24 months
   - More than 24 months
9. How many hours per week do you typically work for your current employer?
   - 0-14 hours
   - 15-24 hours
   - 25-34 hours
   - 35 or more hours
10. What type of industry do you currently work in?
    - a. Accommodation and Food Services
    - b. Administrative and Support Services
    - c. Agriculture, Forestry, Fishing, and Hunting
    - d. Arts, Entertainment, and Recreation
    - e. Construction
    - f. Educational Services
    - g. Finance and Insurance
    - h. Government
    - i. Health Care and Social Assistance
    - j. Information
    - k. Management of Companies and Enterprises
    - l. Manufacturing
    - m. Mining, Quarrying, and Oil and Gas Extraction
    - n. Other Services (Except Public Administration)
    - o. Professional, Scientific, and Technical Services
    - p. Real Estate and Rental and Leasing
    - q. Retail Trade
    - r. Transportation and Warehousing
s. Utilities
t. Wholesale Trade
u. Other

11. How do you complete your work?
   Fully in-person   Hybrid (in person and online)   Full online

12. From your perspective, what level of autonomy do you have in your given work modality?
   High   Medium   Low

13. Which of the following work modalities allows for the highest level of autonomy?
   Fully in-person   Fully remote   Hybrid (in-person and remote)   Other
Appendix B

Basic Need Satisfaction Scale

INSTRUCTIONS: The following questions concern your feelings about your current job during the last 6 months. Please indicate how true each of the following statements is for you given your experiences on this job. Remember that your boss will never know how you responded to these questions. Please use the following scale in responding to the items.

1 (Not at all true)
2
3
4 (Somewhat True)
5
6
7 (Very True)

1. I feel like I can make a lot of inputs to deciding how my job gets done. (A)
2. I really like the people I work with at my job. (R)
3. I do not feel very competent when I am at my job. (C – reverse)
4. People at my job tell me I am good at what I do. (C)
5. I feel pressured at my job. (A – reverse)
6. I get along with people at my job. (R)
7. I pretty much keep to myself when I am at my job. (R – reverse)
8. I am free to express my ideas and opinions at my job. (A)
9. I consider the people I work with to be my friends. (R)
10. I have been able to learn interesting new skills on my job. (C)
11. When I am at my job, I have to do what I am told. (A – reverse)
12. Most days I feel a sense of accomplishment from working. (C)
13. My feelings are taken into consideration at my job. (A)
14. On my job I do not get much of a chance to show how capable I am. (C – reverse)
15. People at my job care about me. (R)
16. There are not many people at my job that I am close to. (R – reverse)
17. I feel like I can pretty much be myself at my job. (A)
18. The people I work with do not seem to like me much. (R – reverse)
19. When I am working, I often do not feel very capable. (C – reverse)
20. There is not much opportunity for me to decide for myself how to go about my job. (A – reverse)
21. People at my job are pretty friendly towards me. (R)

Note. A = autonomy, C = competence, R = relatedness

## Appendix C

### Factual Autonomy Scale

**INSTRUCTIONS:** In your present job, how often do you have to ask permission...

<table>
<thead>
<tr>
<th>Event</th>
<th>1 = Never</th>
<th>2 = Rarely</th>
<th>3 = Sometimes</th>
<th>4 = Quite often</th>
<th>5 = Extremely often or always</th>
</tr>
</thead>
<tbody>
<tr>
<td>... to take a rest break?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... to take a lunch/meal break?</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>... to leave early for the day?</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>... to change the hours you work?</td>
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<tr>
<td>... to leave your office or work station?</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>... to come late to work?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... to take time off?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**How often do the following events occur in your present job?**

<table>
<thead>
<tr>
<th>How often does someone tell you what you are to do?</th>
<th>Never</th>
<th>Once or twice</th>
<th>Once or twice per month</th>
<th>Once or twice per week</th>
<th>Every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often does someone tell you when you are to do your work?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often does someone tell you how you are to do your work?</td>
<td></td>
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<td></td>
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</tbody>
</table>

Appendix D

Job Diagnostic Survey – Autonomy Subscale

INSTRUCTIONS: Please indicate below how accurately or inaccurately the following statements describe your present job.

1 (Very inaccurate)
2 (Mostly inaccurate)
3 (Slightly inaccurate)
4 (Uncertain)
5 (Slightly accurate)
6 (Mostly accurate)
7 (Very accurate)

1. I decide on my own how to go about doing the work.
2. The job gives me a chance to use my personal initiative or judgment in carrying out the work.
3. The job gives me considerable opportunity for independence and freedom in how I do the work.


Appendix E

One-Item Autonomy Scale

INSTRUCTIONS: Please indicate the extent to which the following statement in descriptive of your current job.

1 (Strongly Disagree)  
2 (Disagree)  
3 (Neither Agree nor Disagree)  
4 (Agree)  
7 (Strongly Agree)

1. The job allows freedom, independence, or discretion in work scheduling, sequence, methods, procedures, quality control, or other decision making.”

Appendix F

Work Climate Questionnaire – Autonomy Support Scale

INSTRUCTIONS: This questionnaire contains items that are related to your experience with the manager who is your most immediate supervisor at your current job. Managers have different styles in dealing with employees, and we would like to know more about how you have felt about your encounters with your manager in the past 6 months. Your responses are confidential. Please be honest and candid.

1 (Strongly Disagree)
2
3
4 (Neutral)
5
6
7 (Strongly Agree)

1. I feel that my manager provides me choices and options.
2. I feel understood by my manager.
3. I am able to be open with my manager at my job.
4. My manager conveyed confidence in my ability to do well at my job.
5. I feel that my manager accepts me.
6. My manager made sure I really understood the goals of my job and what I need to do.
7. My manager encouraged me to ask questions.
8. I feel a lot of trust in my manager.
9. My manager answers my questions fully and carefully.
10. My manager listens to how I would like to do things.
11. My manager handles people's emotions very well.
12. I feel that my manager cares about me as a person.
13. I don't feel very good about the way my manager talks to me. (reverse)
14. My manager tries to understand how I see things before suggesting a new way to do things.
15. I feel able to share my feelings with my manager.

Appendix G

Intrinsic Motivation Scale

INSTRUCTIONS: Below you will find a series of statements that describe how you might feel about your current job in the past 6 months. Please rate how strongly you agree or disagree with each statement.

1 (Strongly Disagree)
2 (Moderately Disagree)
3 (Slightly Disagree)
4 (Neutral)
5 (Slightly Agree)
6 (Moderately Agree)
7 (Strongly Agree)

1. I enjoy participating in my job very much.  
2. I think I am pretty good at my job.  
3. I put a lot of effort into my job.  
4. I do not feel nervous at all while participating in my job.  
5. My job is fun to do.  
6. I think I do pretty well at my job, compared to other workers.  
7. I haven't tried very hard to do well at my job.  
8. I feel very tense while working at my job.  
9. I haven't really had a choice about working at my job.  
10. I think my job is boring.  
11. I try very hard at my job.  
12. I am very relaxed when performing my job.  
13. I feel like I have to work at my job.  
14. My job does not hold my attention at all.  
15. I would describe my job as very interesting.  
16. I am pretty skilled at performing my job.  
17. I haven't put much energy into my job.  
18. I feel pressured while working at my job.  
19. I think my job is quite enjoyable.  
20. While working at my job, I think about how much I enjoy my job.  
21. I work at my job because I have no other choice.

Interest/enjoyment  
Competence  
Effort/importance  
Pressure/tension

McAuley, Wraith, Duncan, 1991, JASP, 21, pp. 139-155
McAuley, Duncan, & Tammen 1989, Research Quarterly for Exercise and Sport, 60, pp. 49-58
Appendix H

Job Satisfaction - MOAQ

INSTRUCTIONS: How do you feel about your current job?

1 (Disagree very much)
2 (Disagree moderately)
3 (Disagree slightly)
4 (Agree slightly)
5 (Agree moderately)
6 (Agree very much)

1. In general, I don’t like my job. (reverse)
2. All in all, I am satisfied with my job.
3. In general, I like working here.

Cammann, Fichman, Jenkins, & Klesh’s (1979) Michigan organizational assessment questionnaire (MOAQ)

Appendix I

Subjective Well-Being Scale

INSTRUCTIONS: Below are five statements that you may agree or disagree with. Using the scale below, indicate your agreement with each item. Please be open and honest in your responding.

1 (Strongly disagree)
2 (Disagree)
3 (Slightly disagree)
4 (Neither agree nor disagree)
5 (Slightly agree)
6 (Agree)
7 (Strongly agree)

1. In most ways my life is close to my ideal.
2. The conditions of my life are excellent.
3. I am satisfied with my life.
4. So far I have gotten the important things I want in life.
5. If I could live my life over, I would change almost nothing.

Appendix J

Work-Related Affective Feelings Scale – Anxiety at Work

INSTRUCTIONS: Taking into account the last 6 months, how often do you feel the following things at your current job?

1 (Almost never)
2 (Rarely)
3 (Sometimes)
4 (Almost always)

Feelings of Anxiety
1. I feel fear at my job.
2. I feel that matters related to my job are getting out of control, which makes me panic.
3. What is happening at my job, fills me with anxiety and makes me feel threatened.
4. I'm thinking that on Monday I need to go to my job, I feel anxious.
5. I have symptoms of anxiety and nervousness at my job, and I'm not able to calm down.
6. Actions taken by my co-workers and/or supervisors make me feel uncertain.
7. I am concerned that I won't be able to meet my job requirements.
8. I feel uncertain at my job.

Feelings of Happiness
9. I find my work enjoyable.
10. My job brings me satisfaction.
11. My job gives me a sense of fulfilment.
12. I find contentment in my work.
13. Overall I feel relaxed and free.
14. I am happy with my relations with my superiors.
15. I have a positive attitude toward the task and problems which I am facing at work.

Feelings of Detection
16. At work I feel like I reached the bottom.
17. When it goes to my job, it cannot be worse.
18. Most work related activities make me feel sad and useless.
19. I don't see any career path in front of me.
20. I have a sense of being suspended from what is happening at work.

Feelings of Anger
21. Recently everything related to my work makes me angry.
22. I find everything at work annoying.
23. The tasks I am getting from my supervisor make me furious.
24. There are moments when I feel very irritated.

Appendix K

Oldenburg Burnout Inventory

INSTRUCTIONS: Below you find a series of statements with which you may agree or disagree. Using the scale below, please state how much you agree or disagree with each statement regarding your current job.

1 (Strongly disagree)
2 (Disagree)
3 (Agree)
4 (Strongly agree)

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

Note. Items 1, 3, 6, 7, 9, 11, 13, and 15 measured disengagement. Items 2, 4, 5, 8, 10, 12, 14, and 16 measured exhaustion. Items 1, 5, 7, 10, 13, 14, 15, and 16 were reverse scored.

Appendix L

Role Ambiguity and Role Conflict

INSTRUCTIONS: The following questions ask about your experiences at your current job in the past 6 months. Please answer each question by selecting the response option that most closely matches your opinion.

1 (Strongly disagree)
2 (Disagree)
3 (Slightly disagree)
4 (Neither agree nor disagree)
5 (Slightly agree)
6 (Agree)
7 (Strongly agree)

Role ambiguity:
1. I am not sure what is expected of me at my job.
2. The requirements of my job aren’t always clear.
3. I often don’t know what is expected of me at my job.
4. I know everything that I am expected to do at my job with certainty. (reverse)
5. My job duties are clearly defined. (reverse)
6. I know what I am required to do for every aspect of my job. (reverse)

Role Conflict:
1. In my job, I often feel like different people are “pulling me in different directions.”
2. I have to deal with competing demands at my job.
3. My superiors often tell me to do two different things that can’t both be done.
4. The tasks I am assigned at my job rarely come into conflict with each other. (reverse)
5. The things I am told to do at my job do not conflict with each other. (reverse)
6. In my job, I’m seldom placed in a situation where one job duty conflicts with other job duties. (reverse)

Appendix M

Quantitative Workload Inventory

INSTRUCTIONS: Please indicate how often each thing happens in your current job.

1 (Less that once per month or never)
2 (Once or twice per month)
3 (Once or twice per week)
4 (Once or twice per day)
5 (Several times per day)

1. How often does your job require you to work very fast?
2. How often does your job require you to work very hard?
3. How often does your job leave you with little time to get things done?
4. How often is there a great deal to be done?
5. How often do you have to do more work than you can do well?

Appendix N

Physical Symptoms Inventory

INSTRUCTIONS:
Over the past 6 months how often have you experienced each of the following symptoms?

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Not at all</th>
<th>Once or Twice</th>
<th>Once or twice per week</th>
<th>Most days</th>
<th>Every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An upset stomach or nausea</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. A backache</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Trouble sleeping</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Headache</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Acid indigestion or heartburn</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Eye strain</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Diarrhea</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Stomach cramps (Not menstrual)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Constipation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Ringing in the ears</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. Loss of appetite</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. Dizziness</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. Tiredness or fatigue</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

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Appendix O

Growth-Need-Strength

INSTRUCTIONS: Listed below are a number of characteristics which could be present on any job. People differ about how much they would like to have each one present in their own jobs. We are interested in learning how much you personally would like to have each one in your present job.

Using the scale below, please indicate the degree to which you would like to have each characteristic present in your job. (Note: the numbers on this scale are different from those used in previous scales.

1 (would like having this only a moderate amount (or less))
2
3
4 (would like having this very much)
5
6
7 (would like having this extremely much)

1. Stimulating and challenging work
2. Chance to exercise independent thought and action in my job
3. Opportunities to learn new things from my work
4. Opportunities to be creative and imaginative in my work
5. Opportunities for personal growth and development in my job
6. A sense of worthwhile accomplishment in my work

Note. Before averaging, subtract three from each item score: this will result in a summary scale ranging from one to seven.

Appendix P

Organizational Citizenship Behaviors

INSTRUCTIONS:

How often have you done each of the following things at your current job in the past 6 months?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Once or twice</th>
<th>Once or twice per month</th>
<th>Once or twice per week</th>
<th>Every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>2.</td>
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<td>10.</td>
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<td>11.</td>
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<td>12.</td>
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<td>13.</td>
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<td>14.</td>
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<td>15.</td>
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<td>16.</td>
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<td>17.</td>
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<td>18.</td>
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<td>19.</td>
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<td>20.</td>
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</tbody>
</table>

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217
Appendix Q

Counterproductive Workplace Behaviors

INSTRUCTIONS: Please indicate the extent to which you have engaged in each of the behaviors in the last 6 months.

1 (Never)
2 (Once a year)
3 (Twice a year)
4 (Several times a year)
5 (Monthly)
6 (Weekly)
7 (Daily)

Interpersonal Deviance:
1. Made fun of someone at work
2. Said something hurtful to someone at work
3. Made an ethnic, religious, or racial remark at work
4. Cursed at someone at work
5. Played a mean prank on someone at work
6. Acted rudely toward someone at work
7. Publicly embarrassed someone at work

Organizational Deviance:
8. Taken property from work without permission
9. Spent too much time fantasizing or daydreaming instead of working
10. Falsified a receipt to get reimbursed for more money than you spent on business expenses
11. Taken an additional or longer break than is acceptable at your workplace
12. Come in late to work without permission
13. Littered your work environment
14. Neglected to follow your boss's instructions
15. Intentionally worked slower than you could have worked
16. Discussed confidential company information with an unauthorized person
17. Used an illegal drug or consumed alcohol on the job
18. Put little effort into your work
19. Dragged out work in order to get overtime

Appendix R

Cognitive Dissonance

INSTRUCTIONS: When you think about how much control you have over your job compared to how much control other people have over your job, to what extent do you feel:

1 2 3 4 5 6 7

Not at all comfortable .............................................................. very comfortable
Not at all stressed ............................................................... very stressed (reverse-scored)
Not at all frustrated ........................................................... very frustrated (reverse-scored)
Not at all anxious ............................................................... very anxious (reverse-scored)
Not at all focused .............................................................. very focused

Appendix S

Work Locus of Control Scale

INSTRUCTIONS: The following questions concern your beliefs about jobs in general. They do not refer only to your present job. Please use the scale below.

1 (Disagree very much)
2 (Disagree moderately)
3 (Disagree slightly)
4 (Agree slightly)
5 (Agree moderately)
6 (Agree very much)

1. A job is what you make of it. (reverse)
2. On most jobs, people can pretty much accomplish whatever they set out to accomplish. (reverse)
3. If you know what you want out of a job, you can find a job that gives it to you. (reverse)
4. If employees are unhappy with a decision made by their boss, they should do something about it. (reverse)
5. Getting the job you want is mostly a matter of luck.
6. Making money is primarily a matter of good fortune.
7. Most people are capable of doing their jobs well if they make the effort. (reverse)
8. In order to get a really good job, you need to have family members or friends in high places.
9. Promotions are usually a matter of good fortune.
10. When it comes to landing a really good job, who you know is more important than what you know.
11. Promotions are given to employees who perform well on the job. (reverse)
12. To make a lot of money you have to know the right people.
13. It takes a lot of luck to be an outstanding employee on most jobs.
14. People who perform their jobs well generally get rewarded. (reverse)
15. Most employees have more influence on their supervisors than they think they do. (reverse)
16. The main difference between people who make a lot of money and people who make a little money is luck.

Appendix T

Big Five Personality Factors – IPIP

INSTRUCTIONS: The following pages contain phrases describing people’s behaviors. Please use the rating scale next to each phrase to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age.

1 (Very inaccurate)
2 (Moderately inaccurate)
3 (Neither accurate nor inaccurate)
4 (Moderately accurate)
5 (Very accurate)

1. Am the life of the party (E)
2. Sympathize with others’ feelings (A)
3. Get chores done right away (C)
4. Have frequent mood swings (N)
5. Have a vivid imagination (O)
6. Don’t talk a lot (E) (reverse)
7. Am not interested in other people’s problems (A) (reverse)
8. Often forget to put things back in their proper place (C) (reverse)
9. Am relaxed most of the time (N) (reverse)
10. Am not interested in abstract ideas (O) (reverse)
11. Talk to a lot of different people at parties (E)
12. Feel others’ emotions (A)
13. Like order (C)
14. Get upset easily (N)
15. Have difficulty understanding abstract ideas (O) (reverse)
16. Keep in the background (E) (reverse)
17. Am not really interested in others (A) (reverse)
18. Make a mess of things (C) (reverse)
19. Seldom feel blue (N) (reverse)
20. Do not have a good imagination (O) (reverse)

Note. A = agreeableness, E = extraversion, C = conscientiousness, O = openness to experiences, N = neuroticism

Appendix U

Social Desirability – BIDR-16

INSTRUCTIONS: Using the scale below as a guide, indicate how true each statement is for you.

1 (Not true) 2 3 4 (Somewhat true) 5 6 7 (Very true)

Self-deceptive enhancement:
1. I have not always been honest with myself. (reverse)
2. I always know why I like things.
3. It's hard for me to shut off a disturbing thought. (reverse)
4. I never regret my decisions.
5. I sometimes lose out on things because I can't make up my mind soon enough. (reverse)
6. I am a completely rational person.
7. I am very confident of my judgments.
8. I have sometimes doubted my ability as a lover. (reverse)

Impression management:
9. I sometimes tell lies if I have to. (reverse)
10. I never cover up my mistakes.
11. There have been occasions when I have taken advantage of someone. (reverse)
12. I sometimes try to get even rather than forgive and forget. (reverse)
13. I have said something bad about a friend behind his/her back. (reverse)
14. When I hear people talking privately, I avoid listening.
15. I never take things that don't belong to me.
16. I don't gossip about other people's business.

Appendix V

Leadership Behavior Description Questionnaire (LBDQ – XII)

INSTRUCTIONS: Please indicate how frequently your current supervisor engages in the following behaviors using the scale below.

5 (Always)
4 (Often)
3 (Occasionally)
2 (Seldom)
1 (Never)

Initiating Structure:
1. My supervisor makes their attitudes clear to the group.
2. My supervisor assigns group members particular tasks.
3. My supervisor schedules the work to be done.
5. My supervisor encourages the use of uniform procedures.
6. My supervisor asks that group members follow standard rules and regulations.
7. My supervisor lets group members know what is expected of them.
8. My supervisor decides what shall be done and how it shall be done.
9. My supervisor makes sure that their part in the group is understood by other group members.

Leader Consideration:
10. My supervisor tries out their ideas with the group.
11. My supervisor does little things to make it pleasant to be a member of the group.
12. My supervisor keeps to their self. (reverse)
13. My supervisor refuses to explain their actions. (reverse)
14. My supervisor acts without consulting the group. (reverse)
15. My supervisor treats all group members as their equals.
16. My supervisor is willing to make changes.
17. My supervisor is friendly and approachable.
18. My supervisor puts suggestions made by the group into operation.
19. My supervisor gives advance notice of changes.
20. My supervisor looks out for the personal welfare of group members.

Appendix W

Comprehensive Health Rating

INSTRUCTIONS: In general, how would you rate your current health?

1 (Poor)
2 (Fair)
3 (Good)
4 (Very good)
5 (Excellent)

Appendix X

Insufficient Effort Responding Items

Bogus items: The following three items will be embedded in one of the above variable measures, and participants will use the respective scale to record their answer.

1. My birthday is on February 30th. (Embedded in Appendix F)
2. I can run 2 miles in 2 min. (Embedded in Appendix K)
3. I work fourteen months in a year. (Embedded in Appendix R)

Instructed response items: The following two items will be embedded in one of the above variable measures and participants will be instructed to choose an option from the respective scale.

4. All animals make for great pets (Embedded in Appendix G)
5. Dogs and cats are great pets (Embedded in Appendix L)

Note: Participants were removed from the dataset if they failed to correctly answer any of the above five questions.
Appendix Y

Consent Form – MTurk Sample

Investigators: Riley Schwanz (schwanz.3@wright.edu)

WSU Psychology Department, Fawcett Hall Room 335, Dayton, OH 45435

Dr. Debra Steele-Johnson (debra.steele-johnson@wright.edu)
WSU Psychology Department, Fawcett Hall Room 335, Dayton, OH 45435

Study site: Online at a time and location of your choosing

If you have general questions about giving consent or your rights as a research participant in this research study, you can call the Wright State University Institutional Review Board at 937-775-4462.

Background Information:

You are invited to participate in a research study. The study is being conducted by Riley Schwanz (student in the WSU IO/HF MS Program) and Dr. Debra Steele-Johnson. To participate, you must be at least 18 years of age, be a U.S. Citizen, working at least 35 hours/week, and have normal to corrected vision.

Purpose

The purpose of this research study is to examine relationships between job characteristics and various positive and negative outcomes.

Procedure

In this study, you will be asked to complete several online questionnaires. Completion of the online surveys is self-paced but must be completed in one sitting. If you leave the survey, you may not be able to return to it. If you complete the study satisfactorily, you will receive $2.50 to compensate you for completing all of the questionnaires. These surveys will be used to measure aspects of job characteristics and behavioral and attitudinal outcomes. You will be presented with 249 questions. This study will take approximately 60 minutes to complete. Once you have completed the survey, you will be provided a code that you will submit on the MTurk page. Do not close the MTurk page until you have submitted your responses and the code. You will not receive any credit if you submit an incorrect code.

Potential Risks

There is minimal risk and discomfort anticipated as part of or as a result of this research study. The primary risk is fatigue resulting from responding to the questionnaires. Additionally, some
items may cause discomfort or result in positive or negative feelings. Any information about you obtained from this study will be kept strictly confidential and you will not be identified in any report or publication.

Benefits

The possible benefits of this study include the gaining of knowledge about human psychology that can improve job attitudes and reduce dysfunctional outcomes. The knowledge gained may not benefit you directly. The information learned in this study may be helpful to others. You will receive the benefit of $2.50 for completing this study.

Compensation

If you complete the study satisfactorily, you will receive $2.50 to compensate you for completing all of the questionnaires. You will be paid through Amazon’s payment system. Please note that this study contains several checks to make sure that participants are finishing the tasks honestly and completely. In accordance with the policies set by Amazon Mechanical Turk, we may reject your work if you do not complete the Human Intelligence Task (HIT) correctly or if you do not follow the relevant instructions. We are researchers at a public university with limited grant funding. Please read each question carefully and respond truthfully. The researcher will have the ability to screen out participants based on insufficient effort or attention and automated responding. Participants who engage in these behaviors will have their surveys terminated immediately, their data removed, and will NOT be paid. Please accept this HIT only if you are comfortable with $2.50 for 60 minutes of your time.

Confidentiality

Total privacy cannot be guaranteed. We will protect your privacy to the extent permitted by law. If the results from this study are published, your name will not be made public. Once your information leaves our institution, we cannot promise that others will keep it private. Results of the study will show only aggregated (combined) data. No individual results will be available.

Your information may be shared with the following:

- The Wright State IRB and Office of Research and Sponsored Programs
- Office for Human Research Protections (OHRP)

Security

To ensure data collected is secured, your data will be kept in either a password protected computer, or the password protected Amazon MTURK system.

Voluntary Participation
Taking part in this study is voluntary. You may choose not to take part at all. If you decide to be in this study, you may stop taking part at any time. However, if you choose to stop before the end of the survey, you will not be paid.

Research Subject’s Rights, Questions, Concerns, and Complaints

You may contact the principal investigator, Riley Schwanz (schwanz.3@wright.edu) and his faculty advisor, Dr. Debra Steele-Johnson (debra.steele-johnson@wright.edu).

If you have any questions about your rights as a subject, questions, concerns or complaints, you may call the Wright State IRB Office (937) 775-4462. You may discuss any questions about your rights as a subject with a member of the IRB or staff. The IRB is an independent committee composed of members of the University community, staff of the institutions, as well as lay members of the community not connected with these institutions. The IRB has reviewed this study.

This form tells you what will happen during the study if you choose to take part. Clicking the “I Agree” button below and continuing with the questionnaires implies that this study has been discussed with you, that your questions have been answered, and that you will take part in the study. This informed consent document is not a contract. You are not giving up any legal rights by signing this informed consent document. Your decision to participate or to not participate will not cause a loss of benefits to which you might otherwise be entitled. There is no penalty of any kind for either non-participation or withdrawal at any time. You may request a copy of this consent to keep for your records by contacting the primary investigator, Riley Schwanz at schwanz.3@wright.edu.

Please indicate your agreement to participate in this study. If you choose not to participate you may close your browser now.

By clicking the “I agree to participate in this study” option below, you indicate that you are 18 years of age or older, have read and understood the description of the study, and you agree to participate.

I agree to participate in this study.
Consent Form – Student Sample

Investigators: Riley Schwanz (schwanz.3@wright.edu)
WSU Psychology Department, Fawcett Hall Room 335,
Dayton, OH 45435

Dr. Debra Steele-Johnson (debra.steele-johnson@wright.edu)
WSU Psychology Department, Fawcett Hall Room 335,
Dayton, OH 45435

Study site: Online at a time and location of your choosing

If you have general questions about giving consent or your rights as a research participant in this research study, you can call the Wright State University Institutional Review Board at 937-775-4462.

Background Information:

You are invited to participate in a research study. The study is being conducted by Riley Schwanz (student in the WSU IO/HF MS Program) and Dr. Debra Steele-Johnson. To participate, you must be at least 18 years of age, be a U.S. Citizen, and have normal to corrected vision.

Purpose

The purpose of this research study is to examine relationships between job characteristics and various positive and negative outcomes.

Procedure

In this study, you will be asked to complete several online questionnaires. Completion of the online surveys is self-paced but must be completed in one sitting. If you leave the survey, you may not be able to return to it. If you complete the study satisfactorily, you will receive 2 research participation credits to compensate you for completing all of the questionnaires. These surveys will be used to measure aspects of job characteristics and behavioral and attitudinal outcomes. This study will take approximately 60 minutes to complete. You will be presented with 275 questions.

Potential Risks

There is minimal risk and discomfort anticipated as part of or as a result of this research study. The primary risk is fatigue resulting from responding to the questionnaires. Additionally, some items may cause discomfort or result in positive or negative feelings. Any information about you obtained from this study will be kept strictly confidential and you will not be identified in any report or publication.
Benefits

The possible benefits of this study include the gaining of knowledge about human psychology that can improve job attitudes and reduce dysfunctional outcomes. The knowledge gained may not benefit you directly. The information learned in this study may be helpful to others.

Compensation

If you complete the study satisfactorily, you will receive 2 research participation credit to compensate you for completing all of the questionnaires. You will receive 2 research participation credit. Please note that this study contains several checks to make sure that participants are finishing the tasks honestly and completely. We may reject your work if you do not follow the relevant instructions. Please read each question carefully and respond truthfully. The researcher will have the ability to screen out participants based on insufficient effort or attention and automated responding. Participants who engage in these behaviors will have their data removed. You will receive 1 credit if you do not complete the entire survey.

Confidentiality

Total privacy cannot be guaranteed. We will protect your privacy to the extent permitted by law. If the results from this study are published, your name will not be made public. Once your information leaves our institution, we cannot promise that others will keep it private. Results of the study will show only aggregated (combined) data. No individual results will be available.

Your information may be shared with the following:

· The Wright State IRB and Office of Research and Sponsored Programs
· Office for Human Research Protections (OHRP)

Security

To ensure data collected is secured, your data will be stored in a password protected excel spreadsheet in a password protected computer.

Voluntary Participation

Taking part in this study is voluntary. You may choose not to take part at all. If you decide to be in this study, you may stop taking part at any time. However, if you choose to stop before the end of the survey, you will receive partial credit.

Research Subject’s Rights, Questions, Concerns, and Complaints

You may contact the principal investigator, Riley Schwanz (schwanz.3@wright.edu) and his faculty advisor, Dr. Debra Steele-Johnson, at debra.steele-johnson@wright.edu.
If you have any questions about your rights as a subject, questions, concerns or complaints, you may call the Wright State IRB Office (937) 775-4462. You may discuss any questions about your rights as a subject with a member of the IRB or staff. The IRB is an independent committee composed of members of the University community, staff of the institutions, as well as lay members of the community not connected with these institutions.

This form tells you what will happen during the study if you choose to take part. Clicking the “I Agree to participate in this study” button below and continuing with the questionnaires implies that this study has been discussed with you, that your questions have been answered, and that you will take part in the study. This informed consent document is not a contract. You are not giving up any legal rights by signing this informed consent document. Your decision to participate or to not participate will not cause a loss of benefits to which you might otherwise be entitled. You will receive 1 credit if you choose to withdraw prior to completing the study. You may request a copy of this consent to keep for your records by contacting the primary investigator, Riley Schwanz at schwanz.3@wright.edu.

Please indicate your agreement to participate in this study. If you choose not to participate you may close your browser now.

By clicking the “I agree to participate in this study” option below, you indicate that you are 18 years of age or older, have read and understood the description of the study, and you agree to participate.
Appendix Z

Debriefing Form

THANK YOU FOR PARTICIPATING IN THIS STUDY!

The experiment you just completed examines the relationships between various job characteristics variables and various behavioral and attitudinal outcome variables.

Prior research has examined relationships between autonomy and various positive and negative outcomes in organizations. We are interested in the moderator effects and curvilinear relationships among these variables.

With data from you and other individuals, we are discovering more about how job characteristic variables affect the relationship between employees’ autonomy and various positive and negative outcomes.

Your input is very important, and we appreciate your time and participation!

Please do not discuss these surveys with anyone else because it is important that future participants know nothing about the experiment before they participate in the same experiment. The data you provide today is important to us, and we appreciate your help. If you have any questions or comments about today’s experiments, please talk to the researcher, Riley Schwanz at schwanz.3@wright.edu or contact Dr. Debra Steele-Johnson at debra.steele-johnson@wright.edu. Thank you for your time and cooperation.
Appendix AA

Exploratory Factor Loadings for Student Sample (Study 1)

Basic Psychological Needs Satisfaction Loadings (3 Factor Structure)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1 - Autonomy</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor 2 - Relatedness</td>
<td>0.51</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor 3 - Competence</td>
<td>0.13</td>
<td>-0.05</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>BPNS  8 I am free to express my</td>
<td>0.66</td>
<td>0.07</td>
<td>-0.22</td>
<td></td>
</tr>
<tr>
<td>ideas and opinions at my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS 13 My feelings are taken</td>
<td>0.63</td>
<td>0.18</td>
<td>-0.16</td>
<td></td>
</tr>
<tr>
<td>into consideration at my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS  1 I feel like I can make a</td>
<td>0.48</td>
<td>0.27</td>
<td>-0.35</td>
<td></td>
</tr>
<tr>
<td>lot of inputs to deciding how</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>my job gets done.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS 17 I feel like I can pretty</td>
<td>0.47</td>
<td>0.19</td>
<td>-0.24</td>
<td></td>
</tr>
<tr>
<td>much be myself at my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS  5 I feel pressured at my</td>
<td>0.23</td>
<td>0.29</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS11 When I am at my job, I</td>
<td>-0.20</td>
<td>0.22</td>
<td>-0.09</td>
<td></td>
</tr>
<tr>
<td>have to do what I am told.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS 20 There is not much</td>
<td>-0.05</td>
<td>0.84</td>
<td>-0.03</td>
<td></td>
</tr>
<tr>
<td>opportunity for me to decide for</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>myself how to go about my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS 18 The people I work with</td>
<td>0.27</td>
<td>0.23</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>do not seem to like me much.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS 16 There are not many</td>
<td>0.38</td>
<td>0.15</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>people at my job that I am close</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>to.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS 15 People at my job care</td>
<td>0.84</td>
<td>0.05</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>about me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS  7 I pretty much keep to</td>
<td>0.35</td>
<td>-0.01</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>myself when I am at my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS  2 I really like the people</td>
<td>0.81</td>
<td>-0.07</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>I work with at my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS  6 I get along with people</td>
<td>0.72</td>
<td>-0.07</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>at my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>**BPNS 21 People at my work are</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>**pretty friendly towards me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS  9 I consider the people I</td>
<td>0.75</td>
<td>-0.16</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>work with to be my friends.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS 14 On my job I do not get</td>
<td>0.08</td>
<td>0.36</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>much of a chance to show how</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>capable I am.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS 19 People at my job are</td>
<td>0.10</td>
<td>0.36</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>pretty friendly towards me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS  3 I do not feel very</td>
<td>-0.10</td>
<td>0.33</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>competent when I am at my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS  4 People at my job tell me</td>
<td>0.59</td>
<td>-0.04</td>
<td>-0.15</td>
<td></td>
</tr>
<tr>
<td>I am good at what I do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS 12 Most days I feel a sense</td>
<td>0.57</td>
<td>0.15</td>
<td>-0.17</td>
<td></td>
</tr>
<tr>
<td>of accomplishment from working.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPNS 10 I have been able to</td>
<td>0.45</td>
<td>0.12</td>
<td>-0.27</td>
<td></td>
</tr>
<tr>
<td>learn interesting new skills on</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Items 1, 5, 8, 11, 13, 17 and 20 measure autonomy. Items 2, 6, 7, 9, 15, 16, 18, and 21 measure relatedness. Items 3, 4, 10, 12, 14, and 19 measure competence.
Basic Psychological Needs Satisfaction Three Factor Extraction

Scree plot

Eigenvalues of factors and components

factor or component number

- PC
- FA
Basic Psychological Needs Satisfaction Loadings (1 Factor Autonomy Subscale)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPNS 1</td>
<td>I feel like I can make a lot of inputs to deciding how my job gets done.</td>
<td>0.73</td>
</tr>
<tr>
<td>BPNS 13</td>
<td>My feelings are taken into consideration at my job.</td>
<td>0.73</td>
</tr>
<tr>
<td>BPNS 8</td>
<td>I am free to express my ideas and opinions at my job.</td>
<td>0.68</td>
</tr>
<tr>
<td>BPNS 17</td>
<td>I feel like I can pretty much be myself at my job.</td>
<td>0.57</td>
</tr>
<tr>
<td>BPNS 20</td>
<td>There is not much opportunity for me to decide for myself how to go about my job.</td>
<td>0.55</td>
</tr>
<tr>
<td>BPNS 5</td>
<td>I feel pressured at my job.</td>
<td>0.45</td>
</tr>
<tr>
<td>BPNS11</td>
<td>When I am at my job, I have to do what I am told.</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Basic Psychological Needs Satisfaction Autonomy Factor Extraction

Scree plot
Intrinsic Motivation Composite Loadings (1 Factor)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM 19</td>
<td>I think my job is quite enjoyable.</td>
<td>0.92</td>
</tr>
<tr>
<td>IM 5</td>
<td>My job is fun to do.</td>
<td>0.90</td>
</tr>
<tr>
<td>IM 1</td>
<td>I enjoy participating in my job very much.</td>
<td>0.84</td>
</tr>
<tr>
<td>IM 20</td>
<td>While working at my job, I think about how much I enjoy my job.</td>
<td>0.73</td>
</tr>
<tr>
<td>IM 15</td>
<td>I would describe my job as very interesting.</td>
<td>0.67</td>
</tr>
<tr>
<td>IM 10</td>
<td>I think my job is boring.</td>
<td>0.65</td>
</tr>
<tr>
<td>IM 3</td>
<td>I put a lot of effort into my job.</td>
<td>0.63</td>
</tr>
<tr>
<td>IM 14</td>
<td>My job does not hold my attention at all.</td>
<td>0.48</td>
</tr>
<tr>
<td>IM 2</td>
<td>I think I am pretty good at my job.</td>
<td>0.46</td>
</tr>
<tr>
<td>IM 12</td>
<td>I am very relaxed when performing my job.</td>
<td>0.41</td>
</tr>
<tr>
<td>IM 16</td>
<td>I am pretty skilled at performing my job.</td>
<td>0.41</td>
</tr>
<tr>
<td>IM 4</td>
<td>I do not feel nervous at all while participating in my job.</td>
<td>0.40</td>
</tr>
<tr>
<td>IM 11</td>
<td>I try very hard at my job.</td>
<td>0.39</td>
</tr>
<tr>
<td>IM 9</td>
<td>I haven't really had a choice about working at my job.</td>
<td>0.39</td>
</tr>
<tr>
<td>IM 21</td>
<td>I work at my job because I have no other choice.</td>
<td>0.39</td>
</tr>
<tr>
<td>IM 17</td>
<td>I haven't put much energy into my job.</td>
<td>0.38</td>
</tr>
<tr>
<td>IM 8</td>
<td>I feel very tense while working at my job.</td>
<td>0.29</td>
</tr>
<tr>
<td>IM 18</td>
<td>I feel pressured while working at my job.</td>
<td>0.29</td>
</tr>
<tr>
<td>IM 6</td>
<td>I think I do pretty well at my job, compared to other workers.</td>
<td>0.26</td>
</tr>
<tr>
<td>IM 7</td>
<td>I haven't tried very hard to do well at my job.</td>
<td>0.26</td>
</tr>
<tr>
<td>IM 13</td>
<td>I feel like I have to work at my job.</td>
<td>-0.09</td>
</tr>
</tbody>
</table>

Intrinsic Motivation Composite Factor Extraction

Scree plot
Autonomy Support Loadings (1 Factor)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS 8</td>
<td>I feel a lot of trust in my manager.</td>
<td>0.90</td>
</tr>
<tr>
<td>AS 12</td>
<td>I feel that my manager cares about me as a person.</td>
<td>0.89</td>
</tr>
<tr>
<td>AS 3</td>
<td>I am able to be open with my manager at my job.</td>
<td>0.89</td>
</tr>
<tr>
<td>AS 15</td>
<td>I feel able to share my feelings with my manager.</td>
<td>0.88</td>
</tr>
<tr>
<td>AS 10</td>
<td>My manager listens to how I would like to do things.</td>
<td>0.87</td>
</tr>
<tr>
<td>AS 2</td>
<td>I feel understood by my manager.</td>
<td>0.86</td>
</tr>
<tr>
<td>AS 1</td>
<td>I feel that my manager provides me choices and options.</td>
<td>0.85</td>
</tr>
<tr>
<td>AS 9</td>
<td>My manager answers my questions fully and carefully.</td>
<td>0.84</td>
</tr>
<tr>
<td>AS 14</td>
<td>My manager tries to understand how I see things before suggesting a new way to do things.</td>
<td>0.82</td>
</tr>
<tr>
<td>AS 6</td>
<td>My manager made sure I really understood the goals of my job and what I need to do.</td>
<td>0.81</td>
</tr>
<tr>
<td>AS 5</td>
<td>I feel that my manager accepts me.</td>
<td>0.78</td>
</tr>
<tr>
<td>AS 7</td>
<td>My manager encouraged me to ask questions.</td>
<td>0.77</td>
</tr>
<tr>
<td>AS 4</td>
<td>My manager conveyed confidence in my ability to do well at my job.</td>
<td>0.75</td>
</tr>
<tr>
<td>AS 13</td>
<td>I don't feel very good about the way my manager talks to me.</td>
<td>0.71</td>
</tr>
<tr>
<td>AS 11</td>
<td>My manager handles people's emotions very well.</td>
<td>0.70</td>
</tr>
</tbody>
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Autonomy Support Factor Extraction

Scree plot

Eigen values of factors and components

factor or component number

237
Job Satisfaction Loadings (1 Factor)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>JS 2</td>
<td>All in all, I am satisfied with my job.</td>
<td>0.92</td>
</tr>
<tr>
<td>JS 3</td>
<td>In general, I like working here.</td>
<td>0.91</td>
</tr>
<tr>
<td>JS 1</td>
<td>In general, I don’t like my job.</td>
<td>0.89</td>
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</tbody>
</table>

Job Satisfaction Factor Extraction

![Scree plot](image-url)
Subjective Well-Being Loadings (1 Factor)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWB 3</td>
<td>I am satisfied with my life.</td>
<td>0.87</td>
</tr>
<tr>
<td>SWB 1</td>
<td>In most ways my life is close to my ideal.</td>
<td>0.81</td>
</tr>
<tr>
<td>SWB 4</td>
<td>So far I have gotten the important things I want in life.</td>
<td>0.80</td>
</tr>
<tr>
<td>SWB 2</td>
<td>The conditions of my life are excellent.</td>
<td>0.80</td>
</tr>
<tr>
<td>SWB 5</td>
<td>If I could live my life over, I would change almost nothing.</td>
<td>0.61</td>
</tr>
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Subjective Well-Being Factor Extraction

Scree plot
Work-Related Affective Feelings - Anxiety Loadings (1 Factor)

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<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANX 3</td>
<td>What is happening at my job, fills me with anxiety and makes me feel threatened.</td>
<td>0.82</td>
</tr>
<tr>
<td>ANX 2</td>
<td>I feel that matters related to my job are getting out of control, which makes me panic.</td>
<td>0.82</td>
</tr>
<tr>
<td>ANX 8</td>
<td>I feel uncertain at my job.</td>
<td>0.81</td>
</tr>
<tr>
<td>ANX 4</td>
<td>I'm thinking that on Monday I need to go to my job, I feel anxious.</td>
<td>0.81</td>
</tr>
<tr>
<td>ANX 6</td>
<td>Actions taken by my co-workers and/or supervisors make me feel uncertain.</td>
<td>0.79</td>
</tr>
<tr>
<td>ANX 5</td>
<td>I have symptoms of anxiety and nervousness at my job, and I'm not able to calm down.</td>
<td>0.70</td>
</tr>
<tr>
<td>ANX 1</td>
<td>I feel fear at my job.</td>
<td>0.69</td>
</tr>
<tr>
<td>ANX 7</td>
<td>I am concerned that I won't be able to meet my job requirements.</td>
<td>0.61</td>
</tr>
</tbody>
</table>

Work-Related Affective Feelings Factor Extraction

Scree plot

[Graph showing scree plot with eigenvalues for factors or components]
**Stress – Oldenburg Burnout Loadings (1 Factor)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>OLBI 15</td>
<td>I feel more and more engaged in my job.</td>
<td>0.84</td>
</tr>
<tr>
<td>OLBI 7</td>
<td>I find my job to be a positive challenge.</td>
<td>0.79</td>
</tr>
<tr>
<td>OLBI 3</td>
<td>It happens more and more often that I talk about my job in a negative way.</td>
<td>0.75</td>
</tr>
<tr>
<td>OLBI 16</td>
<td>When I work at my job, I usually feel energized.</td>
<td>0.74</td>
</tr>
<tr>
<td>OLBI 8</td>
<td>While working at my job, I often feel emotionally drained.</td>
<td>0.69</td>
</tr>
<tr>
<td>OLBI 1</td>
<td>I always find new and interesting aspects on my job.</td>
<td>0.66</td>
</tr>
<tr>
<td>OLBI 11</td>
<td>Sometimes I feel sickened by my job tasks.</td>
<td>0.58</td>
</tr>
<tr>
<td>OLBI 12</td>
<td>After my job, I usually feel worn out and weary.</td>
<td>0.56</td>
</tr>
<tr>
<td>OLBI 10</td>
<td>After working at my job, I have enough energy for my leisure activities.</td>
<td>0.55</td>
</tr>
<tr>
<td>OLBI 9</td>
<td>Over time, one can become disconnected from this type of job.</td>
<td>0.51</td>
</tr>
<tr>
<td>OLBI 4</td>
<td>After my job, I tend to need more time than in the past in order to relax and feel better.</td>
<td>0.44</td>
</tr>
<tr>
<td>OLBI 5</td>
<td>I can tolerate the pressure of my job very well.</td>
<td>0.39</td>
</tr>
<tr>
<td>OLBI 2</td>
<td>There are days when I feel tired before I arrive at my job.</td>
<td>0.36</td>
</tr>
<tr>
<td>OLBI 14</td>
<td>Usually, I can manage the amount of work at my job well.</td>
<td>0.20</td>
</tr>
<tr>
<td>OLBI 6</td>
<td>Lately, I tend to think less at my job and do my job almost mechanically.</td>
<td>0.14</td>
</tr>
<tr>
<td>OLBI 13</td>
<td>This is the only type of job that I can imagine myself doing.</td>
<td>0.03</td>
</tr>
</tbody>
</table>
**Stress – Oldenburg Burnout Loadings (2 Factor – Disengagement and Emotional Exhaustion)**

<table>
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<tr>
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<th>Item Text</th>
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<td>Factor 1 - Disengagement</td>
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<tr>
<td></td>
<td>Factor 2 – Emotional Exhaustion</td>
<td>0.54</td>
<td>1</td>
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<tr>
<td>OLBI 1</td>
<td>I feel like I can make a lot of inputs to deciding how my job gets done.</td>
<td>0.91</td>
<td>-0.20</td>
</tr>
<tr>
<td>OLBI 7</td>
<td>I feel pressured at my job.</td>
<td>0.72</td>
<td>0.15</td>
</tr>
<tr>
<td>OLBI 15</td>
<td>I am free to express my ideas and opinions at my job.</td>
<td>0.70</td>
<td>0.24</td>
</tr>
<tr>
<td>OLBI 3</td>
<td>My feelings are taken into consideration at my job.</td>
<td>0.45</td>
<td>0.40</td>
</tr>
<tr>
<td>OLBI 11</td>
<td>I feel like I can pretty much be myself at my job.</td>
<td>0.38</td>
<td>0.28</td>
</tr>
<tr>
<td>OLBI 13</td>
<td>People at my job are pretty friendly towards me.</td>
<td>0.33</td>
<td>-0.34</td>
</tr>
<tr>
<td>OLBI 9</td>
<td>I do not feel very competent when I am at my job.</td>
<td>0.27</td>
<td>0.30</td>
</tr>
<tr>
<td>OLBI 6</td>
<td>I get along with people at my job.</td>
<td>0.14</td>
<td>0.02</td>
</tr>
<tr>
<td>OLBI 12</td>
<td>I pretty much keep to myself when I am at my job.</td>
<td>-0.04</td>
<td>0.76</td>
</tr>
<tr>
<td>OLBI 8</td>
<td>I consider the people I work with to be my friends.</td>
<td>0.17</td>
<td>0.68</td>
</tr>
<tr>
<td>OLBI 10</td>
<td>People at my job care about me.</td>
<td>0.13</td>
<td>0.54</td>
</tr>
<tr>
<td>OLBI 2</td>
<td>There are not many people at my job that I am close to.</td>
<td>-0.06</td>
<td>0.51</td>
</tr>
<tr>
<td>OLBI 4</td>
<td>The people I work with do not seem to like me much.</td>
<td>0.03</td>
<td>0.51</td>
</tr>
<tr>
<td>OLBI 16</td>
<td>When I am at my job, I have to do what I am told.</td>
<td>0.63</td>
<td>0.18</td>
</tr>
<tr>
<td>OLBI 5</td>
<td>There is not much opportunity for me to decide for myself how to go about my job.</td>
<td>0.30</td>
<td>0.14</td>
</tr>
<tr>
<td>OLBI 14</td>
<td>I really like the people I work with at my job.</td>
<td>0.18</td>
<td>0.05</td>
</tr>
</tbody>
</table>

*Note.* Items 1, 3, 6, 7, 9, 11, 13, and 15 measured disengagement. Items 2, 4, 5, 8, 10, 12, 14, and 16 measured emotional exhaustion.
Scree plot

Stress – Oldenburg Burnout Factor Extraction

Eigen values of factors and components

factor or component number

PC

FA
Appendix AB

Exploratory Hierarchical Regression Analyses Examining Interest-Enjoyment as a Moderator of the Relationship between BPNS Autonomy and the Four Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
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<td>.27</td>
<td>2.92</td>
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<td>2. Interaction Term</td>
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<td>Interest-Enjoyment</td>
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<td>.02</td>
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</table>

Note. N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Interest-Enjoyment as a Moderator of the Relationship between BPNS Autonomy and Anxiety
Exploratory Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationship between Work-Locus of Control (WLCS) and the Four Outcomes

<table>
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<th>Outcome</th>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
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<tbody>
<tr>
<td>Job Sat.</td>
<td>1. WLCS</td>
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<td>.71</td>
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<td>.37***</td>
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<tr>
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<td>.08**</td>
<td>.08*</td>
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<tr>
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_Note._ N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Exploratory Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationship between Work-Locus of Control (WLCS) and the Four Outcomes

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<th>Predictors</th>
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<th>$SE$</th>
<th>$t$</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
<th>$R^2$</th>
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*Note. $N = 116$. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and $SE$ values are from the last (second) step of each hierarchical regression analysis.*
Appendix AD

Exploratory Hierarchical Regression Analyses Examining Leadership Behavior as a Moderator of the Relationship between BPNS Autonomy and the Four Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
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<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
</tr>
</thead>
<tbody>
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Note. N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Leader Behavior as a Moderator of the Relationship between BPNS Autonomy and Anxiety
Exploratory Hierarchical Regression Analyses Examining Leadership Consideration Subscale as a Moderator of the Relationship between BPNS Autonomy and the Four Outcomes

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Note. N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Leader Consideration as a Moderator of the Relationship between BPNS Autonomy and Anxiety
Appendix AE

Exploratory Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Quantitative Workload, Physical Symptoms, and OCB

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Note. $N = 116$. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and $SE$ values are from the last (second) step of each hierarchical regression analysis.

Exploratory Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationship between BPNS Autonomy and Quantitative Workload, Physical Symptoms, and OCB

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Note. $N = 116$. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and $SE$ values are from the last (second) step of each hierarchical regression analysis.
Appendix AF

Exploratory Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationship between the Factual Autonomy Scale (FAS) and Quantitative Workload, Physical Symptoms, and OCB

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Note. *N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis. FAS = factual autonomy scale.

Exploratory Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationship between the Factual Autonomy Scale and Quantitative Workload, Physical Symptoms, and OCB

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Note. *N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis. FAS = factual autonomy scale.
Appendix AG

Exploratory Hierarchical Regression Analyses Examining Unique Incremental Variance between Primary Predictors and Primary Outcomes

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Note. N = 116. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Appendix AH

Exploratory Factor Loadings for Student Sample (Study 2)

Basic Psychological Needs Satisfaction Loadings (3 Factor Structure)

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<th>Item Text</th>
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<th>Factor 2</th>
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<td>Factor 3 - Competence</td>
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<tr>
<td>BPNS 21</td>
<td>People at my work are pretty friendly towards me.</td>
<td>0.50</td>
<td>0.14</td>
<td>-0.04</td>
</tr>
<tr>
<td>BPNS 6</td>
<td>I get along with people at my job.</td>
<td>0.49</td>
<td>0.07</td>
<td>-0.30</td>
</tr>
<tr>
<td>BPNS 2</td>
<td>I really like the people I work with at my job.</td>
<td>0.66</td>
<td>0.01</td>
<td>0.08</td>
</tr>
<tr>
<td>BPNS 15</td>
<td>People at my job care about me.</td>
<td>0.70</td>
<td>-0.04</td>
<td>0.09</td>
</tr>
<tr>
<td>BPNS 9</td>
<td>I consider the people I work with to be my friends.</td>
<td>0.65</td>
<td>-0.15</td>
<td>0.28</td>
</tr>
<tr>
<td>BPNS 10</td>
<td>I have been able to learn interesting new skills on my job.</td>
<td>0.58</td>
<td>0.13</td>
<td>0.01</td>
</tr>
<tr>
<td>BPNS 14</td>
<td>On my job I do not get much of a chance to show how capable I am.</td>
<td>-0.03</td>
<td>0.70</td>
<td>0.00</td>
</tr>
<tr>
<td>BPNS 3</td>
<td>I do not feel very competent when I am at my job.</td>
<td>0.03</td>
<td>0.71</td>
<td>-0.02</td>
</tr>
<tr>
<td>BPNS 4</td>
<td>People at my job tell me I am good at what I do.</td>
<td>0.67</td>
<td>0.12</td>
<td>-0.11</td>
</tr>
<tr>
<td>BPNS 19</td>
<td>People at my job are pretty friendly towards me.</td>
<td>0.01</td>
<td>0.79</td>
<td>-0.12</td>
</tr>
<tr>
<td>BPNS 12</td>
<td>Most days I feel a sense of accomplishment from working.</td>
<td>0.65</td>
<td>0.02</td>
<td>-0.14</td>
</tr>
</tbody>
</table>

Note. Items 1, 5, 8, 11, 13, 17 and 20 measure autonomy. Items 2, 6, 7, 9, 15, 16, 18, and 21 measure relatedness. Items 3, 4, 10, 12, 14, and 19 measure competence.
Basic Psychological Needs Satisfaction Three Factor Extraction

Scree plot

Eigen values of factors and components

factor or component number
Basic Psychological Needs Satisfaction Loadings (1 Factor Autonomy Subscale)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPNS 17</td>
<td>I feel like I can pretty much be myself at my job.</td>
<td>0.69</td>
</tr>
<tr>
<td>BPNS 13</td>
<td>My feelings are taken into consideration at my job.</td>
<td>0.66</td>
</tr>
<tr>
<td>BPNS 1</td>
<td>I feel like I can make a lot of inputs to deciding how my job gets done.</td>
<td>0.63</td>
</tr>
<tr>
<td>BPNS 8</td>
<td>I am free to express my ideas and opinions at my job.</td>
<td>0.59</td>
</tr>
<tr>
<td>BPNS 5</td>
<td>I feel pressured at my job.</td>
<td>-0.05</td>
</tr>
<tr>
<td>BPNS 20</td>
<td>There is not much opportunity for me to decide for myself how to go about my job.</td>
<td>-0.09</td>
</tr>
<tr>
<td>BPNS 11</td>
<td>When I am at my job, I have to do what I am told.</td>
<td>-0.37</td>
</tr>
</tbody>
</table>

Basic Psychological Needs Satisfaction Autonomy Factor Extraction

Scree plot
**Basic Psychological Needs Satisfaction Loadings (1 Factor Modified Autonomy Subscale)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPNS 17</td>
<td>I feel like I can pretty much be myself at my job.</td>
<td>0.68</td>
</tr>
<tr>
<td>BPNS 13</td>
<td>My feelings are taken into consideration at my job.</td>
<td>0.66</td>
</tr>
<tr>
<td>BPNS 1</td>
<td>I feel like I can make a lot of inputs to deciding how my job gets done.</td>
<td>0.64</td>
</tr>
<tr>
<td>BPNS 8</td>
<td>I am free to express my ideas and opinions at my job.</td>
<td>0.60</td>
</tr>
</tbody>
</table>

**Basic Psychological Needs Satisfaction Autonomy Factor Extraction**

![Scree plot](image)

Eigenvalues of factors and components

Factor or component number
### Intrinsic Motivation Composite Loadings (1 Factor)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM 17</td>
<td>I haven't put much energy into my job.</td>
<td>0.79</td>
</tr>
<tr>
<td>IM 7</td>
<td>I haven't tried very hard to do well at my job.</td>
<td>0.78</td>
</tr>
<tr>
<td>IM 9</td>
<td>I haven't really had a choice about working at my job.</td>
<td>0.77</td>
</tr>
<tr>
<td>IM 8</td>
<td>I feel very tense while working at my job.</td>
<td>0.75</td>
</tr>
<tr>
<td>IM 14</td>
<td>My job does not hold my attention at all.</td>
<td>0.71</td>
</tr>
<tr>
<td>IM 21</td>
<td>I work at my job because I have no other choice.</td>
<td>0.71</td>
</tr>
<tr>
<td>IM 18</td>
<td>I feel pressured while working at my job.</td>
<td>0.68</td>
</tr>
<tr>
<td>IM 10</td>
<td>I think my job is boring.</td>
<td>0.63</td>
</tr>
<tr>
<td>IM 2</td>
<td>I think I am pretty good at my job.</td>
<td>-0.01</td>
</tr>
<tr>
<td>IM 3</td>
<td>I put a lot of effort into my job.</td>
<td>-0.08</td>
</tr>
<tr>
<td>IM 16</td>
<td>I am pretty skilled at performing my job.</td>
<td>-0.09</td>
</tr>
<tr>
<td>IM 1</td>
<td>I enjoy participating in my job very much.</td>
<td>-0.13</td>
</tr>
<tr>
<td>IM 15</td>
<td>I would describe my job as very interesting.</td>
<td>-0.17</td>
</tr>
<tr>
<td>IM 6</td>
<td>I think I do pretty well at my job, compared to other workers.</td>
<td>-0.18</td>
</tr>
<tr>
<td>IM 19</td>
<td>I think my job is quite enjoyable.</td>
<td>-0.20</td>
</tr>
<tr>
<td>IM 12</td>
<td>I am very relaxed when performing my job.</td>
<td>-0.24</td>
</tr>
<tr>
<td>IM 13</td>
<td>I feel like I have to work at my job.</td>
<td>-0.24</td>
</tr>
<tr>
<td>IM 4</td>
<td>I do not feel nervous at all while participating in my job.</td>
<td>-0.26</td>
</tr>
<tr>
<td>IM 20</td>
<td>While working at my job, I think about how much I enjoy my job.</td>
<td>-0.28</td>
</tr>
<tr>
<td>IM 5</td>
<td>My job is fun to do.</td>
<td>-0.29</td>
</tr>
<tr>
<td>IM 11</td>
<td>I try very hard at my job.</td>
<td>-0.35</td>
</tr>
</tbody>
</table>

### Intrinsic Motivation Composite Factor Extraction

![Scree plot](image)
### Autonomy Support Loadings (1 Factor)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS 10</td>
<td>My manager listens to how I would like to do things.</td>
<td>0.77</td>
</tr>
<tr>
<td>AS 3</td>
<td>I am able to be open with my manager at my job.</td>
<td>0.75</td>
</tr>
<tr>
<td>AS 5</td>
<td>I feel that my manager accepts me.</td>
<td>0.75</td>
</tr>
<tr>
<td>AS 7</td>
<td>My manager encouraged me to ask questions.</td>
<td>0.75</td>
</tr>
<tr>
<td>AS 8</td>
<td>I feel a lot of trust in my manager.</td>
<td>0.74</td>
</tr>
<tr>
<td>AS 12</td>
<td>I feel that my manager cares about me as a person.</td>
<td>0.72</td>
</tr>
<tr>
<td>AS 4</td>
<td>My manager conveyed confidence in my ability to do well at my job.</td>
<td>0.72</td>
</tr>
<tr>
<td>AS 1</td>
<td>I feel that my manager provides me choices and options.</td>
<td>0.72</td>
</tr>
<tr>
<td>AS 2</td>
<td>I feel understood by my manager.</td>
<td>0.71</td>
</tr>
<tr>
<td>AS 11</td>
<td>My manager handles people's emotions very well.</td>
<td>0.71</td>
</tr>
<tr>
<td>AS 15</td>
<td>I feel able to share my feelings with my manager.</td>
<td>0.70</td>
</tr>
<tr>
<td>AS 14</td>
<td>My manager tries to understand how I see things before suggesting a new</td>
<td>0.69</td>
</tr>
<tr>
<td></td>
<td>way to do things.</td>
<td></td>
</tr>
<tr>
<td>AS 6</td>
<td>My manager made sure I really understood the goals of my job and what I</td>
<td>0.68</td>
</tr>
<tr>
<td></td>
<td>need to do.</td>
<td></td>
</tr>
<tr>
<td>AS 9</td>
<td>My manager answers my questions fully and carefully.</td>
<td>0.67</td>
</tr>
<tr>
<td>AS 13</td>
<td>I don't feel very good about the way my manager talks to me.</td>
<td>0.01</td>
</tr>
</tbody>
</table>

### Autonomy Support Factor Extraction

![Scree plot](image)

Eigen values of factors and components

Factor or component number
Job Satisfaction Loadings (1 Factor)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>JS 2</td>
<td>All in all, I am satisfied with my job.</td>
<td>0.83</td>
</tr>
<tr>
<td>JS 3</td>
<td>In general, I like working here.</td>
<td>0.63</td>
</tr>
<tr>
<td>JS 1</td>
<td>In general, I don’t like my job.</td>
<td>0.51</td>
</tr>
</tbody>
</table>

Job Satisfaction Factor Extraction

Scree plot

Eigen values of factors and components

factor or component number
Subjective Well-Being Loadings (1 Factor)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWB 1</td>
<td>In most ways my life is close to my ideal.</td>
<td>0.75</td>
</tr>
<tr>
<td>SWB 4</td>
<td>So far I have gotten the important things I want in life.</td>
<td>0.71</td>
</tr>
<tr>
<td>SWB 3</td>
<td>I am satisfied with my life.</td>
<td>0.71</td>
</tr>
<tr>
<td>SWB 2</td>
<td>The conditions of my life are excellent.</td>
<td>0.67</td>
</tr>
<tr>
<td>SWB 5</td>
<td>If I could live my life over, I would change almost nothing.</td>
<td>0.35</td>
</tr>
</tbody>
</table>

Subjective Well-Being Factor Extraction

Scree plot

Eigen values of factors and components

factor or component number
### Work-Related Affective Feelings - Anxiety Loadings (1 Factor)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANX 3</td>
<td>What is happening at my job, fills me with anxiety and makes me feel threatened.</td>
<td>0.76</td>
</tr>
<tr>
<td>ANX 6</td>
<td>Actions taken by my co-workers and/or supervisors make me feel uncertain.</td>
<td>0.76</td>
</tr>
<tr>
<td>ANX 5</td>
<td>I have symptoms of anxiety and nervousness at my job, and I'm not able to calm down.</td>
<td>0.75</td>
</tr>
<tr>
<td>ANX 7</td>
<td>I am concerned that I won't be able to meet my job requirements.</td>
<td>0.75</td>
</tr>
<tr>
<td>ANX 2</td>
<td>I feel that matters related to my job are getting out of control, which makes me panic.</td>
<td>0.74</td>
</tr>
<tr>
<td>ANX 4</td>
<td>I'm thinking that on Monday I need to go to my job, I feel anxious.</td>
<td>0.72</td>
</tr>
<tr>
<td>ANX 1</td>
<td>I feel fear at my job.</td>
<td>0.68</td>
</tr>
<tr>
<td>ANX 8</td>
<td>I feel uncertain at my job.</td>
<td>0.44</td>
</tr>
</tbody>
</table>

### Work-Related Affective Feelings Factor Extraction

![Scree plot](image)
### Stress – Oldenburg Burnout Loadings (1 Factor)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>OLBI 8</td>
<td>While working at my job, I often feel emotionally drained.</td>
<td>0.74</td>
</tr>
<tr>
<td>OLBI 12</td>
<td>After my job, I usually feel worn out and weary.</td>
<td>0.71</td>
</tr>
<tr>
<td>OLBI 3</td>
<td>It happens more and more often that I talk about my job in a negative way.</td>
<td>0.64</td>
</tr>
<tr>
<td>OLBI 11</td>
<td>Sometimes I feel sickened by my job tasks.</td>
<td>0.63</td>
</tr>
<tr>
<td>OLBI 6</td>
<td>Lately, I tend to think less at my job and do my job almost mechanically.</td>
<td>0.62</td>
</tr>
<tr>
<td>OLBI 4</td>
<td>After my job, I tend to need more time than in the past in order to relax and feel better.</td>
<td>0.60</td>
</tr>
<tr>
<td>OLBI 2</td>
<td>There are days when I feel tired before I arrive at my job.</td>
<td>0.60</td>
</tr>
<tr>
<td>OLBI 9</td>
<td>Over time, one can become disconnected from this type of job.</td>
<td>0.56</td>
</tr>
<tr>
<td>OLBI 7</td>
<td>I find my job to be a positive challenge.</td>
<td>-0.02</td>
</tr>
<tr>
<td>OLBI 1</td>
<td>I always find new and interesting aspects on my job.</td>
<td>-0.09</td>
</tr>
<tr>
<td>OLBI 14</td>
<td>Usually, I can manage the amount of work at my job well.</td>
<td>-0.10</td>
</tr>
<tr>
<td>OLBI 16</td>
<td>When I work at my job, I usually feel energized.</td>
<td>-0.12</td>
</tr>
<tr>
<td>OLBI 15</td>
<td>I feel more and more engaged in my job.</td>
<td>-0.12</td>
</tr>
<tr>
<td>OLBI 5</td>
<td>I can tolerate the pressure of my job very well.</td>
<td>-0.16</td>
</tr>
<tr>
<td>OLBI 10</td>
<td>After working at my job, I have enough energy for my leisure activities.</td>
<td>-0.24</td>
</tr>
<tr>
<td>OLBI 13</td>
<td>This is the only type of job that I can imagine myself doing.</td>
<td>-0.32</td>
</tr>
</tbody>
</table>
**Stress – Oldenburg Burnout Loadings (2 Factor – Disengagement and Emotional Exhaustion)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor 1 - Disengagement</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Factor 2 – Emotional Exhaustion</td>
<td>-0.12</td>
<td>1</td>
</tr>
<tr>
<td>OLBI 3</td>
<td>My feelings are taken into consideration at my job.</td>
<td>0.64</td>
<td>-0.01</td>
</tr>
<tr>
<td>OLBI 11</td>
<td>I feel like I can pretty much be myself at my job.</td>
<td>0.63</td>
<td>-0.03</td>
</tr>
<tr>
<td>OLBI 9</td>
<td>I do not feel very competent when I am at my job.</td>
<td>0.61</td>
<td>0.18</td>
</tr>
<tr>
<td>OLBI 6</td>
<td>I get along with people at my job.</td>
<td>0.59</td>
<td>-0.13</td>
</tr>
<tr>
<td>OLBI 7</td>
<td>I feel pressured at my job.</td>
<td>0.15</td>
<td>0.52</td>
</tr>
<tr>
<td>OLBI 1</td>
<td>I feel like I can make a lot of inputs to deciding how my job gets done.</td>
<td>0.03</td>
<td>0.50</td>
</tr>
<tr>
<td>OLBI 15</td>
<td>I am free to express my ideas and opinions at my job.</td>
<td>0.01</td>
<td>0.61</td>
</tr>
<tr>
<td>OLBI 13</td>
<td>People at my job are pretty friendly towards me.</td>
<td>-0.23</td>
<td>0.41</td>
</tr>
<tr>
<td>OLBI 16</td>
<td>When I am at my job, I have to do what I am told.</td>
<td>0.03</td>
<td>0.64</td>
</tr>
<tr>
<td>OLBI 14</td>
<td>I really like the people I work with at my job</td>
<td>0.03</td>
<td>0.55</td>
</tr>
<tr>
<td>OLBI 10</td>
<td>People at my job care about me.</td>
<td>-0.13</td>
<td>0.53</td>
</tr>
<tr>
<td>OLBI 5</td>
<td>There is not much opportunity for me to decide for myself how to go about my job.</td>
<td>-0.07</td>
<td>0.44</td>
</tr>
<tr>
<td>OLBI 12</td>
<td>I pretty much keep to myself when I am at my job.</td>
<td>0.74</td>
<td>0.08</td>
</tr>
<tr>
<td>OLBI 8</td>
<td>I consider the people I work with to be my friends.</td>
<td>0.76</td>
<td>0.03</td>
</tr>
<tr>
<td>OLBI 2</td>
<td>There are not many people at my job that I am close to.</td>
<td>0.59</td>
<td>-0.07</td>
</tr>
<tr>
<td>OLBI 4</td>
<td>The people I work with do not seem to like me much.</td>
<td>0.55</td>
<td>-0.22</td>
</tr>
</tbody>
</table>

*Note.* Items 1, 3, 6, 7, 9, 11, 13, and 15 measured disengagement. Items 2, 4, 5, 8, 10, 12, 14, and 16 measured emotional exhaustion.
Stress – Oldenburg Burnout Factor Extraction

Scree plot

Eigen values of factors and components

factor or component number

Stress – Oldenburg Burnout Factor Extraction

266
Appendix AI

Total Item Correlations, Correlation for Item Against the Scale without Item, Reliability if Item is Dropped, Mean, and Standard Deviations for BPNS Autonomy Original Scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Raw Item Cor.</th>
<th>Item Cor. with Full Scale</th>
<th>Reliability if Item Dropped</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPNS 1</td>
<td>.53</td>
<td>.33</td>
<td>.37</td>
<td>5.6</td>
<td>1.1</td>
</tr>
<tr>
<td>BPNS 5 Rev.</td>
<td>.60</td>
<td>.26</td>
<td>.39</td>
<td>3.9</td>
<td>1.9</td>
</tr>
<tr>
<td>BPNS 8</td>
<td>.50</td>
<td>.27</td>
<td>.39</td>
<td>5.4</td>
<td>1.2</td>
</tr>
<tr>
<td>BPNS 11 Rev.</td>
<td>.25</td>
<td>-.02</td>
<td>.52</td>
<td>2.9</td>
<td>1.4</td>
</tr>
<tr>
<td>BPNS 13</td>
<td>.48</td>
<td>.24</td>
<td>.40</td>
<td>5.3</td>
<td>1.3</td>
</tr>
<tr>
<td>BPNS 17</td>
<td>.46</td>
<td>.22</td>
<td>.41</td>
<td>5.2</td>
<td>1.3</td>
</tr>
<tr>
<td>BPNS 20 Rev.</td>
<td>.56</td>
<td>.23</td>
<td>.41</td>
<td>3.8</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Note. N = 444. Raw Item Cor. = not corrected for item overlap. Item Cor. with Full Scale = correlation for this item with the entire scale without this item. BPNS = basic psychological need satisfaction. Rev. = reverse-scored item. Cronbach’s alpha = .45.

Total Item Correlations, Correlation for Item Against the Scale without Item, Reliability if Item is Dropped, Mean, and Standard Deviations for BPNS Autonomy Modified Scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Raw Item Cor.</th>
<th>Item Cor. with Full Scale</th>
<th>Reliability if Item Dropped</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPNS 1</td>
<td>.73</td>
<td>.53</td>
<td>.68</td>
<td>5.6</td>
<td>1.1</td>
</tr>
<tr>
<td>BPNS 8</td>
<td>.73</td>
<td>.50</td>
<td>.70</td>
<td>5.4</td>
<td>1.2</td>
</tr>
<tr>
<td>BPNS 13</td>
<td>.76</td>
<td>.54</td>
<td>.67</td>
<td>5.3</td>
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Note. N = 444. Raw Item Cor. = not corrected for item overlap. Item Cor. with Full Scale = correlation for this item with the entire scale without this item. BPNS = basic psychological need satisfaction. Cronbach’s alpha = .74.

I conducted an exploratory factor analysis on the original 7-item BPNS Autonomy Scale for both Study 1 and Study 2. In Study 1, the items acceptably loaded onto the autonomy factor (except for Item 11). However, the three reverse-scored items did not acceptably load onto the autonomy factor in Study 2. Thus, I modified the original 7-item scale by creating a 4-item scale which excluded the reverse-scored items. The Cronbach’s alpha increased from .45 to .74 after removing the three items.
### Total Item Correlations, Correlation for Item Against the Scale without Item, Reliability if Item is Dropped, Mean, and Standard Deviations for Work Locus of Control Original Scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Raw Item Cor.</th>
<th>Item Cor. with Full Scale</th>
<th>Reliability if Item Dropped</th>
<th>M</th>
<th>SD</th>
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<tr>
<td>WLCS 1 Rev.</td>
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<td>WLCS 2 Rev.</td>
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*Note.* N = 444. Raw Item Cor. = not corrected for item overlap. Item Cor. with Full Scale = correlation for this item with the entire scale without this item. WLCS = work locus of control. Rev. = reverse-scored item. Cronbach’s alpha = .65.

### Total Item Correlations, Correlation for Item Against the Scale without Item, Reliability if Item is Dropped, Mean, and Standard Deviations for Work Locus of Control Modified Scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Raw Item Cor.</th>
<th>Item Cor. with Full Scale</th>
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<th>SD</th>
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<td>WLCS 13</td>
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*Note.* N = 444. Raw Item Cor. = not corrected for item overlap. Item Cor. with Full Scale = correlation for this item with the entire scale without this item. WLCS = work locus of control. Cronbach’s alpha = .89.
Total Item Correlations, Correlation for Item Against the Scale without Item, Reliability if Item is Dropped, Mean, and Standard Deviations for the Intrinsic Motivation Interest-Enjoyment Original Subscale.

<table>
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<th>Raw Item Cor.</th>
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<th>Reliability if Item Dropped</th>
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<td>2.0</td>
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*Note. N = 444. Raw Item Cor. = not corrected for item overlap. Item Cor. with Full Scale = correlation for this item with the entire scale without this item. IM = intrinsic motivation. Rev. = reverse-scored item. Cronbach’s alpha = .56.*

Total Item Correlations, Correlation for Item Against the Scale without Item, Reliability if Item is Dropped, Mean, and Standard Deviations for Intrinsic Motivation Interest-Enjoyment Modified Subscale.

<table>
<thead>
<tr>
<th>Item</th>
<th>Raw Item Cor.</th>
<th>Item Cor. with Full Scale</th>
<th>Reliability if Item Dropped</th>
<th>M</th>
<th>SD</th>
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</table>

*Note. N = 444. Raw Item Cor. = not corrected for item overlap. Item Cor. with Full Scale = correlation for this item with the entire scale without this item. IM = intrinsic motivation. Cronbach’s alpha = .74.*
Appendix AJ

Intrinsic Motivation as a Moderator of the Relationship between the 7-Item Original BPNS Autonomy Scale and Job Satisfaction

Note. Int. Motivation = Intrinsic Motivation.
Intrinsic Motivation as a Moderator of the Relationship between the 7-Item Original BPNS Autonomy Scale and Well-Being

Note. Int. Motivation = Intrinsic Motivation.
Intrinsic Motivation as a Moderator of the Relationship between the 7-Item Original BPNS Autonomy Scale and Stress

Note. Int. Motivation = Intrinsic Motivation.
Appendix AK

Autonomy Support as a Moderator of the Relationship between the 7-Item Original BPNS Autonomy Scale and Well-Being

Autonomy Support as a Moderator of the Relationship between the 7-Item Original BPNS Autonomy Scale and Stress (Operationalized as Burnout)

Autonomy Support as a Moderator of the Relationship between the 7-Item Original BPNS Autonomy Scale and Anxiety

Appendix AL

The Curvilinear Relationship between the 7-Item Original BPNS Autonomy Scale and Well-Being
The Curvilinear Relationship between the 7-Item Original BPNS Autonomy Scale and Well-Being
The Curvilinear Relationship between the 7-Item Original BPNS Autonomy Scale and Anxiety
Appendix AM

**Exploratory Hierarchical Regression Analyses Examining Interest-Enjoyment as a Moderator of the Relationship between BPNS Autonomy and the Four Outcomes**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>$b$</th>
<th>$SE$</th>
<th>$t$</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
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<td>-2.61</td>
<td>.009</td>
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<td>.15***</td>
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<td>.55</td>
<td>.007</td>
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*Note. N = 444. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and $SE$ values are from the last (second) step of each hierarchical regression analysis.*
Interest-Enjoyment as a Moderator of the Relationship between BPNS Autonomy and Job Satisfaction

![Graph showing the relationship between BPNS Autonomy and Job Satisfaction with Enjoyment as a moderator.]
Interest-Enjoyment as a Moderator of the Relationship between BPNS Autonomy and Well-Being
Interest-Enjoyment as a Moderator of the Relationship between BPNS Autonomy and Stress

![Graph showing the relationship between BPNS Autonomy and Stress with Interest-Enjoyment as a moderator.](image-url)
Exploratory Hierarchical Regression Analyses Examining the Original 9-item Interest-Enjoyment Scale as a Moderator of the Relationship between BPNS Autonomy and the Four Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
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<th>SE</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
<th>R²</th>
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Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Appendix AN

Exploratory Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationship between Work-Locus of Control (WLCS) and the Four Outcomes

<table>
<thead>
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<th>Outcome</th>
<th>Predictors</th>
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<th>$SE$</th>
<th>$t$</th>
<th>$p$</th>
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<td>.02</td>
<td>1.20</td>
<td>.22</td>
<td>.01</td>
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</table>

Note. $N = 444$. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and $SE$ values are from the last (second) step of each hierarchical regression analysis.
Autonomy Support as a Moderator of the Relationship between Work-Locus of Control and Job Satisfaction

### Exploratory Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationship between the Original 16-Item Work-Locus of Control Scale (WLCS) and the Four Outcomes

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<th>Outcome</th>
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<th>t</th>
<th>p</th>
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<th>R²</th>
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Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Exploratory Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationship between Work-Locus of Control (WLCS) and the Four Outcomes

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Note. $N = 444$. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and $SE$ values are from the last (second) step of each hierarchical regression analysis.
Intrinsic Motivation as a Moderator of the Relationship between Work-Locus of Control and Well-Being

Note. Int. Motivation = intrinsic motivation.
Intrinsic Motivation as a Moderator of the Relationship between Work-Locus of Control and Anxiety

Note. Int. Motivation = intrinsic motivation.
Exploratory Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationship between the Original 16-Item Work-Locus of Control Scale (WLCS) and the Four Outcomes

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*Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.*
## Appendix AO

**Exploratory Hierarchical Regression Analyses Examining Leadership Behavior as a Moderator of the Relationship between BPNS Autonomy and the Four Outcomes**

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*Note. N = 444. *$p < .05$; **$p < .01$; ***$p < .001$. All $b$ and $SE$ values are from the last (second) step of each hierarchical regression analysis.*
Leader Behavior as a Moderator of the Relationship between BPNS Autonomy and Stress
Leader Behavior as a Moderator of the Relationship between BPNS Autonomy and Anxiety
Exploratory Hierarchical Regression Analyses Examining Leadership Consideration Subscale as a Moderator of the Relationship between BPNS Autonomy and the Four Outcomes

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Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Leader Consideration as a Moderator of the Relationship between BPNS Autonomy and Well-Being
Leader Consideration as a Moderator of the Relationship between BPNS Autonomy and Stress
Leader Consideration as a Moderator of the Relationship between BPNS Autonomy and Anxiety

![Graph showing the relationship between leader consideration and anxiety across different levels of BPNS autonomy. The graph indicates that as leader consideration increases, anxiety decreases at both high and low levels of autonomy, with a slight difference between +1 SD and -1 SD conditions.](image-url)
## Appendix AP

Exploratory Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationship between BPNS Autonomy and Quantitative Workload, Physical Symptoms, and OCB

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Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.

## Exploratory Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationship between BPNS Autonomy and Quantitative Workload, Physical Symptoms, and OCB

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Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.
Autonomy Support as a Moderator of the Relationship between BPNS Autonomy and Quantitative Workload

Appendix AQ

Exploratory Hierarchical Regression Analyses Examining Intrinsic Motivation as a Moderator of the Relationship between the Factual Autonomy Scale (FAS) and Quantitative Workload, Physical Symptoms, and OCB

<table>
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<tr>
<th>Outcome</th>
<th>Predictors</th>
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<th>SE</th>
<th>t</th>
<th>p</th>
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<th>R²</th>
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Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis. FAS = factual autonomy scale.
Autonomy Support as a Moderator of the Relationship between Factual Autonomy and Physical Symptoms

Note. Int. Motivation = Intrinsic Motivation.
Autonomy Support as a Moderator of the Relationship between Factual Autonomy and OCB

Note. Int. Motivation = Intrinsic Motivation.
**Exploratory Hierarchical Regression Analyses Examining Autonomy Support as a Moderator of the Relationship between the Factual Autonomy Scale and Quantitative Workload, Physical Symptoms, and OCB**

<table>
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<tr>
<th>Outcome</th>
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<th>t</th>
<th>p</th>
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<th>R²</th>
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*Note.* N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis. FAS = factual autonomy scale.
Appendix AR

Exploratory Hierarchical Regression Analyses Examining Unique Incremental Variance between Primary Predictors and Primary Outcomes

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<th>p</th>
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<th>R²</th>
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Note. N = 444. *p < .05; **p < .01; ***p < .001. All b and SE values are from the last (second) step of each hierarchical regression analysis.