A role perspective of workplace procrastination

Boran Li
University at Albany, State University of New York, richardal2108@gmail.com
A Role Perspective of Workplace Procrastination

Boran Li

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Abstract

Although procrastination has been studied for over twenty years in the field of psychology, knowledge of workplace procrastination, developed from general procrastination, remains limited. Drawing from role theory, the current study aims to examine the positive relationship between role ambiguity and workplace procrastination through stress. It further examines the moderating role of work self-efficacy on the stress-procrastination relationship, such that higher work self-efficacy attenuates the positive relationship between stress and procrastination. Results from experimental data on 119 participants revealed that neither role ambiguity nor stress directly affects workplace procrastination, but individuals who have a higher level of self-efficacy at work procrastinate more when they are at a high job stress level.

Keywords: workplace procrastination, role ambiguity, stress
Acknowledgements

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I must thank my parents for opportunities to study in this field. Though they probably will lose their patience after reading three pages of this article (thank you mom and dad), I must thank them for their kind support to keep me living alone overseas. I also would like to thank my former host family, the Armstrongs. It is a blessing to have someone close when life gets tough.

Finally, I must thank all my friends. Without your help, I would not have come so far. My life is full of blessings that people around me are very supportive to keep me strong and hopeful. I wish could list your names one by one but the page restriction does not allow me so. Perhaps this should be a reason I list in my statement for applying for a doctoral program: to write another thesis so I can put all of you in my acknowledgments.
Workplace Procrastination: A Gold Mine Requires Tapping

According to Ferrari et al. (2007), 10% of adults reported they had a general procrastination problem over the world. General procrastination indicates a tendency to delay tasks across all life domains, such as putting off buying a Christmas gift until the last minute or not performing tasks until approaching the deadline (Ferrari et al., 2007). The consequence of this behavior can vary across situations, but it is especially crucial studying it in the workplace context: Paulsen (2015) suggested that 1.5 hours of each day on average might be wasted on non-work-related activities by procrastinating employees, which can lead to a 30-40% productivity loss for U.S. organization (Verton, 2000). Procrastination hinders workers’ performance and well-being as well: for instance, through the sense of failure when employees fail to control their time, their job satisfaction might also decrease (Claessens et al., 2007; Sirois & Pychyl, 2016). This underscores the importance to understand work procrastination in efforts to develop intervention strategies.

The current understanding of workplace procrastination behaviors in organizational science is limited. Even though there has been substantial research on general procrastination, the same findings may not extend to the workplace. The general definition of procrastination is that people willingly delay an intended course of action, with the expectation that a worse result will be generated by such a delay (Steel, 2007). Yet, the frequency and consequence of
procrastination behaviors vary largely across domains, thus using domain-specific tools can better measure the behavior, reduce the error, and generate a better understanding (Klingsieck, 2013). Moreover, workplace characteristics are unique from other life contexts, such as time pressure from job demands, thus their impact on people’s procrastination behavior through cognitive progress is also unique (Prem et al., 2018). To sum up, workplace procrastination should be studied differently from general procrastination.

The current study aims to fill in this research gap by investigating the effects of one important job characteristic on workplace procrastination: role ambiguity. Drawing from role theory and past research on stress, I propose that procrastination may be a result of role ambiguity through job stress (Ivancevich & Matteson, 1980; Kahn & Byosiere, 1992). Furthermore, because research has long investigated the importance of self-efficacy as a buffering factor on the negative effects of stress (Beehr & Newman, 1978; Ivancevich & Matteson, 1980), I further propose that self-efficacy may interact with job stress to influence procrastination. In doing so, the current study makes two main contributions: First, it identifies a possible causal factor of workplace procrastination, thus helping companies to recognize what is potentially damaging their employees’ work efficiency. Second, it demonstrates the mechanism from role ambiguity to workplace procrastination, hence helping employers find possible solutions to workplace procrastination.
Theoretical Framework and Hypothesis Development

**Workplace Procrastination.**

*Workplace procrastination* is defined as “the delay of work-related action by intentionally engaging (behaviorally or cognitively) in nonwork-related actions, with no intention of harming the employer, employee, workplace or client” (Metin et al., 2016, p. 255). Although procrastination has long been studied within the field of psychology, workplace procrastination has not received much attention. Nevertheless, it is important to separate procrastination at the workplace from when it occurs in other domains because of the difference between both behavior frequencies and causal factors. A former confirmatory factor analysis found support that domain-specific procrastination models yielded a better fit than domain-general models (Klingsieck, 2013). It separated procrastination behaviors into six domains: academic and work, everyday routines and obligations, health, leisure, family and partnership, and social contacts. Domain-specific procrastination is best predicted by domain-specific factors. For example, in the academic and work domain, the predictor could be the unwillingness of returning a job-related phone call, while in the health domain they could be the aversiveness to attend a doctor’s appointment (Klingsieck, 2013). Although work and academics are grouped together in Klingsieck’s (2013) study, they should be further separated for two reasons. First, her study sample was students who were working at school, thus their work was highly related to studying.
Separating academic and work domains by conducting research on individuals with actual work experience can increase the face validity of future studies. Second, theoretical approaches, diagnostic tools, and intervention programs from procrastination should be domain specific in order to fit better. Separating procrastination of work from academic activities may be beneficial to those interested in investigating and solving the problem of procrastination.

Later work in procrastination separates the construct into three dimensions: general procrastination, counterproductive work behavior (CWB), and boredom at work (Metin et al., 2016). Individuals’ general procrastination has long been discussed related to procrastination behaviors across domains (Klingsieck, 2013; Steel, 2007). Individuals who engage in counterproductive work behavior tend to experience more withdrawal (spending less time on work than is supposed by the organization) and production deviance (purposely reducing work efficiency) behaviors, which, when without harmful intention, lead to procrastination actions (Metin et al., 2016). Finally, boredom at work is described as “a cognitive-motivational state of low arousal and dissatisfaction stemming from an under-stimulating work environment” (Metin et al., 2016), and has been found lead to distraction (van der Heijden et al., 2012) and non-work related presenteeism (Wan et al., 2014). Thus, the current study defines workplace procrastination based on these three domains’ behaviors, with Metin et al.’s (2016) measure.
Next, I will discuss what may predict procrastination based on this conceptualization of workplace procrastination.

**Job Role Ambiguity**

*Role ambiguity* happens when workers lose clarity of their job position due to the deficiency of job information (Kahn et al., 1964). Evidence suggests this job characteristic may influence employee behaviors, such as increasing their turnover rate tendency or damaging their flexibility at work (Kahn & Byosiere, 1992). Specifically, one study among Israel’s hospital teachers found job role ambiguity led to procrastination at work (Hen, 2018). As their traditional teaching methods barely fulfilled hospitalized children’s needs, the teachers felt ambiguous about performing the job and reported a strong work procrastination tendency. One possible explanation for this causal relationship is that when workers experience ambiguity about their job roles, the uncertainty about job content and the job’s unpredictability are reasons why they choose to procrastinate (Juhan, 1993).

Workers are uncertain about their share of the work when the job role is unclear, especially when the responsibility is unclear. It leads to more uncertainty about the expectation of work outcomes. Based on the goal-setting theory (Locke & Latham, 1990), a deficient understanding of their goals will hinder workers’ work motivation. Thus, they are more likely to put off these ambiguous tasks, which may result in more procrastination behavior at work.
The job being unpredictable means that the difficulty of work tasks is unpredictable, or exceeds the workers’ knowledge and experience (Juhan, 1993; Wieland et al., 2022). When the job is perceived as beyond their abilities, workers may find that their possessed skills and experience are unable to meet the job’s needs. Thus, their uncertainty regarding work strategies may increase their perceived difficulty of the job, which further leads to a general procrastination tendency through an increase in task aversiveness (Blunt & Pychyl, 2000), and then may turn into workplace procrastination. In addition, when employees feel uncertain about their job tasks, their assessment of their own abilities might decrease as well (Kahn et al., 1964; Wieland et al., 2022). This decreasing expectation regarding their own abilities may further reduce employees' perceive job resources, based on the job demands-resource model (JD-R; Demerouti et al., 2001). It may also reduce workers’ energy and motivation on the job, which may further lead to rising boredom at work and in the end, workplace procrastination (Metin et al., 2016). Therefore, I hypothesize that:

*Hypothesis 1:* Job role ambiguity is positively related to employee’s workplace procrastination.

**Stress as a Mediator**

In Kahn’s role theory (1964), role ambiguity is viewed as one of the job stressors that leads to stress, which further leads to strain, anxiety, emotional tension, and other symptoms.
Within this role perspective of stress, role ambiguity is conceptualized as a stressor at the individual level and can relate to both short-term physiological (e.g., blood pressure), behavioral outcomes (e.g., turnover), and long-term health consequences (e.g., coronary disease; Ivancevich & Matteson, 1980; Pikó & Mihálka, 2017; Schmidt et al., 2014; Tubre & Collins, 2000).

Subsequent models put role ambiguity into the category of psychosocial stressors and posited that it would stimulate individuals’ response to stress, resulting in strain (Kahn & Byosiere, 1992). Indeed, past research suggests that role ambiguity can increase individuals’ stress levels and well-being (Tubre & Collins, 2000). For example, across 100 industries in Pakistan, managers had a significant stress issue at work when their role ambiguity level was high (Ram et al., 2011).

Drawing from the role perspective of stress, I argue that role ambiguity, as a stressor, can lead to procrastination as a result of stress. First, stress itself increases the chance of general procrastination (Steel, 2007; Veresova, 2013). People who suffer long-term stress tend to procrastinate more frequently (A. T. Beck & Beck, 1972). Second, a high-stress level might damage employees’ interest in work, which increases boredom at the workplace (Fisher, 1993). Research has found that employees’ increasing stress level at work often comes with an increasing boredom level (Loukidou & Daniels, 2009; Wan et al. 2014). Feelings of boredom, as well as the decreased interest, can further lead to a higher tendency to procrastinate (Ackerman
& Gross, 2005; Metin et al., 2016). Third, procrastination behaviors can act as a task avoidance strategy and can relieve the stress caused by the fear of tasks (Ferrari et al., 1995). Some procrastination behaviors, such as online surfing, can serve as distractions when individuals experience high stress (Lavoie & Pychyl, 2001). To sum up, I hypothesize that

*Hypothesis 2:* The positive relationship between job role ambiguity and employee’s workplace procrastination is partially mediated by stress.

**Self-efficacy as a Stress Buffer**

*Self-efficacy*, falling under the category of self-esteem in role theory, has a significant effect on reducing certain strains caused by work stress (Jex & Bliese, 1999; Kahn & Byosiere, 1992; Kahn et al., 1964). When one has a strong belief in their ability to perform tasks, they may perceive a lower sense of task overload and hence have a less negative stress response (Beehr & Newman, 1978; Kahn & Byosiere, 1992). Consistent with this line of reasoning, researchers have found that self-efficacy serves as a moderator between stress and related health strains, such as coronary heart disease (Ivancevich & Matteson, 1980; Mossholder et al., 1982), but other research suggests that individuals’ self-efficacy does not always have a buffering effect on some other strains outcomes, such as turnover intent (Jex & Bliese, 1999).

Considering that general procrastination can be the product of stress (Steel, 2007) and stress can lead to procrastination, workplace procrastination can be viewed as a form of strain
caused by stress in this study. As procrastination has been assumed as the product of sensing growing work challenges, self-efficacy may be a moderator between stress and procrastination as it buffers individuals' belief in their own abilities, which means less negative stress response (Kahn & Byosiere, 1992; Kahn et al., 1964). In addition, workers with higher self-efficacy tend to have a higher motivation of allocating limited resources for success, and as a result, they may procrastinate less as procrastination is considered a waste of time for boosting performance (Beck & Schmidt, 2018). Thus, when a group of people is at the same level of job stress, those who have a higher level of self-efficacy may be less likely to procrastinate. On the other hand, those with a low level of self-efficacy may be more likely impacted by procrastination tendencies. Thus, I hypothesize

*Hypothesis 3*: The relationship between job stress and workplace procrastination will be weaker (stronger) when the individual has higher (lower) self-efficacy.
Method

Participants

The original sample consisted of 304 undergraduate students at the University at Albany who participated in the study in exchange for course credit in 2022, and 9 professional workers from different industries and occupations. The eligibility criterion requires participants to currently or have previously held a job that is at least 10 hours per week, which screened out 79 participants. Of the survey returned back, 47 did not contain any answers and thus were not included. Then, as the survey contains an essential scenario, participants needed to pass all three scenario comprehension check questions (see procedure section for the list of questions) before their answers were taken into the final pool, which took out 66 samples. Finally, 2 samples were taken out because of duplicate answering from the same person. As a result, 119 participants (114 students and 5 professionals) were therefore included in the final sample. The sample was 58% female and 42% male, with a mean age of 21.76 years ($SD = 8.12$). In terms of ethnicity, the sample was 49% White, 12% Asian, 26% African American, 3% American Indian, and 3% non-native. Among all participants, 58.8% answered the pre-scenario questions based on their current job experience, and 39.5% were based on past job experience. Their average work time per week was 26.9 hours ($SD = 11.98$). Finally, 19.3% of the participants worked less than 15 hours a
week when they are (were) doing the job, 61.3% worked between 15 hours to 40 hours per week, and 19.3% worked over 40 hours per week.

Procedure

Student participants received Psychology course credit to take part in the study, and professional workers were provided with two dollars as compensation for taking the survey. After participants signed up, they would be guided to a Quartics link. The survey started with a qualification check, which asked participants if they had any prior or current job that required them to work at least 10 hours per week. This qualification check aims to screen out participants who have limited work experience, as that may limit their ability to realistically picture themselves in a real-life workplace. After passing the qualification check and signing the consent form, participants were instructed to respond to the scale of workplace procrastination, based on their real-life job experience. Then, participants were randomly assigned into one of the two conditions (role ambiguity vs. control conditions), where they were instructed to imagine themselves in a fictitious work scenario and answer scenario comprehension check questions, to show they clearly understood the scenario. Once they finished the comprehension questions, they were instructed to answer the rest of the questionnaire, which included perceived job role ambiguity, procrastination, job stress, and work self-efficacy, based on the scenario. At the end of the survey, participants were asked to provide their demographic information such as gender,
age, race, average work hours per week of the job on which they based to answer questions, and how long they had been working.

*Scenario*

Participants were told to assume the role of a barista in a coffee shop. All participants were provided with the following opening to the scenario:

“Imagine you are a barista in a coffee shop. Your work content for every day is decided by the shift manager, which can be serving customers at the bar, taking drive through orders, offering customer support, taking charge of the oven, etc. So, every day you are supposed to do only one type of job. However, you are also supposed to ‘flex’, which means to support workers from other positions.”

Then, participants in the control group received the following:

“Your shift managers will tell you the job content and which position you should offer support every day. The support you offer to others will also be recorded as your performance and contribute to your salary. Moreover, you have scheduled break time, during which you are asked not to work at all.”

Participants in the role ambiguity conditions received the following instead:
“Your shift managers hardly tell you to what extent should you ‘flex’, which brings you to some awkward situations: sometimes, you keep running between several positions all day that you barely have time for a break, which makes you feel like, you are doing way much more than your assigned work content.”

Scenario comprehension Check

To ensure the robustness of the manipulation, participants were presented with three manipulation check questions. They are “You are a barista working in a coffee shop”, “You tell your coworkers their daily work content every morning”, and “Being ‘flex’ requires you to help your colleagues with their tasks”. Participants who did not answer all three questions correctly were removed from the sample, thus responses from 72 participants were removed, resulting in a final sample of 119.

Measures

Workplace Procrastination

Workplace procrastination was measured with the 16-item Procrastination at Work Scale adapted from Metin et al. (2016) on a scale from 1 to 7 (1 = Strongly Disagree; 7 = Strongly Agree). Participants provided responses for this scale twice: once prior to the scenario pertaining to their current/last job, and the second after reading the scenario pertaining to what they just
read. The scale measured workplace procrastination within two domains that were soldiering and cyberslacking. Soldiering was measured with eight items ($\alpha = 0.84$). A sample item is “when I work, even after I make decision, I delay acting upon it”. Cyberslacking was measured with four items ($\alpha = 0.69$). A sample item is “I do online shopping during working hours”.

**Role Ambiguity**

The role ambiguity was measured with a 6-item scale ($\alpha = 0.78$) developed by Harris and Bladen (1994) on a scale from 1 to 5 ($1=\text{strongly disagree}; 5=\text{strongly agree}$). A sample item is “I know exactly what is expected of me”.

**Self-efficacy at Work**

Self-efficacy at work was measured by a 10-item scale ($\alpha = 0.86$) developed by Riggs et al. (1994) on a scale from 1 to 6 ($1=\text{strongly disagree}; 6=\text{strongly agree}$). A sample item is “I have confidence in my ability to do my job”.

**Job Stress**

Job stress was measured with a 9-item scale ($\alpha = 0.76$) developed by Shukla and Srivastav (2016) on a scale from 1 to 7 ($1=\text{strongly disagree}; 7=\text{strongly agree}$). A sample item is “I have a lot of work and fear that very little time to do it”.


Results

Table 1 shows the correlation among descriptive statistics for key study variables. Cronbach’s α is above .80 across all measures, which suggests the scales used in this study had good internal consistency. A priori power analysis was conducted using G*Power3 (Faul et al., 2007) to estimate the required sample size for the linear multiple regression with $R^2$ deviated from 0. Due to lacking support of an estimated effect size, it was put in as small ($f^2 = .02$) and medium ($f^2 = .15$) separately. As α was set as .05, power as .80, and predictor numbers as 2, when effect size was small, the total sample size was 485; when effect size was medium, the total sample size was 68. This suggests the sample size of this study meets the minimum requirement if the effect size was more than medium, but could be problematic if it was smaller than estimated. Next, prior to conducting the main hypothesis testing, an ANOVA test was conducted to investigate whether role ambiguity differed significantly between the control and treatment conditions. The results showed that the role ambiguity level across the two groups was significantly different [$F (1, 117) = 17.20, p = .00$]. Participants in the treatment condition reported a significantly higher level of role ambiguity ($M = 3.34; SD = .94$) than those in the control condition ($M = 2.65; SD = .84$). Thus, the scenario manipulation was successful. Below are the results of the main hypothesis testing, and all analyses included participants’ self-reported workplace procrastination during their current or last job (measured prior to the scenario) as a
control variable. Further, because the manipulation of role ambiguity was successful, all analyses involving role ambiguity were tested twice: once using role ambiguity as a continuous variable (as measured by the scale), and once using it as a dichotomous variable (based on the condition participants were randomly assigned in).

Table 1

Correlation among and descriptive data for key study variables

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PRWP</td>
<td>3.38</td>
<td>1.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. POWP</td>
<td>3.07</td>
<td>1.11</td>
<td>.56**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Role ambiguity</td>
<td>3.05</td>
<td>.96</td>
<td>.23*</td>
<td>.24**</td>
<td></td>
<td></td>
<td>(.86)</td>
</tr>
<tr>
<td>4. Self-efficacy at work</td>
<td>4.10</td>
<td>.74</td>
<td>-.23**</td>
<td>-.27**</td>
<td>-.48**</td>
<td></td>
<td>(.81)</td>
</tr>
<tr>
<td>5. Job stress</td>
<td>3.38</td>
<td>.88</td>
<td>.25**</td>
<td>.28**</td>
<td>.46**</td>
<td>-.32**</td>
<td>(.88)</td>
</tr>
</tbody>
</table>

Note. PRWP = pre-scenario workplace procrastination; POWP = post-scenario workplace procrastination. * p < .05, ** p < .01

Hypothesis 1 predicted that job role ambiguity positively leads to work procrastination. A linear regression test was conducted to investigate the effects of job role ambiguity (measured continuously) on the scenario of workplace procrastination with their procrastination at real-life
work as the covariate. The result is shown in Table 2, which suggests that role ambiguity’s impact on workplace procrastination was not significant, \((b = .12, p = .21)\).

**Table 2**

*Regression Coefficients of Role Ambiguity on Workplace Procrastination*

<table>
<thead>
<tr>
<th>Variables</th>
<th>(b)</th>
<th>(\beta)</th>
<th>(SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>.92**</td>
<td></td>
<td>.38</td>
</tr>
<tr>
<td>WP</td>
<td>.53**</td>
<td>.52**</td>
<td>.08</td>
</tr>
<tr>
<td>RA</td>
<td>.12</td>
<td>.10</td>
<td>.10</td>
</tr>
<tr>
<td>(R)</td>
<td>.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(R^2)</td>
<td>.31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. WP = workplace procrastination level at the real-job; RA = role ambiguity of the job in the scenario.*

* *\(p < .05\), **\(p < .01\)

As role ambiguity was significantly different between the two groups, an ANCOVA test was conducted with role ambiguity entered as a dichotomous variable (by dummy coding the control and treatment experimental conditions). Results indicated there were no significant differences in procrastination between the role ambiguity and control conditions \([F(1, 117) = .002, p = .97]\). Hypothesis 1 was not supported.
Hypothesis 2 predicted stress mediates the causal relationship between job role ambiguity and workplace procrastination. It was tested using the PROCESS macros developed by Hayes (2013) with participants’ real life procrastination level as the covariate, and all variables were mean-centered. One participant was removed from the analysis due to missing scenario workplace procrastination data. For role ambiguity measured continuously, results indicated there was no significant mediating effect of job stress on the role ambiguity-procrastination relationship (see Table 3, $b = .04$, 95% CI = [-.06, .14]). When entering role ambiguity as a dichotomous variable (with dummy coding the control and treatment experimental conditions), results indicated there was no significant mediating effect of job stress on the role ambiguity-procrastination relationship ($b = .08$, CI = [-.03, .23]). Thus, hypothesis 2 was not supported.
Table 3

Summary of the Mediation Model

<table>
<thead>
<tr>
<th>Variables</th>
<th>effect</th>
<th>se</th>
<th>t</th>
<th>p</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct effect of RA</td>
<td>.08</td>
<td>.10</td>
<td>.72</td>
<td>.47</td>
<td>-.13</td>
<td>.28</td>
</tr>
<tr>
<td>Indirect effect of RA</td>
<td>.04</td>
<td>.05</td>
<td></td>
<td></td>
<td>-.06</td>
<td>.14</td>
</tr>
<tr>
<td>Direct effect of CRA</td>
<td>-.08</td>
<td>.19</td>
<td>-.41</td>
<td>.68</td>
<td>-.45</td>
<td>.30</td>
</tr>
<tr>
<td>Indirect effect of CRA</td>
<td>.08</td>
<td>.06</td>
<td></td>
<td></td>
<td>-.03</td>
<td>.23</td>
</tr>
</tbody>
</table>

Note. Dependent variable: workplace procrastination. Direct effects are role ambiguity’s direct effects on workplace procrastination. Indirect effects are role ambiguity’s indirect effects on workplace procrastination via stress as the mediator.

RA = role ambiguity; CRA = Categorical role ambiguity

*ab* The indirect effect is bootstrapped with 5000 samples.

LLCI=lower limit confidence interval; ULCI=upper limit confidence interval

Hypothesis 3 predicted that work self-efficacy moderates the causal relationship between stress (caused by role ambiguity) and procrastination. After centering all variables and using real-life work procrastination as a covariate, the moderation was tested with the model 14 in PROCESS macros (Hayes, 2013). The independent variable was continuous role ambiguity, the dependent variable was scenario workplace procrastination, the mediator was job stress, and work self-efficacy was hypothesized to moderate between stress and workplace procrastination.
Results showed that work self-efficacy had a significant interaction with job stress on generating workplace procrastination ($b = .29, p = .04, CI = [.02, .56]$). Results from simple slope tests revealed that when employee work self-efficacy was high, job stress was positively related to workplace procrastination (see Figure 1, $b = .29, p = .05, CI = [.01, .58]$). But when work self-efficacy was medium, job stress did not significantly lead to workplace procrastination ($b = .08, p = .49, CI = [-.15, .31]$). Similarly, when work self-efficacy was low, there was no significant effect between stress and procrastination behaviors ($b = -.13, p = .40, CI = [-.45, .18]$). Based on the figure and data results, when employee work self-efficacy was high, increased stress leads to increased procrastination, while stress was not significantly related to procrastination when work self-efficacy was medium or high.
Figure 1

Interaction Effects between Job Stress and Work Self-Efficacy on Procrastination

![Graph showing interaction effects](image)

*Note.* Results based on a moderated mediation model with role ambiguity (measured continuously) as an independent variable and work self-efficacy as a stage-2 moderator on the job stress-procrastination relationship.

Then, with the same moderator analysis strategy and only the independent variable (continuous role ambiguity) was replaced with the categorical role ambiguity, another moderator analysis was conducted through PROCESS (Hayes, 2013), using model 14. See Table 4 for the summary of full model moderator analysis. The results were similar to the above. It showed that
the interaction between work self-efficacy and job stress was significant \((b = .29, p = .04, \text{CI} = [.02, .56])\). Specifically, for those whose work self-efficacy was high, job stress led to procrastination at work (see Figure 2, \(b = .32, p = .03, \text{CI} = [.04, .61]\)), but for those with medium \((b = .11, p = .34, \text{CI} = [-.11, .33])\) and low work self-efficacy \((b = -.11, p = .49, \text{CI} = [-.42, .20])\), job stress was not significantly related to procrastination.

**Table 4**

*Full Model Moderator Analysis, Conditional Indirect Effect of Job Stress on Procrastination at Different Values of Moderator*

<table>
<thead>
<tr>
<th>WSE</th>
<th>Effect</th>
<th>se</th>
<th>t</th>
<th>p</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1: Role ambiguity as continuous</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.746</td>
<td>-0.133</td>
<td>0.159</td>
<td>-0.84</td>
<td>0.403</td>
<td>-0.447</td>
<td>0.181</td>
</tr>
<tr>
<td>0</td>
<td>0.079</td>
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<td>0.046</td>
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Model 2: Role ambiguity as categorical

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<th>WSE</th>
<th>Effect</th>
<th>se</th>
<th>t</th>
<th>p</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
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*Note.* LLCI=lower limit confidence interval; ULCI=upper limit confidence interval.
Figure 2

*Interaction Effects Between Job Stress and Work Self-Efficacy on Procrastination*

![Graph showing interaction effects between job stress and work self-efficacy on procrastination.](image)

*Note.* Results based on a moderated mediation model with role ambiguity (measured categorically with control group = 0, manipulation group = 1) as an independent variable and work self-efficacy as a stage-2 moderator on the job stress-procrastination relationship.

A further simple moderation analysis was conducted through PROCESS (Hayes, 2013) to test the interactive effects of job stress and work self-efficacy on procrastination behavior without accounting for role ambiguity, using model 1. Similar to the results from testing the full model (which includes role ambiguity), the interaction between stress and work self-efficacy was
significant (see Table 5, $b = .28$, $p = .04$, CI = $[.02, .55]$). Further simple slope test showed that for workers with high work self-efficacy, job stress was positively related to procrastination at work ($b = .30$, $p = .03$, CI = $[.03, .58]$); for whom with medium work self-efficacy, stress’s relationship with procrastination was minor and insignificant ($b = .09$, $p = .40$, CI = $[-.12, .30]$); for whom had low work self-efficacy, stress did not lead to procrastination (see Figure 3, $b = -.12$, $p = .43$, CI = $[-.42, .18]$).

Table 5

<table>
<thead>
<tr>
<th>WSE</th>
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<th>$t$</th>
<th>$p$</th>
<th>LLCI</th>
<th>ULCI</th>
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<td>0.032</td>
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<td>0.578</td>
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</tbody>
</table>

*Note.* LLCl=lower limit confidence interval; ULCI=upper limit confidence interval.
Figure 3

Results from simple moderation model of interactive effects of job stress and work self-efficacy on procrastination behavior

Note. The figure reflects the slope test for the moderator analysis of the simple moderation model. The independent variable is job stress. The according data suggested that the slope was significant only when work self-efficacy was high.

In sum, the current results showed that the relationship between job stress and workplace procrastination was both under the moderation of work self-efficacy: workers with high work self-efficacy tended to procrastinate more when they were suffering from job stress, but to those
who had an average level or low level of work self-efficacy, job stress did not significantly cause procrastination issues.

In light of non-significant results for Hypotheses 1 and 2, additional post-hoc analysis was conducted to further investigate relationships among the key variables of interest. First, a linear regression analysis was conducted to test if job stress directly impacts workplace procrastination, with subjects’ real life workplace procrastination as a covariate. The result was still not significant \( [b = .15, t (117) = 1.42, p = .16] \). Thus, the current data had no evidence that job stress consistently impacted workplace procrastination across conditions. Second, a linear regression was conducted to test the effects of role ambiguity on job stress. The factor was the individuals’ continuous role ambiguity level, and the dependent variable was the job stress level. The result showed role ambiguity’s impact was significant, \( [b = .42, F (1, 117) = 31.11, p = .00] \). The categorical form of role ambiguity was also tested with an ANCOVA analysis if it showed the same pattern of effect as the continuous role ambiguity did. Its effect was still significant, \( [F (1,117) = 11.60, p = .00] \). Combining results from both the linear regression and the ANCOVA test, the current data supported the findings of Kahn and Byosiere (1992), that employees’ role ambiguity would cause them to feel more stress in their job.
Discussion

The study experimentally investigated the causal effect of job role ambiguity on workplace procrastination through job stress. It further proposed and tested the moderating role of work self-efficacy on the stress-procrastination relationship. Results provided partial support for the hypothesized model, such that self-efficacy in one’s job may moderate the effect of stress on workplace procrastination behaviors. Below I will discuss the results and theoretical implications in greater detail.

The current study suggests that work self-efficacy significantly moderates the relationship between stress and workplace procrastination. However, contrary to the original hypothesis direction, the data shows when workers have high self-efficacy in their job, they tend to more easily procrastinate under the impact of stress. One potential reason is that their high work self-efficacy weakens the self-regulatory efforts. As they feel more confident about their abilities to perform the task, the perceived discrepancy between the goal and the current performance decreases, which disengages the self-regulatory process (Kanfer & Ackerman, 1989). The weakened self-regulatory process further induces workers to put less cognitive resources into their tasks, which causes poorer job performance in the future (Kanfer, 1994). Thus, under a circumstance where workers are suffering from high work stress, procrastination behaviors can be more common as they serve as a stress relief while employees spend less
attentional resources to control them (Ferrari et al., 1995; Lavoie & Pychyl, 2001). Although the
data did not provide any significant findings when workers have moderate or low self-efficacy,
the direction of the slope test demonstrates the same tendency suggested above.

Contrary to the prediction, the current study did not reveal a direct effect of role
ambiguity on workplace procrastination. This finding is also contrary to the finding from Hen’s
(2018) study, which reported role ambiguity was a major cause of teachers’ procrastination at
work. A possible explanation would be that employees could bear a level of task ambiguity, as a
job consists of multiple work tasks. In other words, perhaps a small part of tasks might be
ambiguous to their job role, but the major work content remains clear or does not confuse their
understandings of their job role. In Hen’s study, teachers’ confusion at work was about the daily
teaching strategies, which played a major role in job content. In the current research design,
students might not feel the same way, because being asked for help was a smaller part of their
job role. Thus, even though their overall job role ambiguity increased, procrastination behaviors
would not be common on their job. Another explanation is that the impact of job role ambiguity
is not large enough to directly generate procrastination. The manipulation group did not have a
high role ambiguity level ($M = 3.34$) given it was significantly higher than the other group.
Hence, considering that the stress from role ambiguity of daily work accumulates to impact
employees’ well-being (Tubre & Collins, 2000), perhaps the sample’s low level of role ambiguity
was not sufficient to stimulate their procrastination behavior as the impact had not accumulated. Future researchers can focus on task role ambiguity instead of job role ambiguity, to get a more specific result. However, based on the current findings, the rising job role ambiguity does not always lead to workplace procrastination.

Although the researcher did not find any support for the mediation effect of the work stress between role ambiguity and procrastination at work, this might not be the evidence that stress caused by the role ambiguity at work cannot lead to procrastination behaviors. First, this is contradictory to the former studies that argued that stressed people procrastinate more easily (Lavoie & Pychyl, 2001; Pasha, & Jyoth, 2017). Secondly, self-efficacy had a significant moderating effect between stress and procrastination when introduced into the model. One possible explanation is that our current participants did not have any recent experience working in a customer service position. As a matter of fact, 42.9 percent of our subjects did not report they have any job experience working in customer service. This might impact their precision of imagining the daily work content, which is to say that they held no perfect estimation about the extent of pressure they will experience at the daily work, nor to what extent they might procrastinate at the job, given participants’ role ambiguity level significantly increases when they were put into the manipulation group. Future researchers are encouraged to run the experiment with workers who have more job experience, thus letting the subjects gain a better estimate of
their behaviors. But in sum, this study did not find any causal relationship between stress and procrastination under no moderator circumstance.

To summarize, the current study did not find support that role ambiguity has any effect on workplace procrastination. However, workers with higher work self-efficacy will be more likely to procrastinate as the job stress level goes up, but workers with moderate or low self-efficacy seem not to be impacted by stress about their procrastination behaviors.
Implications and Limitations

Perhaps the most surprising finding of the current study is that increased self-efficacy strengthens the relationship between stress and workplace procrastination. This provides additional support to the previous research that argues self-efficacy might negatively relate to certain task performance at the within person level (Vancouver et al., 2001; Yeo & Neal, 2006), and further demonstrate a possible factor linking high self-efficacy with poor performance: the increased procrastination behaviors at workplace. As was discussed above, when work starts getting more stressful, confident workers’ misjudgment of the discrepancy between goals and the current state will cause them to procrastinate more to relieve their stress. Thus, managers need to pay extra care to these employees, such as helping them better recognize the discrepancy between reality and the job expectation by holding one-to-one meetings, which supposedly can bring back more employees’ cognitive resources to work (Kanfer & Ackerman, 1989). Another starting point for reducing procrastination behaviors might be solving the problem of job stress, as procrastination behavior is shown to be a form of stress relief by the current model. The stress at the workplace does not always simply come from work itself, thus managers can think about reducing subordinates’ stress via other methods such as better work-family policies (Bakker & Demerouti, 2017; Butts et al., 2013). Or, companies can provide training for employees about how to appropriately deal with the stress at the workplace instead of simply procrastinating to do
tasks. Yet, these actions focusing on the job stress might only have an impact on high self-efficacy workers’ performance.

This article hesitates to recommend any manipulation of employees’ procrastination behavior through monitoring or penalty, but suggests investigating the impact of procrastination behavior on job performance at the workplace. First, even though currently procrastination behavior seems to be the production of failed self-regulatory, it relieves workers’ experienced stress, which might in turn protect employees from fatigue or burnout (Ganster & Rosen, 2013). Though previous studies found academic procrastination behavior leads to more stress in long run (e.g., Flett et al. 1995; Sirois & Tosti, 2012; Tice & Baumeister, 1997), again, the workplace is a domain different from school: for example, compared with whole school semester, tasks at the workplace could be much shorter and the performance of tasks is not necessarily related to each other. A student who delays reading his textbook may end up with insufficient knowledge, which hinders the following study; an employee who delays finishing one task might not find the following task become more difficult, since tasks at the workplace can be less related to each other. Second, when faced with limited resources (e.g., time), high self-efficacy workers tend to conserve resources on low-priority tasks but spend more on those high-priority ones, thus obtaining better overall performance (Beck & Schmidt, 2018). However, in this study, high self-efficacy workers seemed to lose their commitment to job success but spent their time in a non-
resource-conserver manner. It is difficult to foresee how procrastination behavior saved their resource and boost their overall performance in this way, nor to explain how their high self-realization hope failed the competition with the eagerness of relieving stress.

One perspective viewing procrastination behavior of high self-efficacy workers might be to take it as a form of the resource recovery strategy, instead of resource waste. Research has found that the relatively rare, brief, and controlled disengagement from work tasks can help maintain a high level of task vigilance (Ariga & Lleras, 2011). As the definition of procrastination in this article did not completely distinguish voluntarily delaying tasks from taking beneficial short breaks (Metin et al., 2016), the participants’ procrastination behavior with negative outcomes overlaps with taking breaks to recover. Thus, future research should be more precise with the specific types of procrastination behaviors and specify the boundaries of procrastination.

As discussed above, the fact that role ambiguity was not found to lead to procrastination may be because the participants can bear a certain level of role ambiguity, especially when the main work task remains clear. In the scenario, participants’ major work content (their daily work share) remained clear, which may cause their procrastination behavior to not significantly increase, even feeling more ambiguous about parts of the work. Thus, future research should focus on certain task ambiguity and task procrastination behavior, or generally increase the
ambiguity of all work tasks to observe if there will be more procrastination behavior at the workplace.

Another limitation of the study is the nature of the sample. The current study used college students as participants. While participants were required to have worked at least 10 hours a week and also have them imagine a job scenario that is likely familiar to many of them, their estimation of their own real work behaviors may still be distorted. Considering that the procrastination scale contains the measurement of specific boredom behaviors and counterproductive work behaviors (Metin et al., 2016), participants might be overly optimistic when evaluating their reaction to job role ambiguity, especially as 42.9 percent of participants did not report any customer service job experience. Future researchers are encouraged to use samples from the work field, to generate a better estimation. In addition, as the power analysis suggested, the current sample size would not be sufficient to correctly test the model if the effect size was small, which raise the risk of failing to reject or accept the hypotheses. Thus, future researchers are encouraged to include more participants in their studies than the current did.
**Conclusion**

The study aims to find evidence for role ambiguity’s causal effect on workplace procrastination. Further, the study proposes that stress is the mediator in this relationship and work self-efficacy serves as a moderator in the second stage between stress and procrastination behaviors. Through a scenario experiment, the researcher found that work self-efficacy has a moderation impact of job stress on workplace procrastination, even though current experiment data did not suggest role ambiguity or job stress has any effect on workplace procrastination. Results suggest high self-efficacy workers tend to procrastinate more when they suffer from high stress than when it is lower. Future studies are encouraged to examine the hypotheses in samples with the higher power, to gain a better understanding of the cause of workplace procrastination.
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