

Individual work performance: Dimensionality and consequences

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Master of Science, Management
Bachelor of Arts, Psychology (Specialization)

DISSERTATION



This thesis is presented for the degree of
Doctor of Philosophy of The University of Western Australia
Business School
Management & Organisations Department

2017

THESIS DECLARATION

I, Joseph Alexandre Carpini, certify that:

This thesis has been substantially accomplished during enrolment in the degree.

This thesis does not contain material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution.

No part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of The University of Western Australia and where applicable, any partner institution responsible for the joint-award of this degree.

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The work(s) are not in any way a violation or infringement of any copyright, trademark, patent, or other rights whatsoever of any person.

The research involving human data reported in this thesis was assessed and approved by The University of Western Australia Human Research Ethics Committee. Approvals are as follows:

- Research related to paper 1 (review and synthesis: exempt from ethics review)
- Research related to paper 2 (adaptive performance): RA/4/1/6691
- Research related to paper 3 (surgical teams): RA/4/6933
- Research related to paper 3 also approved Fiona Stanley Hospital Quality Improvement Committee: QI 12066
- Research related to paper 3 also approved by Fremantle Hospital Health Service Quality Improvement Committee: QI 6729

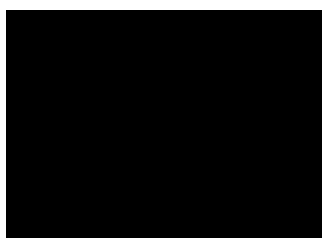
Written participant consent has been received and archived for the research involving human data reported in this thesis.

The work described in this thesis was funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) through a doctoral fellowship as well as through a University Postgraduate Award (UPA) and International Postgraduate Research Scholarship (IPRS). Work related to study 3 was also funded through a SHRAC research translation grant (F-AA-33992) from the Government of Western Australia Health Department.

This thesis contains published work and/or work prepared for publication, some of which has been co-authored. Please refer to the “Co-Authorship Declaration” for further details.

Name: Joseph Alexandre Carpini

Signature:



Date: 05 / 12 / 2017

Abstract

Although burgeoning, the literature on individual work performance is highly fragmented and has mostly focused on the antecedents of performance (Campbell, 2012). In light of these challenges, the present thesis contributes to our understanding of the dimensionality and consequences of performance. The first article reviews and synthesises the performance literature lending on both qualitative and quantitative techniques (Carpini, Parker, & Griffin, 2017). Resulting recommendations include the need for research to examine the consequences of adaptive and proactive performance as well as articulate the underlying mechanisms through which individual performance contributes to higher-level outcomes. Article 2 addresses the consequences of performance by examining the extent to which proficiency, adaptivity, and proactivity contribute uniquely to manager's ratings of overall work performance. Results ($N = 96$ manager-subordinate dyads) suggest each form of performance accounts for unique variance in manager's ratings. Subsequently, the literature on adaptive performance was extended by integrating of role congruity theory (Eagly & Wood, 2011). It was hypothesised that adaptive performance would be ascribed more to women (role congruent) than to men and role congruent performance would result in higher ratings of overall work performance. Results of both a field study ($N=96$) and two vignette studies ($N=66$, $N=48$) provide support for this hypothesis and identify perceived competence as a mediator. Article 3 examines the down-stream effects of proactive performance. Specifically, voice is posited to be a catalyst of team adaptation with implications for team-outcomes. It is argued the extent to which teams benefit from adaptation is a function of their collective role clarity. A sample of 65 surgical teams provides support for the hypothesised model. Together, the present thesis contributes to the understanding of the dimensionality and consequences of individual work performance. The theoretical implications include the leveraging of latent profile analysis and different aggregation techniques, whereas practical

implications include the need for organisations to consider a broad set of value-generating behaviours across their human resource policies and practices.

Keywords: individual work performance, proficiency, adaptivity, proactivity, organisational citizenship behaviour

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It takes a village to raise a child.
(Igbo & Yoruba Proverb)

At the end of the day, a single person is awarded the honour of a Doctor of Philosophy; however, I did not arrive at this point alone. It took a village (and a half) to raise this PhD. I am eternally grateful to many people for their contribution to my journey.

Supervisors

Professor Sharon K. Parker. I consider it my great honour and privilege to have worked with you over the past (almost) four years. I have learned a great deal working with you, from your philosophy toward science right straight through to the writing process. Of all things, I found your ability to turn problems and questions on their heads to be most inspiring. You were also generous with feedback and your time. I look forward to our continued collaboration in the future.

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Funds provided by Government of Western Australia Health Department through a SHRAC Research Translation Grant (F-AA-33992) also provided much needed support to expand my research and bring on very talented collaborators and research assistants.

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UWA Business School Community

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DEDICATION

This thesis is dedicated to the memories of those close to me who passed during my PhD studies. You will all continue to live on in my heart and memories.

Salvatore Broccoli

Nina Broccoli

Linda Carpini

Denis Champagne

Bradey Carpini

Ken Hughes

AUTHORSHIP DECLARATION: CO-AUTHORED PUBLICATIONS

This thesis contains work that has been published and parts being prepared for publication.

Details of the work: A Look Back and a Leap Forward: A Review and Synthesis of the Individual Work Performance Literature

Carpini, J.A., Parker, S.K. & Griffin, M.A. (2017). A look back and a leap forward: A review and synthesis of the individual work performance literature. *Academy of Management Annals*, 11(2), 825 - 885. DOI: 10.5465/annals.2015.0151

Location in thesis: Article 1

Student contribution to work: Please note this work has been published in the *Academy of Management Annals*. This paper is an extension of a research stream built on ideas initially presented in a book chapter (Carpini & Parker, 2017). Joseph led the development of the paper from conceptualisation to final proofing and publication (including three rounds of revisions). Joseph completed all the analyses (including the new “splicing technique” to examine changes in topic areas over time – the first time this has been applied and published). Joseph also conducted the review and synthesis of the literature to flesh-out the nomological network. The measurement and construct recommendations were developed by Joseph, as were several of the theoretical future directions. Joseph did the majority of writing with the assistance of his co-authors. Joseph also oversaw the response to reviewers and formal communication with the editorial team at *Annals* leading up to the final acceptance, proofing, and publication.

Professor Parker provided extensive help reworking the paper through the review process including editing all sections of the paper.

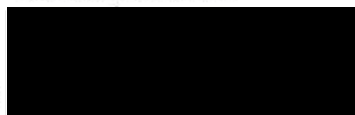
Professor Griffin’s contribution was in the Discussion section specifically with the elaboration of several key theoretical recommendations. Professor Griffin also contributed to the revision of the manuscript.

Co-author signatures and dates:

Sharon K. Parker

Mark A. Griffin

Signature:



Signature:



Date: 07 / 12 / 2017

Date: 07 / 12 / 2017

Details of the work: Ascribed, Prescribed, and Emergent Roles at Work

Location in thesis: Article 2

Student contribution to work: Article 2 contains three separate studies. Study 1 is a cross-sectional study using data from manager-subordinate dyads provided by Professors Parker and Collins. Studies 2a and 2b are experiments using original data collected by the student. Study 1, Joseph developed the theory, research questions, and hypotheses. The initial ideas were tested using an existing data set provided by the co-authors.

Studies 2(a & b), Joseph developed all the experimental materials (vignettes) and survey instruments. Joseph led the initial validation of the instruments with subject-matter experts, oversaw the collection of the data, conducted the analyses, and did the majority of the writing.

Professor Parker provided feedback on the initial idea, the dataset for study 1, and funding for data collection related to studies 2a and 2b. Professor Parker also provided ongoing feedback on drafts of this paper.

Professor Collins also contributed the dataset used in study 1. Professor Collins provided feedback on the experimental materials and design contained in this study.

Data Transparency: The data set used in study 1 of this paper is an archival dataset belonging to both Professor Parker and Collins. The dataset used in study 1 has been previously used to publish Grant, Parker and Collins (2009). In the Grant et al. paper, the authors examine how different forms of proactive behaviour are evaluated by managers as a function of different attributions. There is data overlap in the dependent variable (manager ratings of overall performance). The independent variables and the moderators are original to this research. We confirm that the data included in the present study is distinct from that which was previously published.

Grant, A. M., Parker, S., & Collins, C. (2009). Getting credit for proactive behavior: Supervisor reactions depend on what you value and how you feel. *Personnel Psychology*, 62(1), 31-55.

Co-author signatures and dates:

Sharon K. Parker

Catherine Collins

Signature:



Signature: Professor Parker has signed on the behalf of Professor Collins.

Date: 07 / 12 / 2017

Date: 07 / 12 / 2017

Details of the work: Nurse Voice as a Catalyst in the Operating Theatre: How Voice Instigates Team Adaptation and Drives Team Efficiency

Location in thesis: Article 3


Student contribution to work: Joseph has led this paper from initial conceptualisation through to completion. Specifically, Joseph developed the original idea to examine voice within the surgical context as a catalyst for team-wide adaptive performance after initial exploratory observations in operating theatres. Additionally, Joseph contributed to this paper by: building the industry contacts prerequisite to the collection of this data, designing the study and the survey instrument, collecting all the data presented in this paper (accruing over 400 hours in operating theatres), executing the analyses, and leading the write up of the paper.

Professor Parker provided the initial industry contact, ongoing guidance in the development of the study design and instruments, and feedback on drafts of this paper. Professor Griffin provided feedback and guidance in the execution of the analyses as well as feedback on earlier drafts of this paper.

Co-author signatures and dates:

Sharon K. Parker

Signature:



Date: 07 / 12 / 2017

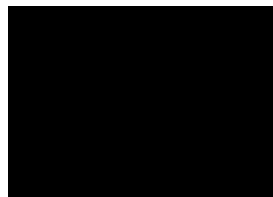
Mark A. Griffin

Signature:



Date: 07 / 12 / 2017

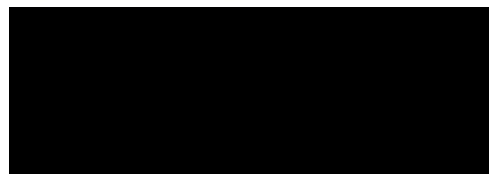
Student signature:
Joseph Alexandre Carpini



Date: 07 / 12 / 2017

I, **Professor Sharon K. Parker** certify that the student statements regarding their contribution to each of the works listed above are correct.

Coordinating supervisor signature:



Date: 07 / 12 / 2017

THESIS EXAMINATION AND APPROVALS

I gratefully acknowledge Professor Peter Jordan and Associate Professor Nathan Podsakoff who agreed to examine my thesis. A copy of their signatures from the “Examiners’ Recommendation Form – Degree of Doctor of Philosophy” is provided below.

Professor Peter Jordan

☒ I confirm that there is no actual or perceived conflict of interest arising from my examination of this thesis.

Signature: _____

Date: _____

8/2/18

Associate Professor Nathan Podsakoff

☒ I confirm that there is no actual or perceived conflict of interest arising from my examination of this thesis.

Signature: _____

Date: _____

1/31/2018

Below is a copy of the Declaration from the “Certification of final Version of Thesis: Doctor of Philosophy or degree of Master by Research” form. Signatures certify that all required corrections have been made to the thesis and recommends the conferral of the degree of Doctor of Philosophy.

9. DECLARATION			
We, the undersigned, agree and certify that all required corrections to the above thesis have been made, and that sections 1-8 of the above are completed.			
	NAME		DATE
STUDENT	Joseph A. Carpini		03/05/2018
COORDINATING SUPERVISOR	Sharon K. Parker		03/05/2018
GRADUATE RESEARCH COORDINATOR	Michael Gillan		03/05/2018

RESEARCH OUTPUTS

Over the course of the past (almost) four years, I have generated several research outputs directly and peripherally related to my thesis which demonstrate my ability to contribute to the advancement of science in our field.

OUTPUTS - DIRECTLY RELATED TO THESIS

PUBLICATIONS

- Carpini, J.A.,** Parker, S.K. & Griffin, M.A. (2017). A look back and a leap forward: A review and synthesis of the individual work performance literature. *Academy of Management Annals*, 11(2), 825 - 885. doi: 10.5465/annals.2015.0151 (ABCD= A*, IF = 9.74, 1/192 Management).
- Carpini, J.A.** & Parker, S.K. (2017). The Bigger Picture: How OCBs Fit within a Broader Conceptualization of Work Performance. In P.M. Podsakoff, S.B. MacKenzie & N.P. Podsakoff (Eds.), *Oxford Handbook of Organizational Citizenship Behavior*. New York: Oxford University Press.

MANUSCRIPTS IN PREPARATION

- Carpini, J.A.,** Parker, S.K., & Collins, C. Acting Your Part: Ascribed, Prescriptive, and Emergent Roles at Work. Target: *Journal of Organizational Behavior*. Status: submitted as part of thesis, complementary data collection.
- Carpini, J.A.,** Parker, S.K., & Griffin, M. Nurse Voice as a Catalyst in the Operating Theatre: How Individual Voice Instigates Team Adaptation and Drives Team Efficiency. Target: *Journal of Applied Psychology*. Status: submitted as part of thesis, complementary data collection.

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Health Department, Government of Western Australia (2015 – 2018)

Success in the operating theatre: Multidisciplinary pre-operative briefings for efficiency, patient safety, and staff engagement. (F-AA-33992). Parker, S.K., Griffin, M., Rammohan, A., Flemming, A.F., Hamdorf, J., Leung, Y., & **Carpini, J.A.** Value: \$268, 240 AUD.

ACADEMIC PRESENTATIONS

Carpini, J.A. (2017). Silence Isn't Always Golden: Beliefs about Voice in Multidisciplinary Medical Teams. Part of "Antecedents and Consequences of Formal and Informal Voice" Symposium chaired by B. Oc and M. Kouchaki. The 77th Academy of Management Annual Meeting. Atlanta, GA, USA.

Carpini, J.A., Fruhen, L., Yam, C., Parker, S.K., & Flemming, A.S.F. (2017). Multidisciplinary Pre-Operative Briefings: Building a Sustainable Healthcare System Together. Invited oral presentation at the 'Operating Room Nurses Association of Western Australia, Annual Scientific Meeting'. Fremantle, WA, Australia.

Carpini, J.A., & Parker, S.K. (2016). The bigger picture: How OCBs fit within a broader conceptualization of work performance. Chaired by N. P. Podsakoff. Society for Industrial & Organizational Psychology, Annual Meeting, Anaheim, CA, USA.

Carpini, J.A., & Parker, S.K., & Flemming, A.S.F. (2016). Building sustainable and productive operating theatres through team briefings. Invited oral presentation at the 'Association of Operating Theatre Practitioners Annual Meeting'. Perth, WA, Australia.

Carpini, J.A., & Parker, S.K., & Flemming, A.S.F. (2016). Interdisciplinary team briefings: Surgical work-team advanced non-technical skills (SWANS). Invited oral presentation at the 'The Royal Australian and New Zealand College of Obstetricians and Gynaecologists', Annual Scientific Meeting'. Perth, WA, Australia.

Parker, S.K., & **Carpini, J.A.** (2016). Preventing silence through effective speaking-up within the operating theatre. Key note presentation at the 'The Royal Australian and New Zealand College of Obstetricians and Gynaecologists', Annual Scientific Meeting'. Perth, WA, Australia.

OUTPUTS - PERIPHERALLY RELATED TO THESIS

PUBLICATIONS

Van den Broeck, A., **Carpini, J.A.,** Leroy, H., & Diefendorff, J. (2017). How much effort will I put into my work? It depends on your type of motivation. In F. Franccaroli, N. Chmiel, & M.

Sverke (Eds.), *An Introduction to Work and Organisational Psychology: An International Perspective* (3rd ed.). London: Wiley-Blackwell.

MANUSCRIPTS IN PREPARATION

Carpini, J.A., Parker, S.K., Johnson, A., & Nguyen, H. Proactive Coping, Career Success & Wellbeing. Target: *Journal of Organizational Behavior*. Status: data analysis

Kiffin-Petersen, S., **Carpini, J.A.,** & Leung, Y. The Role of Affective Events in Trainees' Learning and Performance. Target: *Academy of Management Journal*. Status: data analysis and preliminary model identification

Carpini, J.A., & Parker, S.K. When Silence Isn't Golden: Theories of Voice in the Multi-Team Systems. Target: *Journal of Applied Psychology*. Status: three studies completed, collecting additional data

Holtrop, D., **Carpini, J.A.,** Dunlop, P. A Frequency-Based Estimation Approach to Individual Work Performance Measurement. Target: *Journal of Management*. Status: data collection underway

ACADEMIC PRESENTATIONS

Parker, S.K., & **Carpini, J.A.** (2016). Preventing silence through effective speaking-up within the operating theatre. Key note presentation at the 'The Royal Australian and New Zealand College of Obstetricians and Gynaecologists', Annual Scientific Meeting'. Perth, WA, Australia.

Kiffin-Petersen, S., **Carpini, J.A.,** & Leung, Y. (2016). Tears, fears and cheers: Effects of trainee surgeons' emotions on learning and performance in the operating theatre. Invited oral presentation at the 'The Royal Australian and New Zealand College of Obstetricians and Gynaecologists', Annual Scientific Meeting'. Perth, WA, Australia.

Liao, J., Parker, S.K., **Carpini, J.A.** (2016). Predicting leader responsiveness to proactivity: Servant leadership and wise proactivity. Society for Industrial & Organizational Psychology, Annual Meeting, Anaheim, CA, USA.

General Introduction

The present thesis contributes to our understanding of the dimensionality and consequences of individual work performance.

Individual work performance is defined “as things that people actually do, actions they take, that contribute to the organization’s goals” (Campbell & Wiernik, 2015, p. 48; Campbell, McCloy, Oppler, & Sager, 1993). The field of individual work performance can be distinguished across three forms of performance – proficiency, adaptive, and proactive performance (Griffin, Neal, & Parker, 2007). Proficiency refers to behaviours that can be formalised and anticipated in advance. This includes constructs such as task performance (Campbell, McCloy, Oppler, & Sager, 1993) and “in-role” performance (Katz & Kahn, 1966), and many organisational citizenship behaviours (Carpini & Parker, 2017; P. M. Podsakoff, MacKenzie, Paine, & Bachrach, 2000). Adaptive performance is in response to an external demand which requires individuals to “cope with, respond to, and/or support changes” (Griffin, Neal, & Parker, 2007, p. 131). This includes several dimensions of adaptive performance identified by Pulakos, Arad, Donovan, and Plamondon (2000) as well as sportsmanship (Organ, Podsakoff, & Podsakoff, 2006). As opposed to responding to external change, proactive performance is about initiating changes oneself and defined by its agentic, change-oriented, and future focused nature. Proactive constructs include voice (Van Dyne & LePine, 1998), taking charge (Morrison & Phelps, 1999), and the innovator role (Welbourne, Johnson, & Erez, 1998).

Individual work performance has been a central topic in applied psychology since the inception of the field (Austin & Villanova, 1992). In 1917, Henderschott identified six fundamental problems to be addressed by applied psychologists – one of which was the study of individual work performance as a means of establishing the comparative value of employees in achieving organisational objectives. Although this initial call went largely

unmet, research including individual work performance burgeoned between 1937 and 1946 and has since become one of the most important and highly researched concepts in applied psychology (Campbell & Wiernik, 2015; Kozlowski, Chen, & Salas, 2017).

In looking across the field, evidence of the importance of individual work performance is clear. Employees are recruited and selected based on knowledge, skills, abilities, and other attributes believed to be essential for successful work performance (Ployhart, Schmitt, Tippins, & Carolina, 2017; Sackett, Lievens, Iddekinge, & Kuncel, 2017). Once selected, employees undergo training and developmental opportunities across their organisational tenure to enable and enhance their performance on the job (Bell, Tannenbaum, Ford, Noe, & Kraiger, 2017). Organisations invest heavily in performance appraisal and management systems designed to monitor, assess, and provide feedback on the comparative value of employees (DeNisi & Murphy, 2017). Individual work performance is one of the critical outcomes associated with job attitudes and satisfaction (Judge, Iiss, Kammeyer-Mueller, & Hulin, 2017), employee motivation (Kanfer, Frese, & Johnson, 2017), the design of work (Parker, Morgeson, & Johns, 2017) and teams (Mathieu, Hollenbeck, & Ilgen, 2017), and of leadership (Dinh et al., 2014; Lord, Day, Zaccaro, Avolio, & Eagly, 2017). In sum, individual work performance is the fundamental building block of social organisations (Katz, 1964) and is ubiquitous within the field of applied psychology.

Although individual work performance has been a central topic in the field for a century and over 290 meta-analyses have included individual work performance as a focal variable (Carpini, Parker, & Griffin, 2017), two critical challenges remain. First, the field of individual work performance remains largely fragmented with little work systematically integrating various conceptualisations and perspectives on the topic. For example, the literature on organisational citizenship behaviours is largely segregated from that on proactivity, even though the two lend on similar constructs such as voice (Carpini & Parker,

2017; LePine & Van Dyne, 1998; N. P. Podsakoff, Podsakoff, MacKenzie, Maynes, & Spoelma, 2014). Second, the vast majority of research including individual work performance positions it as the dependent variable (Campbell & Wiernik, 2015) with very little work explicitly examining the consequences of performance. As such, there is little understanding of the outcomes associated with different forms of individual work performance and even less about the processes through which performance translates to interdependent outcomes (e.g., team performance). The present thesis contributes to filling these important gaps in the literature. Below, I offer an overview of the three articles included in the present thesis and how they contribute to addressing the two gaps identified in the literature. A schematic representation of the thesis and its contributions is presented in Figure 1. Each panel represents one of the three articles included in the thesis.

Thesis Overview

Epistemological Approach

It is important to acknowledge the positivist-knowledge framework from which I am operating as it has profound implication for the approach I have adopted in theorising and conducting my research as well as the underlying meaning of the obtained results (Clegg, 1990; Johnson & Duberley, 2000a). Positivistic-knowledge frameworks rely on the sensory experiences of individuals to access reality and through these experiences one can gain scientific knowledge (Johnson & Duberley, 2000b). Specifically, a positivist framework allows for both inductive (bottom-up) and deductive (top-down) theorising and empirical testing. The positivistic approach to knowledge acquisition is apparent in the following chapters such that chapter 2 adopts both deductive and inductive methods to reviewing and synthesising the individual work performance literature, and both chapters 3 and 4 adopt distinctly deductive approaches. Consistent with this approach, this thesis assumes empirical data derived from

members of organisations can provide insights into reality that can ultimately help us understand causal relationships and latent processes.

Chapter 2. A Look Back and a Leap Forward: A Review and Synthesis of the Individual Work Performance Literature

The first article (chapter 2, Figure 1 – Panel A), published in the *Academy of Management Annals* (Carpini et al., 2017), reviews and synthesises the individual work performance literature and contributes to the understanding of the dimensionality of performance. This article is divided into three sections that each contribute to our understanding of individual work performance in unique and synergistic ways. In the first section, I leveraged *science mapping* (Van Eck & Waltman, 2010; Van Eck, Waltman, Dekker, & van den Berg, 2010), an advanced bibliometric technique, to quantitatively analyse the content of 9299 articles related to individual work performance published in top-tier journals between 1972 and 2015. Results of this analysis suggest the field is highly fragmented with five distinct approaches to the study of individual work performance (management, personnel selection, motivation, good citizen, and job attitudes approaches) which represent the historical, rather than theoretical, development of the field. Building on these results, I then mapped the development of the field by examining articles published in ten-year increments (1972 – 1982, 1983 – 1993, 1994 – 2004, and 2005 – 2015)¹. The results of these analyses suggest that the field, as a whole, has progressed; however, there is also evidence of theoretical isolationism. One of the major conclusions is that there is little understanding of how different performance constructs (e.g., organisational citizenship behaviour, voice, and task performance) relate to one another.

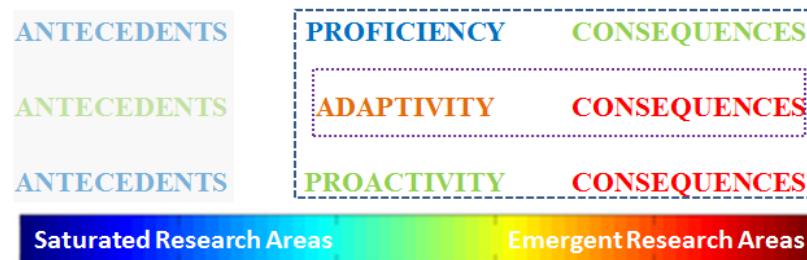
¹ This is the first published instance of this technique being used for theory building and was developed by Joseph Carpini.

Article 1. *A Look Back and A Leap Forward: A Review and Synthesis of the Individual Work Performance Literature*



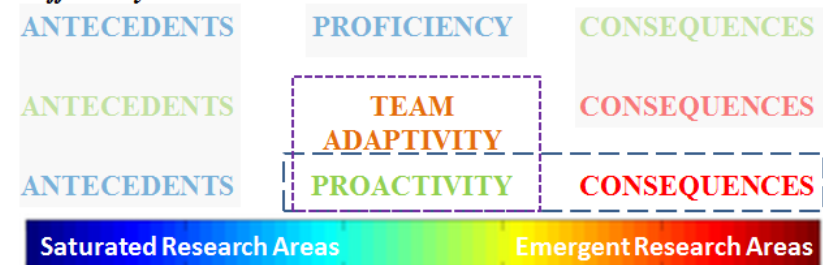
Legend. The colours assigned to each element are consistent with *heat maps* such that elements in blue are saturated areas whereas those presented in red are “hot” or emergent research areas. Colours based on the results of Carpini, Parker, & Griffin (2017).

Article 2. *Ascribed, Prescribed, and Emergent Roles at Work*



Note. Study 1 (blue box) examined the unique role of proficiency, adaptivity, and proactivity in informing assessments of overall work performance. Studies 2a and 2b (purple box) sought to understand the nature of adaptive performance by integrating role congruity theory.

Article 3. *Nurse Voice as a Catalyst in the Operating Theatre: How Individual Voice Instigates Team Adaptation and Drives Team Efficiency*



Note. This study focuses on the consequences of individual proactive performance (blue box) and integrates team-level adaptive performance as an explanatory mechanism (red box).

Figure 1. Thesis overview and article contributions

The second section of this paper addresses the disjointedness of the field by elaborating the nomological network of major performance constructs. As the first step in establishing the nomological network, it was important to understand the relationship between constructs (Schwab, 1980). The review and synthesis encompassed 97 commonly used performance constructs and classified them using the multi-dimensional model of Griffin, Neal, and Parker (2007) which distinguishes the form of performance (proficiency, adaptivity, and proactivity) as well as the level of contribution (individual, team, and organisational). Results of this synthesis found 54% of constructs could be classified as forms of proficiency, 20% as forms of adaptive performance, and 28% as proactive performance². These results suggest there is an abundance of proficiency-related constructs and a relative dearth in adaptive and proactive performance. In particular, we note adaptive and proactive constructs seldom specify the level of intended contribution – an area ripe for future research.

Building on these results, the nomological network of antecedents and consequences of each form and level of performance was elaborated through the review of 93 meta-analyses, reviews, primary studies, and the science maps. A primary outcome of this synthesis is the identification of common and unique antecedents and consequences individual work performance and gaps in knowledge. For example, we identified that job satisfaction and transformational leadership as important antecedents of all forms of performance whereas cognitive ability seems to be particularly important for proficiency, meta-cognition and support for adaptive performance, and proactive personality and autonomy for proactive performance.

The third section takes a leap forward by articulating 18 recommendations addressing construct, measurement, and theoretical issues in the field. Construct recommendations

² The total is 102% due to rounding.

sought to address fundamental issues such as construct definition and proliferation. Measurement recommendations address practical issues such as scale items and the use of archival supervisor ratings. Theoretical recommendations are intended to guide future research including individual work performance as a focal construct. For example, I call for research examining the consequences of individual work performance at the individual (chapter 3), and team (chapter 4) levels as well as increased attention to emergent forms of work performance (chapter 3 and 4). As a whole, this article provides a much needed review and synthesis of the individual work performance literature that bridges different research streams together to create a more cohesive and coherent literature.

Chapter 3. Ascribed, Prescribed, and Emergent Roles at Work

The second article (chapter 3, Figure 1 – Panel B) addresses two critical issues raised in the review and synthesis of the field. First, there is very little research examining the consequences of individual work performance, particularly in comparing multiple forms of performance simultaneously. Second, there is a dearth of theory and research on adaptive performance. Chapter 3 addresses both these gaps using a combination of field and experimental studies.

Very few studies have examined the outcomes of multiple forms of performance (proficiency, adaptivity, and proactivity) concurrently. The lack of research addressing this issue means there is little understanding of the discrete contribution of each form of performance in organisationally-important outcomes. One such organisationally-important outcome is managers' perceptions of overall job performance. Overall job performance is the subjective assessment of the overall contribution of a given employee to the achievement of organisationally-relevant goals (Campbell & Wiernik, 2015) and is the most commonly studied consequences of individual work performance (Whiting, Podsakoff, & Pierce, 2008).

To address the gap in the literature related to the outcomes of performance, I used a sample of 96 managers (henceforth referred to as “employee”) and their respective managers. The managers provided ratings of the employee’s proficiency (e.g., “fulfils the responsibilities specified in their job description”), adaptivity (e.g., “readily responds to unpredictable or unexpected events”), and proactivity (e.g., “speaks up about organisational issues that need to be addressed”), as well as ratings of overall work performance. Results of a hierarchical regression analysis suggests that each form of performance accounts for unique variance in managers’ assessment of employee overall performance. These results are notable as they contribute to the few existing studies examining multiple forms of performance concurrently and highlight the importance of adaptive performance in informing manager’s assessments of overall work performance.

The second gap in the literature addressed in this article is the lack of theory on adaptive performance. Specifically, previous research examining helping (Bergeron, Shipp, Rosen, & Furst, 2013; Heilman & Chen, 2005) and proactive performance (Luksyte, Unsworth, & Avery, 2017; Proudfoot, Kay, & Koval, 2015) have found that these forms of performance are gendered such that helping is associated more with women and proactive performance more with men. Lending on role congruity theory (Eagly & Karau, 2002; Eagly & Wood, 2011; Heilman, 2012), which argues men and women are subject to socially constructed beliefs about what they actually and ought to do which explains why behaviour enacted by men and women are evaluated differently, I argue that adaptive performance is also gendered and should be ascribed to women more than it is to men. As such, women who are highly adaptive at work should be viewed and assessed more positively than men who are adaptive. Furthermore, I articulate the theoretical mechanisms through which these effects are believed to occur. The first proposed mechanism is through enhanced perceptions of competency and the second through ascribed self-transcendent values.

In an initial test of these hypotheses, I used the same field data as previously described ($N = 96$). Results of a moderation analysis support my hypothesis such that women who were rated as highly adaptive were also rated as higher on overall work performance; however, ratings on adaptive performance did not impact managers' ratings of overall work performance of men. To further test the robustness of these results, I designed and deployed two vignette studies (Aguinis & Bradley, 2014) where the gender of the paper-person was manipulated (male/female). In both instances, the employee was described as highly adaptive. In replicating and extending the previous field study (study 2a), participants ($N = 66$ undergraduate students) were asked to provide their ratings of the employee's overall work performance as well as the promotion potential of the employee and a proposed salary increase in dollars. Overall, results of a one-way ANOVA supported my hypothesis such that the female vignette was rated as having higher promotion potential and received higher salary increase proposals than the male vignette; however, no difference was observed in the overall work performance rating. The third study replicated and extended the previous vignette study by including the theorised mechanisms (study 2b). Participants ($N = 48$ employees) provided their ratings of overall work performance, promotion potential, and a proposed salary increase as well as on perceived competence and ascribed self-transcendence. A one-way ANOVA detected mean differences in the ratings of overall work performance and promotion potential, but not for the proposed salary increase. Furthermore, bootstrapped mediation analysis (Hayes & Preacher, 2014) found evidence of mediation for both competence and self-transcendence when entered separately but only for competence when both mediators were entered together. These results suggest role congruent behaviour boosts perceptions of competency whereas role incongruent behaviour does not.

In summary, the second article answers two important gaps in the literature. First, we find each of the forms of performance (proficiency, adaptivity, and proactivity) each

contribute uniquely to manager's assessments of the overall work performance of subordinates. This provides further support for the uniqueness of each form of performance (Griffin et al., 2007; Griffin, Parker, & Mason, 2010; Nguyen, Johnson, Collins, & Parker, 2016; Strauss, Griffin, Parker, & Mason, 2015). Second, this study provides unique insights into the nature of adaptive performance, suggesting it is ascribed to women more than it is to men. These results speak to the established literature demonstrating other forms of performance are also gendered (Heilman & Chen, 2005; Luksyte et al., 2017).

Chapter 4. Nurse Voice as a Catalyst in the Operating Theatre: How Voice Instigates Team Adaptation and Drives Team Efficiency

Whereas chapter 3 focuses largely on adaptive performance, chapter 4 (article 3, Figure 1 – Panel C) examines the consequences of proactive performance. This article addresses two issues raised in the integrative review and synthesis (chapter 2; Carpini et al. 2017). First, there is a dearth of scholarship examining the outcomes of proactive performance (Bashshur & Oc, 2015; Morrison, 2011, 2014). Second, there is very little research examining how proactive performance translates to team-level outcomes. This is surprising because proactive performance is generally considered interpersonally risky because it involves changes that impact interdependent-others (e.g., team members; Van Dyne, Cummings, & McLean Parks, 1995) and has been argued to be critical for team and organisational performance (Crant, 2000; Morrison, 2011).

In addressing the dearth of scholarship on the outcomes of proactive performance and the mechanisms through which individual proactive performance results in team-level outcomes (Carpini et al., 2017), I examined proactive performance within the team context. For the purposes of this chapter, proactive performance is conceptualised as voice, defined as the verbal transmission of constructive change-oriented suggestions directed toward peers or leaders (Liu, Zhu, & Yang, 2010; Van Dyne & LePine, 1998). I examine voice within the

broader team context given teams are largely considered building blocks of modern organisations (Sundstrom, De Meuse, & Futrell, 1990) and voice has most often been conceptualised as a team member contribution (Carpini & Parker, 2017; Griffin et al., 2007). Additionally, both voice (Van Dyne & LePine, 1998) and teams (Maynard, Kennedy, & Sommer, 2015) have been argued to be particularly relevant in dynamic and uncertain work environments (Parker & Collins, 2010). Additionally, this study also expands the team-level criterion to include team efficiency. This is an important contribution because the vast majority of existing research in this area has only considered team effectiveness (Detert, Burris, Harrison, & Martin, 2013; Nemeth, 1986) and innovation (De Dreu, 2002; De Dreu & West, 2001) as team-level outcomes and has ignored other critical team outcomes such as efficiency and productivity which are equally important outcomes for some teams.

To address the two gaps identified in the individual work performance literature related to the consequences and mechanisms related to individual proactive performance (voice), I tested a model in which individual voice was postulated to act as a catalyst for team-level adaptive performance which would then result in team efficiency. Specifically, I focused on the voice of nurses because nurses are traditionally considered low-power and status team members within the broader surgical team including surgeons and anaesthetists (both physicians; Sydor et al., 2013). Although low-power, nurses simultaneously occupy a critical role as coordinators across professional groups (nurses, surgeons, and anaesthetists) in the delivery of safe and efficient health care (Gardezi et al., 2009). As such, nurses' voice is essential but also likely to be less common and vetted to a higher-standard than voice from physicians (Detert et al., 2013). The voice from nurses is argued to instigate change within the broader team resulting in adaptation at the team-level. It is this team-level adaptation which is believed to mediate the relationship between individual voice and team-level efficiency. This is because teams can only benefit from voice if they are willing to act on it

which means changing their current behaviour to align with the content of the voice. I hypothesised the extent to which team adaptive performance results in efficiency gains would be bounded by the degree to which team members are clear in their roles. When team members are clear in their roles, they are better positioned to respond to emergent demands than when they are unclear.

Data were collected from 65 surgical teams performing elective surgeries. Nurses from the surgical teams provided ratings of voice, and all team members provided ratings of team adaptive performance and role clarity. Surgical efficiency was calculated using objective data from hospital records. As an initial test of the hypothesised model, each pathway was tested. Following preliminary support for the hypothesised model, the full mediated moderation (second step moderation) model was tested following the recommendations of Hayes (2012).

Overall, results supported the hypothesised model such that team adaptive performance mediated the relationship between voice and team efficiency. Furthermore, the extent to which teams were able to generate efficiency gains from adaptation was contingent on the team members being very clear on their respective roles. A major conclusion of this study is articulating how individual voice translates to team-level outcomes and the relevant boundary condition. In addition, this research highlights the importance of expanding the team-level criterion included in voice research to match the research context (Cappelli & Sherer, 1991; Johns, 2006). Given increasing demands on elective surgery (Siciliani & Hurst, 2005) and projected shortages of physicians (Etzioni, Liu, Maggard, & Ko, 2003), it will be more important than ever that surgical theatres deliver safe patient care in an efficient manner.

Chapter 5. General Discussion and Future Directions

The final chapter of this thesis (chapter 5) provides an overarching perspective on the contributions of this thesis as well as future directions within the field of individual work performance. In situating the contributions of this thesis, I refer back to several key recommendations from Carpini et al. (2017) and how this thesis has addressed these gaps in the literature. For example, both articles 2 and 3 include multiple forms of performance, and article 3 considers the mechanism through which individual work performance may translate to team-level outcomes. Additionally, I also present both methodological as well as theoretical recommendations. These recommendations include the need to consider the use of filter questions in measuring contextually dependent forms of performance (adaptive and proactive), the issue of isomorphism of performance constructs and models, the need to consider contextually relevant dependent variables, and the potential application of latent profile analysis (LPA) in moving the field forward.

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Chapter 2 Foreword

The overarching goal of the present thesis is to contribute to our understanding of the dimensionality and consequences of individual work performance. To this end, chapter 2 (article 1) presents a comprehensive review and synthesis of the existing literature on individual work performance across theoretical perspectives.

The following article contributes to our understanding of the dimensionality of individual work performance in several important ways. First, from a historical perspective, the article traces the development of the field of individual work performance and highlights the impact of multiple perspectives in shaping our understanding of the dimensionality of performance. Three main conclusions are drawn from the historical analysis: (a) the present field of individual work performance is largely a function of historical rather than theoretical developments in the field, (b) the expansion of constructs to include forms of performance other than task performance (e.g., in-role, and proficiency) is a relatively recent phenomenon, and (c) the literature as a whole is made up of theoretical silos which are largely disconnected from one another. Second, I present a thorough review of existing performance constructs and classify them according to the Griffin, Neal, and Parker (2007) framework. In doing so, I help bridge various research areas together and provide a common framework for the study of individual work performance. A major conclusion of this synthesis is that the vast majority of performance constructs can be meaningfully integrated within this framework. Given the distribution of performance constructs the field can accurately be summarised as comprising four key research areas: individual task proficiency, team member proficiency, adaptive, and proactive performance. Third, I provide several recommendations for construct, measurement, and theory which seek to contribute to our understanding of the dimensionality of performance. For example, ensuring performance accurately define and label constructs helps scholars understand how constructs are related to one another, and the inclusion of

multiple forms of performance within a single study will contribute to our understanding of the relationship between forms of performance.

This review and synthesis also contributes to our understanding of the consequences of individual work performance. Specifically, the historical review of the individual work performance literature highlighted a notable gap theory and evidence. Whereas scholars often speak of the theoretical implications of individual work performance for organisations (e.g., productivity, effectiveness, success, competitiveness) there is far less empirical research demonstrating these positive effects. In fleshing-out the nomological network of performance, it becomes obvious that our understanding of the consequences of performance is limited. Indeed, one of the main conclusions of elaborating the outcomes of performance is that there is a false sense of consistency and coherence due to the lack of research in the area. Several of the theoretical recommendations presented in this article call for research on the consequences of performance. For example, I call on scholars to consider how multiple forms of performance interact over time in determining important individual, team, and organisational outcomes. I also encourage research examining the impact of performance within the team context such as how individual proactive performance may impact team processes and outcomes.

Figure 1 provides a concise overview of the findings of my review and synthesis. Lending on the classical inputs, processes, and outputs model, map the state of the individual work performance literature by distinguishing between “emergent” (red) and “saturated” (blue) areas of study. For example, there is little research examining the consequences of performance, particularly in relation to adaptive and proactive forms which appear in red as emergent areas of scholarship. On the other hand, the antecedents of proficiency (e.g., task performance and organisational citizenship behaviour) have been thoroughly studied and thus appear in blue.

Article 1. *A Look Back and A Leap Forward: A Review and Synthesis of the Individual Work Performance Literature*



Legend. The colours assigned to each element are consistent with *heat maps* such that elements in blue are saturated areas whereas those presented in red are “hot” or emergent research areas. Colours based on the results of Carpini, Parker, & Griffin (2017).

Figure 1. **Review and Synthesis Results Illustration**

A Look Back and a Leap Forward:
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NOTE: Due to copyright, this paper does not appear in the final thesis to be uploaded in the UWA Repository. The citation information above may be used to retrieve this article.

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Abstract

Individual work performance has been a central topic for scholars over the past century. There is a mass of research on performance but it is embodied in a variety of disconnected literatures each using their own set of constructs and theoretical lenses. In this paper, we synthesize this disparate literature to better understand individual work performance and pave the way for future research. First, using a bibliometric technique to analyse 9299 articles, we identify the cumulative intellectual structure of the field and show how the field has evolved over the past 40-years. Second, drawing on the Griffin, Neal, and Parker (2007) model of individual performance, we classify 97 performance constructs according to their form (proficiency, adaptivity, proactivity) and level of contribution (individual, team, organization). We conclude this model is useful for understanding the similarities and differences amongst many distinct performance constructs. Third, using the Griffin et al., model, we illuminate the nomological network by mapping the antecedents and outcomes of each form and level of contribution. Our synthesis identified theoretically-relevant and differentiating antecedents of form; whereas the nomological network is underdeveloped in relation to the level of contribution. Finally, we propose 18 recommendations which include: ensuring conceptual clarity for performance constructs, expanding theoretical models to account for more performance dimensions, greater attention to the underlying mechanisms through which individual performance contributes to higher-level outcomes, increased consideration of how performance changes over time and across contexts, and more investigations into how multiple performance constructs interact with each other to shape effectiveness.

Keywords: individual performance; task performance; adaptive performance; proactive performance; organizational citizenship behaviour; review; nomological network.

Appendix C

Supplementary Information Related to the Science Mapping Methodology

The information included in this Appendix supplements that which is available in Appendix A of the Carpinì et al. (2017) publication and outlines additional important information related to the Science Mapping methodology used in this article.

What kinds of questions is Science Mapping designed to answer?

I have elected to answer this larger-overarching question first as it seems to be particularly important in framing subsequent answers to the questions you have raised.

Science Mapping is a technique that provides insights about a network (Waltman, van Eck, & Noyons, 2010). A network is simply the relationship between different elements; for example, a network can be extracted from, amongst other things and specific to our interests, documents, keywords, authors, or journals (van Eck & Waltman, 2010). The network represents the collective intellectual structure of a given field (Waltman et al., 2010). In the next section, I briefly discuss the key elements of a Science Map and how they represent the intellectual structure or network as discussed here.

When considering what kinds of questions a network can help one answer, it is important to first consider the level of analysis. In a similar way as we might consider the level of analysis in organisational behaviour and applied psychology, one can also consider the level of analysis in regards to networks. That is to say, networks can exist at multiple levels of modality from the very broad to very specific. For example, two recent publications have examined the network within the human resource management literatures to uncover what the major topics are within the field, how these topics relate to one another, and what gaps may exist (García-Lillo, Úbeda-garcía, & Marco-lajara, 2017; Markoulli, Lee, Byington, & Felps, 2017). As one can see the questions asked were very broad in nature and it is no surprise the resulting description of the field and recommendations for future research are also broad. For example, in their analysis of the network of articles published in human resource management journals, Markoulli et al. (2017) encouraged scholars to consider the role of technology and information systems; however, this

recommendation is not explicitly linked to theoretical research questions. As such, analyses at this broad level of analysis are best for describing a field but may lack concreteness and specificity.

With this said, one can also examine the network at a more fine-grained perspective such as by research topic (instead of by field). For example Parker, Morgeson, and Johns (2017) used Science Mapping to examine the intellectual structure of the work design literature. Parker et al. used Science Mapping to examine the network between 5,708 peer-reviewed journal articles published across the management and psychology literatures. The resulting five clusters provided insights into the predominant perspectives used in the study of work design. A similar approach to the study of field has been presented in this thesis (Carpini et al. 2017). What all these articles share in common is their unique focus on a sub-field, which would have otherwise been identified in the broader analyses described above but not to this level of granularity. As such, these two papers ask similar questions as in the previous examples but are more nuanced in their focus. Questions at this level of analysis are: what are the major theoretical perspectives within a given field (work design, job performance)? How do these perspectives relate to one another? What gaps may exist in the synthesis of these perspectives? Answers to these questions are far more detailed and concrete. For example, Parker and colleagues identified seven areas for future research lending in part on the results of the science maps.

An additional level of analysis would be even narrower in focus and would address questions such as: what are the major perspectives within a given literature or used in the study of a specific phenomenon? How do these perspectives relate to one another? What gaps may exist between these perspectives that may be addressed in future research? While these questions are very similar to those outlined above, the key difference is the referent literature or phenomenon. In the previous example of work design and individual work performance the referent was an entire field of study; whereas in the present level of analysis the referent would be a subset of this overarching field. For example, a study at this level of analysis but still within the individual work

performance literature would be to examine the intellectual architecture of the voice literature (because voice is a sub-topic of individual work performance). Such a study would potentially be very interesting as voice has been examined from multiple theoretical traditions including the OCB (Maynes & Podsakoff, 2014; Podsakoff, MacKenzie, Paine, & Bachrach, 2000; Van Dyne & LePine, 1998), proactivity (Carpini & Parker, 2017; Parker & Collins, 2010) and justice literatures (Bashshur & Oc, 2015; Oc, Bashshur, & Moore, 2015). How is voice conceptualised across these literatures? How do these literatures lend (or not) on the findings from one perspective to another? Are there natural points of convergence between these fields and what can they tell us about the nature of voice? Are there points of divergence where the fields provide unique insights that may be elaborated through the synthesis of ideas from another perspective? An example of published research at this level of analysis is the recent work on safety culture (van Nunen, Li, Reniers, & Ponnet, 2017).

Therefore the simple answer to the question “what kinds of questions is Science Mapping designed to answer” is that it is designed to answer questions related to the connectedness between pieces of information and can occur at multiple levels of analysis. I provide Table 1 below as a visualisation of how the different levels of analysis relate to different types of questions and provide exemplar publications.

Table 1. The Levels of Analysis as they relate to Science Mapping

Level of Analysis	Key Research Questions	Level of Granularity	Published Examples
Macro	What the major topics are within the field? How do these topics relate to one another? What gaps may exist within the topics of this field?	Low granularity Clusters are broad Implications for research are very general.	What is the intellectual structure of the Human Resource Management Literature? The field is defined broadly as all the literature within the human resource management field. García-Lillo, Úbeda-garcía, & Marco-lajara (2017) and Markoulli, Lee, Byington, & Felps (2017)

Meso	<p>What are the major theoretical perspectives within a given field (work design, job performance)?</p> <p>How do these perspectives relate to one another?</p> <p>What gaps may exist in the synthesis of these perspectives?</p>	<p>Moderate granularity</p> <p>Clusters are broad but better defined with a greater number of unique terms that are more closely related to specific theoretical perspectives.</p> <p>Implications are broad but can be narrowed when appropriately triangulated with meta-analytic and empirical results</p>	<p>What is the intellectual structure of the Work Design literature?</p> <p>The field is defined in terms of a focal area of study which is more focused.</p> <p>Parker et al. (2017)</p> <p>What is the intellectual structure of the Individual Work Performance literature?</p> <p>Carpini et al. (2017)</p> <p>What is the intellectual structure of the careers literature?</p> <p>Lee, Felps, & Baruch (2014)</p>
Micro	<p>What are the major perspectives within a given literature or used in the study of a specific phenomenon?</p> <p>How do these perspectives relate to one another?</p> <p>What gaps may exist between these perspectives that may be addressed in future research?</p>	<p>High level of granularity</p> <p>Clusters are narrowly defined.</p> <p>Implications for research can be very specific.</p>	<p>What is the intellectual structure of safety culture research?</p> <p>van Nunen, Li, Reniers, & Ponnet (2017)</p>

Detailed description of the underlying algorithm or statistical procedure used to generate the maps

A detailed description and explanation of the underlying algorithm employed by *VosViewer* is available in van Eck and Waltman (2010) which is cited when the software used for these analyses is introduced in Appendix A. In the paper by van Eck and Waltman (2010) the authors discuss the mathematical equations used in calculating co-occurrence terms and the underlying clustering algorithm. Please refer to pages 630 – 632, and 634 for the detailed formulas

and accompanying explanations. An updated discussion of the underlying algorithms and statistical procedures used in generating the maps is also available in Zupic and Čater (2015).

Additional Resource:

van Eck, N.J. & Waltman, L. *VOSviewer Manual: Version 1.6.8*. April 27, 2018. Available from: www.vosviewer.com/getting-started#VOSviewer%20manual

Are multiple types of clusters possible from the same data structure?

According to van Eck and Waltman (2010), the same data will generate the same results across iterations. This is because the underlying algorithm and statistical tests and assumptions remain constant and thus the data is handled in the same way across tests (Van Eck & Waltman, 2010; van Eck, Waltman, Dekker, & van den Berg, 2010; Waltman et al., 2010). With this said, the visualisation can differ between iterations resulting in maps that *look* different but are content-equivalent (Van Eck & Waltman, 2010), in addition, the algorithm much like the bootstrapping method (Hayes & Preacher, 2014) relies on iterations to optimise the solutions such that the higher the number of iterations, the higher the quality of the solution. The default number of iterations has been optimised such that additional iterations do not significantly alter the resulting map (van Eck & Waltman, 2018).

With this said, there are opportunities for those running the analyses for researchers to influence the resulting maps. I provide a brief overview of these in Point 4.

Are different clusters possible given different parameter specifications?

Yes, the resulting maps can be influenced by parameter specifications. Modifications to the parameter specifications can alter the overall structure of the map, the number of terms appearing in the map, and both the content and number of clusters. In explaining how these differences arise, I briefly review related questions regarding the threshold count and the mapping percentage rule as they are interrelated issues.

The threshold count refers to the number of times a given term must appear in the data set (otherwise called a “corpus”) for it to be included in subsequent analyses (van Eck & Waltman, 2010). Adjusting the threshold count will influence the number of terms appearing in the map and may alter the number of content of clusters. For the purpose of the present paper, I used the default threshold count of 10 percent as per the recommendations of van Eck and Waltman (2010). If the threshold count is decreased, more terms will appear in the map, whereas the reverse is true if the threshold is increased. When lowered, it is possible for idiosyncratic terms to influence the content and number of clusters. When increased, it is possible that potentially important terms will be missed which can also impact the content and number of clusters.

The percent mapping rule refers to the percentage of the total number of terms that will be mapped. For example, if one has a dataset that generates 100 terms and one uses the default setting of 60% mapping rule, then the resulting map will contain 60 terms. The percent mapping rule will shape the resulting map because it is restricting the amount of terms being entered into the algorithm.

Decisions related to the percentage mapping rule should be driven by the research question and the data available. In terms of this paper, the research questions were (1) what is the intellectual structure of the individual work performance literature? and (2) how has it evolved over time? In addressing these questions it was logical to adopt slightly different mapping rules. Specifically, in addressing the first question I lent on 9,299 articles (one of the largest Science Maps in the field to date) and thus the default of 60% mapped over 300 terms. This meant the map was already saturated and included key performance constructs – which was the focus of this paper. Thus the default rule of mapping 60% provided a coherent overview of the field while also capturing focal constructs of interest. On the other hand, the subsequent slices lent on much smaller subsets of the data and thus not as many terms were extracted. Using a 60% mapping rule on these smaller data sets meant that many performance-related terms did not meet the inclusion

criteria and thus were not included. This was problematic given the focus of the article was on individual work performance. Thus the decision was made to increase the percent mapping rule from 60% to 100% so all terms meeting the basic 10 percent threshold were mapped. Due to the smaller number of terms, mapping 100% of the terms was feasible and provided important insights aligned with the overall purpose of the article. Part of the reason this was necessary is because scholars have used such a large number of terms when referring to individual work performance and specific behaviours (Carpini et al. 2017). Another reason is because scholars often use generic language such as “performance” instead of specific language like “helping” in describing their study which means the more nuanced terms appear in the corpus less frequently and thus have a reduced chance of being visualised.

Changing the percent mapping rule does significantly alter the number and content of clusters. Therefore it is essential that a clear rationale is provided for the percent mapping rule used and that this percentage is included in the method section. With this said, there has been no systematic research examining the impact of changes to the mapping rule in relation to the ultimate conclusions one may reach. This is an interesting area for future research and extends the empirical work that has examined the use of different threshold counting methods (Perianes-Rodriguez, Waltman, & van Eck, 2016).

Final consideration should be paid to the thesaurus file. The thesaurus file is a document made by the researcher and inputted into the program at the same time as the data file. The purpose of the thesaurus file is to “teach” the program to merge or ignore certain terms. For example, in Carpini et al. (2017) we merged similar terms or synonyms together to clarify the content of the map and reduce “noise” generated through semantic, but not linguistic meaning, differences in terminology; this includes the merging of the terms “manager”, “boss”, “top management team”, “HR manager”, “direct supervisor”, “middle manager”, “line manager”, and “senior manager”. All of these terms appeared in the maps as “manager”. Decisions related to

merging terms should be made based on the results of an iterative process where maps are generated before and after each term is merged. If the map changes significantly then an appropriate rationale should be provided as to why the term was merged. In addition to merging terms, the thesaurus file also allows the researcher to exclude terms. This is particularly useful for overly generic terms like “conference”, “work”, or “place” which frequently appeared in the data set but were otherwise meaningless in relation to our focal question. The ability to manually exclude terms is in addition to the established exclusion criteria included in the algorithm which already ignores common terms such as “the”, “and”, “is” and others. It is possible to generate maps both with and without a thesaurus file although best practice recommends the use of a file generated uniquely for the data set as it is difficult to anticipate which terms may or may not reach the threshold count and percent mapping rule a priori (van Eck & Waltman, 2018).

Are there any fit indices?

There are no statistical fit indices that can be used to determine whether the solution generated by VOSviewer is “correct” or the “best fit” to the available data. This is because the program runs on an algorithm that uses an iterative process to generate the final solution which is based on multiple co-occurrence estimates (Waltman et al., 2010).

Unlike many well-known statistical methods such as confirmatory factor analysis (CFA) and cluster analysis, there are no fit indices. The purpose of Science Mapping is not to generate a “correct solution” but rather to visualize the relationship between terms. When using Science Mapping one is not trying to fit the data to a specific theory (as is the case with CFA) but rather the analyses are intended to assist in the uncovering of the intellectual structure of the field. In theory, the results are much more similar to an exploratory factor analysis than a CFA. In discerning the structure of the field, there are several opportunities for scholars to have input in the way in which the data is handled by the program and consequently on the results obtained. With this said, a scholar cannot directly influence where a term is mapped or where a cluster appears.

How well do clusters explain variation over time?

The question of whether clusters explain variation over time is somewhat mismatched to the bibliometric methodology. This is because the clusters are a *function* of time and are not assumed to be held constant across temporal periods. For example, using profile analysis one can test to see whether profiles are constant over time, profile membership overtime, and the amount of variance each cluster accounts for in a given dependent variable (Meyer & Morin, 2016; Morin & Meyer, 2016). These profiles are generated by the data at one time point, and then tested for their stability over time. Science Mapping on the other hand begins from scratch at each time point and does not test the stability of clusters across time. Rather the extent to which the content of the clusters is consistent can be assessed through systematic analysis of the clusters extracted and their respective terms (e.g., present of the term, threshold count, threshold count relative to other terms). Therefore it is possible to examine the stability of the clusters over time, but there is no measure of how well these clusters explain variation over time; they are a reflection of time themselves. With this said, scholars have acknowledge that using bibliometric analyses such as Science Mapping can be useful in uncovering the intellectual architecture of a field across time (Pasadeos, Phelps, & Kim, 1998), and benefits from being more subjective than qualitative reviews that often reflect the idiosyncratic interests and opinions of the author(s) (Lee et al., 2014; van Eck et al., 2010; Zupic & Čater, 2015).

Is “slice map” a technical term of something you developed for your study?

The present article is the first published piece to use the “slice map” technique. This term was introduced in this article although a similar analysis has since been published (Flis & van Eck, 2017) which traces the history of psychology as a field since 1950. The concept of slicing bibliometric data across time is not new (Ramos-Rodríguez & Ruíz-Navarro, 2004); however, the application of this idea to Science Mapping is a novelty of this study. Specific details related to how these slices were created are provided in Appendix A. Therefore, the present thesis pioneered

the possibility of temporally slicing up bibliometric data and visualising it to interpret changes in the focus of scholarly works across time.

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Chapter 3 Foreword

Consistent with the overarching goal of the present thesis, chapter 2 (article 1) presented a comprehensive review and synthesis of the individual work performance literature. In summarising the field, it is clear that individual work performance can be distinguished according to form (proficiency, adaptivity, and proactivity). Of the existing constructs, 54% are related to proficiency (individual and team member), 20% to adaptive performance, and 28% to proactive performance³. Additionally, illuminating the nomological network of performance demonstrated a dearth of scholarship examining the consequences of performance – particularly in relation to both adaptive and proactive performance. Building on these insights, I recommend future research consider multiple forms of performance simultaneously and attend to the consequences of performance.

Chapter 3 (article 2) addresses the aforementioned recommendations through a series of three empirical studies. In study 1, I examine the consequence of individual work performance on manager ratings of overall work performance. Specifically, I examine the incremental validity of proficiency, adaptivity, and proactivity in informing manager ratings of their subordinate's performance. Results demonstrate that each form of performance contributes unique variance in overall performance ratings.

Building on the finding that adaptive performance contributes uniquely to managers' assessment of subordinate performance, I integrate role congruity theory to examine whether adaptive performance is a gendered form of performance. Performance is said to be “gendered” when gender stereotypes shape the perceptions of the performance. For example, previous research has demonstrated that proactive performance is more strongly associated with men than women such that men are rewarded when they are proactive, but women are not (Lukyste et al. 2017). The underlying reason for this disparity in outcomes of proactive

³ Due to rounding, the sum total is 102%.

behaviour is differences in gender stereotypes. Whereas men are expected to be assertive, agentic, ambitious, and demonstrate willingness to take risks – all behaviours consistent with proactive performance – women are expected to be communal, kind, sensitive, and cooperative (Lyness & Heilman, 2006). Although women’s ascribed behaviours are inconsistent with proactive performance, they are consistent with the behavioural requirements of adaptive performance (Pulakos et al. 2000).

Lending on the initial field sample from study 1, I demonstrate preliminary support for the gendered nature of adaptive performance. Specifically, I demonstrate women who are rated high on adaptive performance also obtain higher overall work performance ratings than women who are rated as being low on adaptive performance. Interestingly, men rated high and low on adaptive performance did not differ significantly in their overall ratings. I built on these findings by employing two follow-up experimental vignette studies (studies 2a and 2b). Results provide additional support for the gendered nature of adaptive performance and suggest the underlying mechanism is enhanced perceptions of competence for role congruent performance.

Together, the studies included in chapter 3 address emergent areas of research on individual work performance (Figure 1).

Article 2. *Ascribed, Prescribed, and Emergent Roles at Work*



Note. Study 1 (blue box) examined the unique role of proficiency, adaptivity, and proactivity in informing assessments of overall work performance. Studies 2a and 2b (purple box) sought to understand the nature of adaptive performance by integrating role congruity theory.

Figure 1. **Focus of Chapter 3 – Consequences and Nature of Individual Work Performance & Adaptive Performance**

Ascribed, Prescribed, and Emergent Roles at Work

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Abstract

Individual work performance is one of the most common variables in organisational behaviour and industrial and organisational psychology research. While a great deal of research has examined the antecedents, we know relatively little about the consequences. Lending on role theory as a general framework, the first goal of this paper is to examine how different forms of performance – namely proficiency, adaptive, and proactive - contribute to supervisor's ratings of subordinate's overall performance. Using a sample of 96 supervisor-subordinate dyads (study 1) we demonstrate that all three forms of performance contribute uniquely to supervisor's assessment of overall performance. Building on these findings, we lend on role congruity theory to better understand the nature of adaptive performance, which has been most neglected in the literature. By integrating research on gender stereotypes and role theory, we hypothesise adaptive performance will be considered more role congruent when enacted by a female than when enacted by a male, resulting in asymmetrical outcomes. Using the same sample as study 1, we find support for our hypothesised moderation. In study 2, we replicate the findings in a sample of 66 undergraduate students. These results are further replicated and extended in experimental study 3 where data obtained from 48 working adults suggests the relationship between role congruent performance and asymmetrical outcomes is mediated by perceptions of competence which are higher when behaviour is role congruent.

Keywords: Individual work performance; role theory; gender stereotypes; task performance; adaptive performance; proactive performance; overall work performance.

Ascribed, Prescribed, and Emergent Roles at Work

All the world's a stage. And all the men and women merely players. They have their exists and their entrances. And one man in his time plays many parts. – William Shakespeare

I know everybody on this island has a role, on this island

So maybe I can roll with mine – “How Far I’ll Go”, Alessia Cara (Moana)

Individual work performance is one of the most commonly studied variables in organisational behaviour and human resource management (Bommer, Johnson, Rich, Podsakoff, & MacKenzie, 1995; Campbell & Wiernik, 2015). And with good reason given the assumption that individual work performance results in positive outcomes for individuals, teams, and organisations alike, it is logical that a wealth of knowledge exists in relation to its antecedents. Many studies have examined antecedents such as cognitive ability (Gonzalez-Mulé, Mount, & Oh, 2014), personality (Barrick & Mount, 1991; Neal, Yeo, Koy, & Xiao, 2011), and motivation (Grant & Rothbard, 2013; Yun, Takeuchi, & Liu, 2007), as well as contextual variables including work characteristics (Hammond, Neff, Farr, Schwall, & Zhao, 2011; Marinova, Peng, Lorinkova, Van Dyne, & Chiaburu, 2015), and leadership (Judge & Piccolo, 2004; Liu, 2001; Wang, Law, & Hackett, 2005).

With this said, our understanding of the consequences of individual work performance are far less developed (Campbell & Wiernik, 2015; Carpini, Parker, & Griffin, 2017; LePine, Erez, & Johnson, 2002). Although some scholars have contributed to our understanding of the consequences of individual work performance at work (e.g., Bommer et al., 1995; N. P. Podsakoff, Whiting, Podsakoff, & Blume, 2009; Tornau & Frese, 2013) much of this research has been narrow in focus, concerning itself with only a select few forms of performance (e.g., task performance, organisational citizenship behavior, proactive performance). To date, there remains a dearth in our understanding of how different forms of performance relate to important employee and organisational outcomes. Furthermore, those studies that do

investigate the consequences of performance often consider only one form of performance or compare it to individual task proficiency instead of considering more closely related forms of performance (Carpini & Parker, 2017). This means the literature requires a more in-depth understanding of how each form of performance relates to valued outcomes when considered simultaneously. We accomplish this by examining data obtained from 96 manager-subordinate dyads (Study 1). Results suggest different forms of performance contribute uniquely to manager's assessments of subordinate's performance.

Building on our need to understand the relationship between forms of performance and valued outcomes, the second purpose of the present study is to explore the role of adaptive performance in manager's assessments of subordinate's performance. We focus on adaptive performance because relatively little empirical attention has been paid to this form of performance, particularly in terms of its consequences (Carpini & Parker, 2017). Specifically, we integrate role congruity theory (Eagly & Karau, 2002; Eagly & Wood, 2011) to articulate how adaptive performance enacted by a female may be considered more role congruent than when enacted by a male and thus generate more positive career-related outcomes. Using the same data from study one, we find support for our hypothesis that role congruent performance is rewarded more for women; a pattern of results that we replicate and constructively extend in both experimental studies two and three.

Role Theory and Forms of Individual Work Performance

Many scholars have attempted to develop models and taxonomies of individual work performance to better understand its nature and dimensionality (Bartram, 2005; Borman & Motowidlo, 1993; Campbell et al., 1993; Griffin, Neal, & Parker, 2007; Johnson, 2003; Johnson, 2001; Katz, 1964; Motowidlo, Borman, & Schmit, 1997; Welbourne, Johnson, & Erez, 1998). These models have helped scholars to articulate the breadth of positive behaviours employees contribute to organisational effectiveness. While some models of

performance have been largely a-theoretical (Bartram, 2005; Campbell, McCloy, Oppler, & Sager, 1993), role theory has proven a useful foundation on which to build theory related to individual work performance.

Role theory has been a popular framework across allied research areas including sociology (Biddle, 1986; Goode, 1960; Sieber, 1974), marketing (Solomon, Surprenant, Czepiel, & Gutman, 1985), social psychology (Eagly & Wood, 2011), and organisational behavior and human resource management (Ilgen & Hollenbeck, 1991). Emerging from the metaphor of stage actors who are assigned “parts” or “roles”, role theory is primarily concerned with how individuals behave as a function of their identities and the social context (Biddle, 1986). As Welbourne et al. (1998, p. 541) explain, “roles are position within a social framework; however, they also are defined by the individuals who occupy them.”

Role theory has proven a useful framework for understanding the various roles employees enact as organisational members. The first to apply this framework to individual work performance was Katz (1964) who posited employees engage in prescriptive (in-role) and emergent role (extra-role) behaviour at work. In this essay, Katz identified several important roles employees engaged in (e.g., dependable role performance, innovative and spontaneous, protection, and cooperation) that he argued to be essential ingredients for organisational functioning. This idea was later the foundation on which organisational citizenship behaviours burgeoned (OCB; Organ, 1997; Organ, Podsakoff, & Podsakoff, 2006; Smith, Organ, & Near, 1983; Van Dyne, Cummings, & McLean Parks, 1995). In a similar vein, Welbourne et al. (1998) combined role theory and identity theory to identify five distinct roles employees enact at work. Those roles were: job (representing “in-role” or task performance), career, innovator (similar to proactive performance), team (similar to OCB-individual; Williams & Anderson, 1991), and organisation (similar to OCB-organisation). These various manifestations of role theory, as applied to the study of individual work

performance, are similar in their focus on the identities of the actors and the various roles the enactors manifest. With this said these models of individual work performance lack a consideration of the broader organisational context (Cappelli & Sherer, 1991; Johns, 2006) referencing only an amorphous “organisation” – one lacking specificity and defining characteristics.

This issue has been addressed through a complementary perspective of role theory which emphasises the context to a greater extent. From this perspective, it is the broader context that informs the roles enacted by organisational members (Ilgen & Hollenbeck, 1991). In their framework, Ilgen and Hollenbeck (1991) distinguished between established task elements and emergent task elements. Established task elements refer to those elements of a job that are formalised and generally written down, relying on predictable and static elements of work. On the other hand, emergent task elements are those that transpire as a function of the non-static nature of work and are seldom formally articulated. The extent to which work is made up of established and emergent elements is a function of the broader context. When the broader context is defined by stability and certainty, the established role is dominant with the reverse role distribution when the context is dynamic and uncertain (Ilgen & Hollenbeck, 1991).

A further extension of role theory as a function of the important characteristics of the organisational context is the framework proposed by Griffin, Neal, and Parker (2007). The authors developed a model of individual work performance made up of nine performance dimensions which distinguish between three levels of uncertainty and interdependence. The forms of performance are related to the level of organisational uncertainty (Wall, Cordery, & Clegg, 2002) and refer to the extent to which “inputs, processes, or outputs of work systems lack predictability” (Griffin et al., 2007; p. 329). When the link between inputs, processes, and outputs are predictable, established roles are effective and are manifested as proficient

performance. However, when the link becomes increasingly complex and unpredictable, emergent roles such as adaptive (adjusting to change) and proactive (self-initiating change) performance become increasingly important. The second dimension, interdependence, recognises the broader social network within which work is performed (Biddle, 1986) and the pathways through which performance is believed to contribute to organisational effectiveness. The authors propose performance can contribute to organisational effectiveness through the completion of individual tasks, working as part of a team, or to the broader social network.

An important outcome of lending on both uncertainty and interdependence at work in defining their framework is that this model of work performance is arguably the most comprehensive (Carpini & Parker, 2017; Griffin et al., 2007). Because this model is comprehensive, grounded in theory, and has been empirically validated (Griffin et al., 2007; Neal et al., 2011) we use it as an organising framework for the present study examining how different forms of performance (proficiency, adaptivity, and proactivity) contribute to overall perceptions of employee effectiveness. Consistent with the amount of research on each form of performance (Carpini et al., 2017), we begin with the fully prescribed role (proficiency), then consider the fully emergent role (proactive performance), then finally the somewhat emergent role of adaptive performance.

Proficiency. Griffin et al. (2007, p. 331) define proficiency as “the degree to which an employee meets the known expectations and requirements of his or her role” within the organisation. Prescriptive role requirements are articulated in job descriptions and are most commonly the focus of the formal appraisal process (Whiting, Podsakoff, & Pierce, 2008). As such, proficiency is a fully prescribed role within organisations. The reason for this being that individual proficiency is generally considered the basic measure of an individual’s contribution to the organisation’s objectives (Katz, 1964). Although there are many

frameworks designed to capture the dimensionality of individual work performance (e.g., Bartram, 2005; Campbell et al., 1993; Motowidlo et al., 1997; see Carpini & Parker, 2017 for review), all these models agree on one thing – task performance is an essential element of individual work performance.

Given individual proficiency is the most basic contribution one can make to the organisation, it is logical to expect these behaviors to inform important work-related outcomes including overall work performance. Several studies highlight the importance of task performance in determining supervisor ratings of overall performance (e.g., Barksdale & Werner, 2001; Motowidlo & Scotter, 1994; Werner, 1994; Whiting et al., 2008) and subsequent reward recommendations (Allen & Rush, 1998; Kiker & Motowidlo, 1999; Orr et al., 1989; Yun et al., 2007). Some research has also found task performance to be positively related to extrinsic career outcomes including salary increases, promotions, and career mobility (Allen, 2006; Bergeron, Shipp, Rosen, & Furst, 2013; Scotter, Motowidlo, & Cross, 2000). Consistent with these findings, we hypothesize the following:

Hypothesis 1: proficiency will be positively related to manager's assessment of employee performance such that employees exhibiting higher levels of proficiency will also receive better overall work performances scores.

Proactive Performance. The increasingly dynamic and uncertain business environment not only requires employees to complete formally prescribed tasks but necessitates employees active shaping of the organisation and its success (Crant, 2000; Grant & Ashford, 2008; Parker, 2000). Proactive work performance is defined as self-starting, change-oriented, and future-focused behavior (Parker, Williams, & Turner, 2006) directed toward the betterment of the organisation and its members (Griffin et al., 2007; Tornau & Frese, 2013). The agentic nature of proactive work performance represents a unique contribution that is distinct from other forms of performance because it is a fully emergent

work role. Whereas proficiency is included in formal job descriptions, proactive performance emerges as a function of uncertainty and dynamism within the context and employee initiative (Grant & Ashford, 2008).

Although scholars have conceptualised proactive work performance as a constructive behavior that generates value, this type of performance is also inherently risky as it challenges the *status quo* through change-oriented behavior (Grant & Ashford, 2008). As such, it is not surprising to find the evidence mixed in regards to the individual-level outcomes associated with this type of performance (Morrison, 2014). While some have reported proactive performance to be positively related to supervisor ratings (Grant, Parker, & Collins, 2009; Van Dyne & LePine, 1998; Whiting et al., 2008) and task performance (Thompson, 2005; Van Dyne & LePine, 1998), others have found no direct effect (e.g., Luksyte, Unsworth, & Avery, Derek, 2017; Nguyen et al., 2016), negative effects (Burris, 2012; Seibert, Kraimer, & Crant, 2001), or have highlighted critical boundary conditions including the content and timing of proactive performance (e.g., Whiting, Maynes, Podsakoff, & Podsakoff, 2012).

Despite the inconsistent findings in the literature, meta-analytic results suggests that proactive work performance is generally valued by supervisors (Tornau & Frese, 2013). This is most likely because proactive work performance generates long-term value (Frese & Fay, 2001) for the organisation (Morrison & Phelps, 1999; Van Dyne et al., 1995) and the constructive agentic nature of the behavior is generally desirable (Katz, 1964; Whiting et al., 2012). Furthermore, Seibert et al. (2001) suggest proactive performance signals a willingness and capacity for increased responsibility that could result in positive extrinsic career outcomes such as salary progression and promotions. Finally, proactive performance is also about shaping the broader context to meet the talents, needs, and values of the employee (Seibert et al., 2001). Consistent with person-environment fit theory (Edwards, Cable,

Williamson, Lambert, & Shipp, 2006; Greguras & Diefendorff, 2009), increased fit resulting from proactive performance should enable greater contributions to organisational functioning which then should be reflected in higher overall work performances. Therefore, we hypothesise the following:

Hypothesis 2: proactive performance will be positively related to overall work performances such that employees rated as being more proactive should also receive higher overall work performances.

Adaptive Performance. The majority of research on forms of performance and supervisor's assessment of overall performance has considered proficient and proactive forms of performance. However, scholars have increasingly called for greater attention to be paid to adaptive performance at work (Baard, Rench, & Kozlowski, 2014; J.W. Johnson, 2003; Jundt, Shoss, & Huang, 2015; Pulakos, Arad, Donovan, & Plamondon, 2000). The reason for this is that the modern business environment is seldom described in terms of stability and predictability. Rather, scholars and practitioners alike emphasize a fast-paced environment driven by both micro (e.g., changes project requirements or team membership) and macro (e.g., economic, technological, regulatory, structural) changes in work (Baard et al., 2014; Chan, 2001; Jundt et al., 2015; Parker, Van den Broeck, & Holman, 2017). Indeed, an analysis of jobs on O*NET suggests 99 percent of jobs require at least a moderate amount of adaptability and flexibility⁴ suggesting adaptive performance should be increasingly important in making judgements about an employee's overall performance.

Uncertain and dynamic work environments drive the need for employees to exhibit adaptive performance (Pulakos et al., 2000) - that is performance that accommodates and supports change (Griffin, Neal, & Parker, 2007). Research examining the outcomes of adaptive performance has demonstrated it to be positively related to group performance when

⁴ Data obtained from www.onetcenter.org. "Moderate" is equal to a score of 50 / 100.

task performance is interdependent (Nielsen, Bachrach, Sundstrom, & Halfhill, 2012) and to organisational indicators of effectiveness and efficiency (Spiro & Weitz, 1990; Walz & Niehoff, 2000). Adaptive performance is distinct from closely related constructs including the ability and willingness to adapt (Baard et al., 2014; Schmitt & Chan, 2014) and individual differences such as career adaptability (Savickas & Porfeli, 2012; Zacher, 2015) as none of these constructs are forms of performance (Campbell & Wiernik, 2015).

Given the inherent need for employees to adapt to changes in their work (Pulakos et al., 2002) and the tenants of social exchange theory (Cropanzano & Mitchell, 2005), we expect adaptive performance to be an important factor in predicting supervisors' overall assessment of performance. With this said, only two published studies have examined the role of adaptive performance in informing supervisor's assessments of performance. In the first study, MacKenzie, Podsakoff, and Fetter (1991) compared the relative value of altruism, civic virtue, courtesy, and sportsmanship in predicting managers' evaluation of insurance agents. Results of this analysis demonstrated that sportsmanship did not account for unique variance in the evaluations of managers in this sample. With this said, the construct of sportsmanship has been criticised for its antithetical and attitudinal, rather than behavioral nature (Carpini & Parker, 2017; Dalal, 2005) thus is an indirect test of the potential for adaptive performance to weigh on supervisors' assessments of employees. The second study is that by Nguyen, Johnson, Collins, & Parker (2016). This study involving 61 junior doctors and their supervisors did find that adaptive performance accounted for variance in supervisors' assessments of junior doctors. When taken together, the results suggest that employees who display adaptive performance are recognised and rewarded by supervisors, but simply being a good sport (Organ et al., 2006) about changes may not be sufficient to weigh on supervisors' assessments.

Adaptive performance is also likely to be reciprocated with higher overall work performance scores by supervisors because adaptive employees signal leadership potential. Being adaptive is an essential quality of a successful leader (Kozlowski, Gully, Nason, & Smith, 1999; Pawar & Eastman, 1997). This is likely due to two reasons. First, the nature of managerial roles which are generally characterised by highly fragmented work cycles and rapidly changing priorities (Hales, 1986). As such, demonstration of adaptive performance is likely to signal a good fit with future work demands in managerial roles. Second, leaders play an important role in the adaptive response of subordinates through their own adaptation and creating favourable conditions for adaptive action on the part of others (Burke, Stagl, Salas, Pierce, & Kendall, 2006; Griffin, Parker, & Mason, 2010). Thus the effective management of uncertain and dynamic work conditions in one's current job demonstrates an important and valued managerial quality. Taken together, adaptive performance in one's current job should be valued by supervisors and be reciprocated through formal systems.

Hypothesis 3: adaptive performance will have a positive effect on performance evaluation ratings, above and beyond those effects of both proficiency and proactive performance, such that greater levels of adaptive performance will result in higher overall work performances.

Gender Roles and Adaptive Performance

As previously discussed, performance is inherently connected to the person enacting it and as such the individual becomes a key element of the social context in which performance is evaluated and rewarded (Ilgen, Barnes-Farrell, & McKellin, 1993; Welbourne et al., 1998). Indeed, a principle element of role congruity theory is that individuals occupy social positions that hold inherent expectations for their own behaviors (Biddle, 1986). In defining one's social position within the broader context, researchers have found that gender is the most salient individual difference, even when other factors such as age and race are considered

(Fiske, Haslam, & Fiske, 1991). The importance of gender as a social marker is important given the ever growing participation rates of women in the workforce in labour markets in OECD countries (trend analysis 1990 to 2016; World Bank, 2017). With increased participation rates of women also comes a need for greater attention to be paid to the normative prescriptive and descriptive roles ascribed to both men and women; That is to say, men and women are subject to socially constructed beliefs about what they actually do and what they ought to do (Eagly & Karau, 2002; Heilman, 1983) which are “deeply rooted, widely shared, and remarkably resistant to change” (Heilman, Block, & Simon, 1989, p. 939).

Socially constructed gender roles are a key element of the role congruity theory (Eagly & Karau, 2002; Eagly & Steffen, 1984) which explains why men and women are evaluated and rewarded differently for the same behavior (Heilman & Chen, 2005; Kulik & Olekalns, 2012; Lovell et al., 1999). As Heilman and Chen (2005, p. 440) note, “the critical issue is not the sex of the targets, but rather the constraints of gender role prescriptions.” Whereas men are expected to be assertive, agentic, ambitious, have high self-esteem, and demonstrate a willingness to take risks; women are expected to be communal, kind, sensitive, friendly, patient, and cooperate (Heilman, Block, & Martell, 1995; Heilman et al., 1989; Prentice & Carranza, 2002). The vast majority of the existing literature examining gender role prescriptions and career-related outcomes points to the perceived lack of fit between general beliefs about successful leaders’ characteristics (e.g., assertive and decisive; Heilman et al., 1995) and women (Lyness & Heilman, 2006). Indeed, in a recent meta-analysis, Roth, Purvis, and Bobko (2012) found that while women were generally rated slightly higher than men on overall job performance, men still had higher promotion ratings. However, it is only recently that the literature has begun to consider specific performance dimensions in relation to gender role prescriptions.

In applying role congruity theory (Eagly & Karau, 2002) to different types of work performance, research has investigated proactive performance and normative gender roles. Several scholars have found proactive behaviors (creativity, innovation, and voice; Potočník & Anderson, 2016) to be ascribed more to men than women (Heilman & Chen, 2005; Proudfoot, Kay, & Koval, 2015) because of their stereotypically masculine nature, and subsequently rewarded more for men than women (Luksyte et al., 2017). These findings are explained by the perceived fit between proactive performance (change-oriented, self-initiated, future-focused; Parker et al., 2006) and the prescriptive roles of men, and conversely the perceived or stereotypically expected misfit between these behaviors and prescriptive roles for women. Indeed, this explanation is supported by Martell, Parker, Emrich, and Crawford (1998) who found participants described change agents as being more characteristically male than female.

Although there appears to be a stereotypical fit between the prescriptive roles of men and proactive performance, there may be a similar, albeit under-explored, fit between the prescriptive roles of women and adaptive performance. Whereas proactive performance is about being an agent of change (Parker et al., 2006), adaptive performance is about adjusting to change (Griffin et al., 2007). We contend that women's ascribed characteristics of being patient, cooperative, and communal (Lyness & Heilman, 2006; Proudfoot et al., 2015) are consistent with characteristics (e.g., being flexible, attentive to situational cues, and accommodating to the needs of others) facilitating adaptive performance. This is because adaptive performance is, in essence, about adjusting oneself to fit newly defined requirements and should be facilitated by the characteristics ascribed to women. For example, the introduction of a new team structure requiring individuals to work together in a new way will certainly require team members to cooperate with one another, and a certain degree of patience as individuals learn new roles and procedures.

The majority of the existing research on the extent to which role congruent behaviours are rewarded suggests role-congruent such as those stereotypically associated with women (e.g., being communal, and warm) behaviours are formally rewarded (Eagly, Karau, & Makhijani, 1995; Kray, Galinsky, & Thompson, 2002; Kulik & Olekalns, 2012; Luksyte et al., 2017). Given the conceptual fit between adaptive performance and gender stereotypes as well as the established research on being rewarded for engaging in role congruent behaviours in the workplace, we hypothesise the follow:

Hypothesis 4: Gender will moderate the positive relationship between adaptive performance and overall performance such that this link will be stronger for women than for men.

Positive Attributions of Role Congruent Performance

According to attribution theory, observers make inferences about the cause of another person's behavior and these interpretations inform the observer's reactions to the behavior (Kelley & Michela, 1980). Researchers have noted that the attributed cause of another's behavior can have a profound impact on the evaluation of the behavior. Early work applying attribution theory to supervisor's interpretations of subordinates' performance largely focused on individual task proficiency (Feldman, 1981; Green & Mitchell, 1979; Mitchell & Wood, 1980; Pence, Pendleton, Dobbins, & Sgro, 1982) and more recent research has applied attribution theory to organisational citizenship behaviours (Allen & Rush, 1998; Eastman, 1994; Halbesleben, Bowler, Bolino, & Turnley, 2010; Tepper, Duffy, Hoobler, & Ensley, 2004) and proactive performance (Grant et al., 2009).

To date, no published research has examined the attributions of adaptive performance at work. Specifically, we integrate attribution theory with research on gender stereotypes to posit two potential mechanisms through which role congruent adaptive performance impacts important employee outcomes. Lending on the role congruity literature, it is possible that

adaptive performance enacted by women will be attributed to different causes than when it is enacted by men and these differences will be responsible for the asymmetric outcomes associated with role congruent performance.

Based on attribution theory, we propose that employees exhibiting high levels of adaptive performance will be attributed higher levels of competency. This is because attributing performance to ability is one of the most typical attributions (Martinko, Harvey, & Dasborough, 2011) and the ability to adapt underpins ultimate adaptive performance (Jundt et al., 2015). Furthermore, integrating role congruity theory suggests that when adaptive performance is role congruent, attributions will be more positive (Eagly & Karau, 2002). This is consistent with previous research that has demonstrated that proactive performance enacted by men is more positively received than when enacted by women (Luksyte et al., 2017). Applying these arguments to adaptive performance, we contend adaptive performance is expected more from women because it requires greater degrees of flexibility and attentiveness to situational cues – all of which are behaviours associated with women more than men. Consistent with this line of argument, and we hypothesise the following:

Hypothesis 5a: When adaptive performance is role congruent (female-enacted), the enactor will be perceived to be more competent than when the performance is role incongruent (male-enacted); and

Hypothesis 5b: Perceived competence will mediate the relationship between role congruent performance and overall work performance outcomes.

While competence is a natural fit with attribution theory, it is also possible that adaptive performance will trigger other performance-specific attributions. For example, when examining organisational citizenship behaviors, scholars have found that prosocial (benevolent) attributions tended to result in higher performance ratings than those that were deemed to be motivated by impression management and/or instrumental motives

(Halbesleben et al., 2010; Tepper et al., 2004). As such, it is possible value-related attributions may function as a second pathway through which ascribed behaviour is evaluated.

Human values are defined as “transitional goals, varying in importance, that serve as guiding principles in the life of a person or a group” (Schwartz & Rubel, 2005, p. 1010). According to Schwartz’s circumplex model of values (Schwartz, 1994) there are four higher-order values: self-transcendence, self-enhancement, conservation, and openness to change. Of the four values, self-transcendence is other-focused and grounded in the interconnectedness between individuals (Schwartz & Sagiv, 1995). Self-transcendence is made up of two subordinate values: benevolence and universalism. Universalism is defined by an “appreciation, tolerance, and protection for the welfare of others”, whereas benevolence concerns the “preservation and enhancement of the welfare of people with whom one is in frequent personal contact” (Schwartz & Rubel, 2005, p. 1010). Self-transcendent values are conceptually similar to prosocial motivation which is defined as the desire to expend effort in the pursuit of helping or contributing to the welfare of others (Grant, 2007). It has been previously argued that those endorsing self-transcendent values or prosocial motivation are more willing to put the needs of others before themselves (Huseman, Hatfield, & Miles, 1987). International research has also identified sex differences in the extent to which individuals endorse values such that women endorse self-transcendent values to a greater extent than men (Schwartz & Rubel, 2005).

Lending on our proposition that adaptive performance is role congruent due to the match between the characteristics generally ascribed to women (e.g., communal and cooperative, Heilman, 2012; Koenig, Eagly, & Mitchell, 2011) and the nature of adaptive performance as a behaviour enacted to adjust oneself to the broader context, we propose observers of adaptive performance enacted by a female will attribute the behaviour to self-

transcendent values. These attributions to self-transcendent values will in turn be rewarded when making performance judgements behaviour because it is role congruent. Thus we hypothesise the following:

Hypothesis 6a: role congruent adaptive performance (female-enacted) will be ascribed to self-transcendent values more than role incongruent adaptive performance (male-enacted); and

Hypothesis 6b: ascribed self-transcendent values will mediate the relationship between role congruent performance and overall work performance outcomes.

Overview of Studies

In the following three studies, we examine the importance of adaptive performance in informing supervisors' assessments of overall work performance. Specifically, in study 1, we examine whether individual adaptive performance will account for variance in supervisors' assessments of overall work performance when considering both proficiency and proactive performance (Hypotheses 1, 2, and 3). Results of our analyses support the proposition that all three forms of performance account for unique variance in perceived overall work performance. Lending on role congruity theory, we also examine the extent to which the relationship between adaptive performance and overall work performance judgements is moderated by ascribed gender roles (Hypothesis 4). Results support the notion that females are rewarded for being highly adaptive whereas males are not. Study two replicates the previous findings in an experimental vignette study. Finally, study three examines the potential underlying mechanisms (perceived competence and self-transcendent values) explaining the observed effects (Hypotheses 5 and 6). Results suggest both perceived competence and ascribed self-transcendent values mediate the relationship between adaptive

performance and overall work performance; however, only competence is significant when both mediators are entered at the same time.

Study 1 - Method

Participants and Procedures

The sample was 196 full-time managers undertaking a part-time MBA course at a large Australian University. This sample was selected as those in management positions have the latitude to engage in a breadth of constructive job-related behaviors (Parker & Collins, 2010). Managers came from a wide variety of industries (e.g., telecommunications, education, construction, and banking) and functional areas (e.g., finance, general management, human resources). The sample was predominantly male (70.3%) with an average age of 34 years ($SD = 4.28$) who held a university degree (85%). On average, managers had 4 years of experience with their current employer ($SD = 3.76$) and 2.3 years of experience in their current roles ($SD = 2.22$). For clarity, we herein refer to the participating managers in this study as “employees” and their corresponding supervisors to retain the hierarchical distinction.

All participants completed a self-report survey which included, amongst other things, a measure of trait negative affect, job tenure and their demographic information.

Additionally, as part of a 360 developmental feedback program embedded in the MBA course, the employees forwarded an online survey link to a minimum of one direct manager. Of the 196 employees, 103 (53%) received ratings from at least one manager with 96 providing complete data (49%). The responding managers provided ratings of the employee’s proficiency, adaptivity, and proactivity, overall work performance, and relationship duration and frequency of contact with the ratee. The managers were repeatedly reminded to: rate how this person *actually behaves*, not how you think they ‘should behave’. Finally, the extent to which data collected from others is an accurate representation of another’s behavior is likely

to be dependent on the familiarity of the rater with the target's behavior. As such, all rating managers provided an assessment of their familiarity with the ratee's work behavior (P. M Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Finally, we used shortened scales that effectively balanced the goals of minimizing response bias (Rogelberg & Stanton, 2007), maintaining construct validity (Hinkin, 1998), all the while limiting survey fatigue and participant burden. The scales used in this sample are different from those in study 1 and thus this study constructively replicates and extends the previous work (Grant et al., 2009).

Measures

Manager ratings. All manager ratings of employee behavior were provided on a five-point frequency scale from 1 = *very infrequently* to 5 = *very frequently* unless otherwise noted. Consistent with the recommendations of Podsakoff et al. (2003), each of the types of performance was separated using a unique root sentence. For example, when assessing the employee's proficiency, managers were instructed, "These questions concern how the person carries out their work role", whereas when asked about adaptive performance managers were instructed, "These questions concern how the person acts in changing or difficult environments". It was important to draw manager ratings of both discrete forms of performance and overall appraisals because managers must be aware of each form of performance for it to impact their overall appraisals, but also because gender stereotypes will manifest in the assessment of behaviours.

Proficiency. Managers provided ratings of employee proficiency using three of the highest loading items from the previously validated in-role behavior scale (Williams & Anderson, 1991). The items were: "fulfils the responsibilities specified in their job description", "performs the tasks that are expected as part of his/her job", and "meets performance expectations" ($\alpha = .87$). The cronbach's alpha is similar to that reported in research using the full seven-item scale (Yun, Takeuchi, & Liu, 2007).

Proactive Performance. We measured proactive performance using three items from the Van Dyne and LePine (1998) measure of employee voice. We used a measure of voice because voice is the most commonly researched proactive construct (N. P. Podsakoff, Podsakoff, MacKenzie, Maynes, & Spoelma, 2014) and both primary research (Parker & Collins, 2010) and meta-analytical findings (Thomas, Whitman, & Viswesvaran, 2010) suggest it has significant overlap with closely related constructs (e.g., taking charge; Morrison & Phelps, 1999). We selected the three items to ensure construct validity (Hinkin, 1998) as voice is about maintaining one's knowledge base so that expressed opinions can be informative and constructive (*ratee keeps well informed about issues where his opinion might be useful?*), about speaking up about organisational issues (*ratee speaks up about organisational issues that need to be addressed?*), and in particular speaking up even when it is potentially risky (*ratee makes voice heard about organisational issues, even if in the minority?*; Morrison, 2011; Van Dyne & LePine, 1998; $\alpha = .96$).

Adaptive Performance. Three items were generated based on the “dealing with uncertain and unpredictable work situations” dimension of the Pulakos et al. (2000) taxonomy of adaptive performance, and were selected to ensure adequate domain coverage (Hinkin, 1995). This dimension of adaptive performance was deemed most relevant to the present research questions given its inherent connection to the broader context. The items were: “readily responds to unpredictable or unexpected events”, “adapt plans, actions and priorities to deal with changing situations”, and “provide focus and structure for him/herself and others in uncertain situations” ($\alpha = .86$).

Overall work performance. Seven items were used to capture managers' assessments of employees' performance (Black & Porter, 1991; Pearce & Porter, 1986). Supervisors were instructed to think about the overall performance of the employee and rate the employee relative to others in the same or similar jobs using a nine-point scale where 1

was “bottom 10%” and 9 was “top 10%”. Because this measure largely focuses on outcomes strongly related to individual task proficiency (e.g., quality of work and completion of work on time), we added two additional items, “level of innovation”, and “broader contribution” ($\alpha = .89$). These additional two items are consistent with previous scholarship contending employees contribute to organisational effectiveness through contributions in their jobs, work units, and broader organisations (Katz, 1964; Morrison & Phelps, 1999; Motowidlo & Scotter, 1994).

Control variables. Managers reported the duration of the working relationship with the ratee (the number of years), as well as the amount of contact via multiple modes (e.g., telephone, email, face-to-face; several times per day, less than once a month) as these may impact the opportunity managers have to observe different forms of performance (Grant et al., 2009).

Employee Measures

We controlled for age as previous studies have shown it to be related to ratings of employee proficiency (Ng & Feldman, 2008). We also controlled for job tenure as employees who have been in their jobs longer may also have accumulated more job-relevant knowledge enabling them to be more adaptive and proficient (Carpini et al., 2017). We also asked respondents to indicate the number of teams they supervise as an indirect measure of their hierarchical position. This is important because those of higher hierarchical position may have greater autonomy (Grant & Ashford, 2008) and demands to be adaptive. Finally, we also controlled for self-reported negative affectivity which has been shown to be a detrimental predictor of supervisor ratings (Grant et al., 2009; Nguyen et al., 2016).

Study 1 - Results & Discussion

The means, standard deviations, and correlations are presented in Table 1. As a first step, we sought to establish the distinctiveness of the two forms of performance and the

dependent variable (overall work performance) as previous research has shown halo effects can inflate the observed relationship between performance dimensions (Viswesvaran, Schmidt, & Ones, 2005). We began with our baseline model where all items loaded onto a single general factor. This model fit the data poorly (Kline, 2015; Marsh, Hau, & Wen, 2004), $\chi^2 (35) = 182.14$, $p < .001$, CFI = .78, RMSEA = .21, and SRMR = .10. We proceeded with two two-factor models, both of which yielded poor fits to the data. The first two-factor model combined proficiency and the overall work performance measure and included adaptive performance as a second latent factor, $\chi^2 (34) = 102.77$, $p < .001$, CFI = .90, RMSEA = .15, and SRMR = .07, $\Delta \chi^2 (1) = 79.37$, $p < .001$. The second included both adaptive performance and the overall work performance measure as one latent factor, and proficiency as a second latent factor, $\chi^2 (34) = 133.65$, $p < .001$, CFI = .85, RMSEA = .18, and SRMR = .08, $\Delta \chi^2 (1) = 48.49$, $p < .001$. Finally, we proceeded to the hypothesized model with three latent factors which fit the data very well, $\chi^2 (32) = 48$, $p = .04$, CFI = .98, RMSEA = .07, and SRMR = .05, $\Delta \chi^2 (3) = 134.14$, $p < .001$. Based on these results and existent theory (Griffin et al., 2007) we tested our hypothesis using the two discrete forms of performance and the overall work performance.

As a final check, we followed the recommendations of Fornell and Larcker (1981) to verify the convergent and discriminate validity of the scales by calculating the average variance extracted (AVE). In assessing the convergent validity, we calculated the squared average variance extracted per scale. Fornell and Larcker (1981) argued the AVE per construct should be greater than .50 suggesting that more variance in the underlying construct is accounted for by the indicators than in measurement error. The AVE for adaptive performance was .71, proficiency .71, and overall work performance .56 suggesting adequate convergent validity. In assessing the discriminate validity, we compared the AVE of each construct to the squared correlation between the constructs. The squared correlation between

adaptive performance and proficiency was .38, adaptive performance and overall work performance .44, and proficiency and overall work performance .55. Because the squared correlation between the constructs is less than the AVE of each construct, the indicators of each construct share more variance with their latent construct than with items of another construct. Together, these analyses provide a stringent test of the convergent and discriminate validity of the three scales used in our analyses.

Having established the distinctiveness of the three forms of performance, we conducted a two-step hierarchical regression to test hypotheses 1, 2, and 3. In the first step, we controlled for age, gender (Thomas et al., 2010), tenure (Grant & Ashford, 2008) in the current job, and negative affect (Grant et al., 2009; Nguyen et al., 2016); in the second step we entered the three forms of performance simultaneously. Results suggest that each form of performance contributes uniquely to supervisors' judgements (see Table 2). These results are among the first to concurrently test the relative contribution of proficient, adaptive, and proactive performance on supervisor's assessments of subordinate's overall performance.

Table 1*Means, Standard Deviations, and Bivariate Correlations*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Adaptive Performance	3.73	.72									
2. Proactive Performance	3.63	.88	.29**								
3. Proficient Performance	4.30	.58	.55**	.07							
4. Overall work performance	7.79	1.03	.58**	.17	.67**						
5. Gender ^a	.65	.48	.16	.03	.22*	.21*					
6. Age ^a	33.84	3.69	-.07	.10	-.22*	-.16	-.06				
7. Job Tenure ^a	2.15	1.73	-.06	-.15	.04	.03	.17	.21*			
8. Negative Affect ^a	1.54	.61	-.03	-.22*	-.01	.14	.16	-.20*	.00		
9. Familiarity	3.38	2.88	-.03	.10	.05	.08	-.02	.29**	.33**	-.06	
10. Contact	1.66	.96	.00	-.13	.00	-.06	-.06	.10	.20	.03	.22*

Note. $N = 97$, Means and standard deviations are provided for non-mean centered variables. ^a These variables were reported by the employee, all others were reported by the manager. Gender was coded: female = 0, male = 1. * $p < .05$, ** $p < .01$.

Table 2*Regression Results of Forms of Performance on Supervisor Appraisals of Overall Performance*

	Step 1				Step 2			
	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>b</i>	<i>SE</i>	β	<i>t</i>
Age	-.04	.03	-.13	-1.25	-.01	.02	-.02	-.27
Gender	.45	.22	.21	2.07*	.09	.16	.04	.54
Negative Affect	.02	.17	.01	.01	.20	.13	.12	1.60
Proficiency					.77	.16	.44	4.92***
Proactive Performance					.21	.09	.18	2.33*
Adaptive Performance					.45	.13	.32	3.57***
Overall <i>F</i>				2.19				18.03***
R^2_{adjusted}				.04				.52
<i>F</i> change								31.67***
R^2 change								.48***

Note. $N = 96$. Job tenure is not presented here because it had several missing values and the overall results are the same, although the statistical significance of proactive performance reaches $p < .01$ when job tenure is included. * $p < .05$, *** $p \leq .001$.

Hypothesis 4, that gender would moderate the relationship between adaptive performance and overall work performance scores was tested following the recommendations of Aiken and West (1991) and Dawson (2014) with the significant interaction visualized⁵. In testing this hypothesis, we controlled for age, gender, negative affect, and proficiency and entered both the centered term for adaptive performance and the interaction term (adaptive x gender). Consistent with hypothesis 4, the results support the notion that women benefit from adaptive performance to a greater degree than their male counterparts (see Table 3 and Figure 1). Interestingly, the extent to which men are rated as high or low on adaptive performance did not make a significant difference on their overall work performance. However, when women were rated as low on adaptive performance their scores were below those of their male counterparts, and when rated high on adaptive performance, ratings of female overall work performance scores were higher than their male comparison.

As an additional check, we also compared the means of adaptive performance, the overall work performance, and proficiency. Results demonstrated a marginal mean difference between men and women on proficiency, Men: $M = 4.39$, $SD = .46$; Women: $M = 4.13$, $SD = .73$, $t(96) = 1.91$, $p = .06$, and no difference for either adaptive, Men: $M = 3.82$, $SD = .62$; Women: $M = 3.57$, $SD = .86$, $t(96) = 1.61$, $p = .11$, or overall work performance, Men: $M = 7.94$, $SD = .70$; Women: $M = 7.50$, $SD = 1.43$, $t(95) = -2.08$, $p = .09$. These results suggest the observed effects are not due to differences in mean scores (Roth et al., 2012).

By examining the potential gendered nature of adaptive performance, we extend the inconclusive findings of study one by integrating a meaningful moderator into the

⁵ Visualisations were completed using the Excel files provided by Dawson at www.jeremydawson.co.uk/slopes.htm

Table 3
Regression Results for the Moderating Role of Gender on Adaptive Role Performance

	Model 1				Model 2			
	<i>b</i>	<i>SE</i>	<i>β</i>	<i>t</i>	<i>b</i>	<i>SE</i>	<i>β</i>	<i>t</i>
<u>Step 1</u>								
Age	.00	.02	-.00	-.01	-.01	.02	-.04	-.55
Gender	.03	.16	.01	.15	.01	.16	.00	.06
Negative Affect	.26	.13	.15	2.05*	.24	.12	.14	1.97*
Proficiency	.90	.16	.50	5.66***	.83	.16	.47	5.33***
Adaptive Performance	.44	.12	.31	3.58***	.73	.16	.51	4.48***
<u>Step 2</u>								
Adaptive Performance x Gender					-.54	.21	-.27	-2.61**
Adjust R-square – Adaptive				.51***				
Performance x Gender								
Δ Adjusted R-square					.03**			

Notes. $N = 96$. Due to the relatively small sample size and the fact that job tenure, contact, and relationship duration were not correlated with any of the variables of interest, we report the results without these controls. The results remained consistent regardless of whether various control variables were included or not suggesting the observed relationship is robust. This is also consistent with the recommendations of Carlson and Wu (2012) in relation to the use of control variables. * $p < .05$, ** $p < .01$, *** $p < .001$.

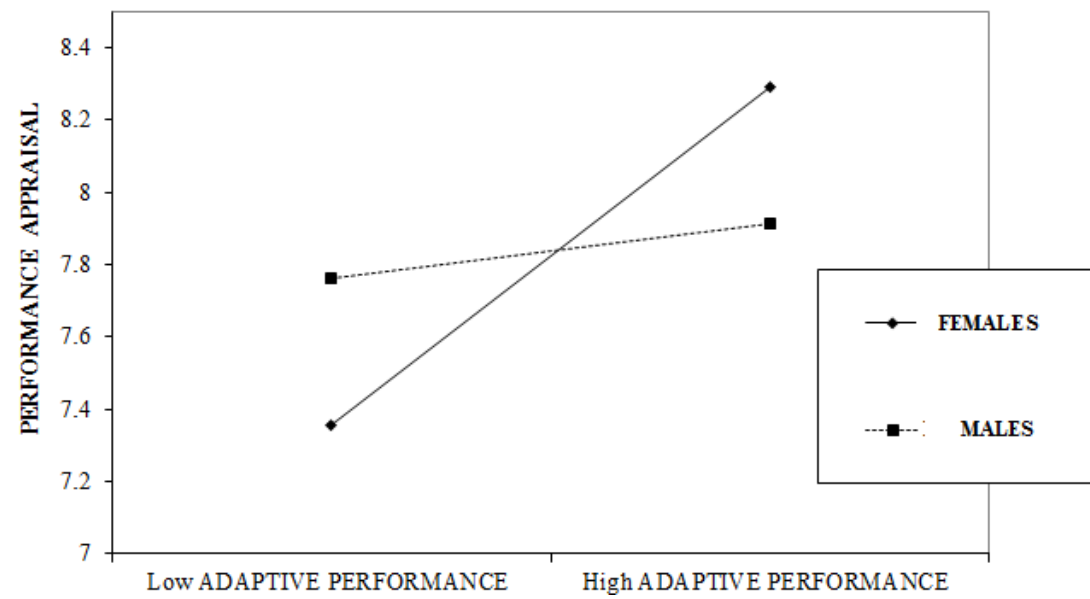


Figure 1: Gender Moderates the Relationship between Adaptive Performance and Manager Overall work performances

relationship between adaptive performance and managers' evaluations of subordinates' overall performance. Consistent with our hypotheses, we found that women with higher ratings on adaptive performance were rated higher by their supervisors, whereas there was no relationship between adaptive performance enacted by men and their overall work performance. These results extend existing theoretical and empirical work on gender stereotypes and role congruity (Heilman, 1983; Heilman & Chen, 2005) at work demonstrating a similar pattern of results as when men are proactive (Luksyte et al., 2017).

Overview of Experimental Vignette Studies

Having identified a general pattern of results using a multi-source field study of manager-employee dyads, we sought to replicate and extend these findings using two complementary experimental vignette studies where the gender of the paper-employee was manipulated. The first experiment (study 2a) sought to replicate and extend the general finding that women are appraised more positively by supervisors for being adaptive than their male counterparts. The extension involves the inclusion of two additional dependent variables: promotion opportunity (Allen & Rush, 1998), and recommended salary increase (Kiker & Motowidlo, 1999; Orr et al., 1989) which capture a greater breadth of extrinsic career-related outcomes (Judge, Cable, Boudreau, & Bretz, 1995). The second experiment (study 2b) sought to replicate and extend the findings of experiment one by testing a series of theoretically relevant mediators. Together, these two experiments provide evidence for the observed effects and test several mediators.

Study 2a – Method

Participants

A total of 83 undergraduate students enrolled in an introductory organisational behaviour unit at a large university in Australia participated in this study. Of these participants, 17 were excluded from our analyses due to failing more than one attention check

resulting in a final sample of 66. The attention checks were: one question asking participants to select “strongly disagree” which was embedded amongst other Likert-type items, the second asked respondents to recall the gender of the employee they were evaluating, and the third asked participants to recall the employee’s name (this information was presented on every survey page). The sample was predominantly male (52%) with a mean age of 19.77 ($SD = 2.61$). The participants represented diverse ethnic groups: 46% Caucasian, 42% Asian, 1% Black, 1% Latin, 2.2% Arab, and 4.3 % mixed (3.5% missing). The majority (64%) were currently or recently (last six months) employed and had experience in a wide variety of industries including hospitality and tourism (25%), retail (28%). The vast majority of participants (78%) also had at least some experience participating in performance appraisals in the past.

Design and Procedure

We used a between-subjects vignette study to test the hypotheses (Aguinis & Bradley, 2014). Consistent with role congruity theory and gender stereotypes, we experimentally manipulated whether adaptive performance was role congruent by presenting the focal employee as either a White female (“Anne Baker”, role congruent) or White male (“George Baker”, role incongruent). We selected “Anne” and “George” as previous research has demonstrated these to be stereotypically White names for a male and female (Luksyte, Waite, Avery, & Roy, 2013). The vignettes only described high adaptive performance as studies one and two showed women to benefit most from high adaptive performance and thus was consistent with the notion that adaptive performance is potentially gendered. In generating the vignettes, we integrated the three adaptive performance items from studies one and two and supplemented them with an additional three items derived from the taxonomy of adaptive performance by Pulakos and colleagues (2000) resulting in six adaptive performance stimuli

(presented in Appendix A). Because studies one and two both used full-time managers, the focal employee in the vignettes was described as a sales manager.

The vignette was pilot tested on a sample of 9 subject matter experts (SMEs). The SMEs were asked to read the vignette and indicate the extent to which they agree that the focal employee was highly adaptive using a five-point Likert-type scale ranging from 1 (“*strongly disagree*”) to 5 (“*strongly agree*”). Results indicate full consensus ($M = 5$, $SD = 0$) that the vignette adequately represented high employee adaptive performance.

Participants accessed the study online and were randomly assigned to one of the two conditions. Having accessed the online study, participants were informed they would be randomly assigned to provide their judgements of a focal employee at “Gateway Teleco Services Inc.” which was described as an up-and-coming leader in the telecommunications industry. Consistent with role theory (Griffin et al., 2007), the organisation’s business environment was described as “fast-paced”, “risky”, and “unpredictable” to ensure adaptive performance would be salient within the work context. Following the description, participants read a short account of the focal employee’s adaptive performance (Griffin et al., 2007; Pulakos et al., 2002), after which participants provided their ratings of the theoretical mechanisms and dependent variables.

Measures

We included the same six item measure of overall performance as previously described (Ashford & Black, 1996; $\alpha = .75$). Building on previous research, we also included two additional dependent variables: promotion opportunity (Allen & Rush, 1998) and proposed salary increase (Orr et al., 1989). Promotion opportunity was assessed with the following item, “assuming there was a leadership position coming up at Gateway Teleco Services Inc. what is the likelihood that “Anne/George” will be promoted to a higher position?”, adapted from previous research (Greenhaus, Parasuraman, & Wormley, 1990).

Participants were asked to provide their suggested pay increase for the employee given an annual salary of \$78,980 (data obtained from O*NET “sales manager”). Responses were open ended.

As a manipulation check, we included three items from the adaptive ($\alpha = .89$) and proficient ($\alpha = .78$) performance dimensions of the Griffin et al. (2007) scale, as well as a question asking respondents to recall the gender of the focal employee. As a final check, we asked participants to briefly explain what they thought the study was about. None of the participants identified gender and performance as the focus of the present work.

Results and Discussion

The means, standard deviations, and bivariate correlations between focal constructs are presented in Table 5. We conducted a one-way ANOVA to test for differences between the two conditions. The manipulation checks demonstrated that both the male and female conditions (female: $M = 4.36$, $SD = .60$; male: $M = 4.58$, $SD = .62$) were perceived equally in terms of proficiency $F(1,64) = .002$, $p = .97$; however, the female condition ($M = 4.81$, $SD = .33$) was rated higher on adaptive performance than the male condition ($M = 4.58$, $SD = .62$) $F(1,64) = 3.93$, $p = .05$.

Consistent with our hypotheses, promotion opportunity $F(1,64) = 8.91$, $p < .01$, and salary increase $F(1,64) = 3.96$, $p = .05$ were both statistically higher in the female high adaptive performance condition (promotion opportunity: $M = 4.44$, $SD = .61$; salary increase: $M = 2832.58$, $SD = 846.77$) than the male condition (promotion opportunity: $M = 4.03$, $SD = .49$; salary increase: $M = 2358.63$, $SD = 1088.52$) but there were no observed differences in the overall work performance $F(1,64) = .24$, $p = .63$ (female: $M = 7.22$, $SD = .66$; male: $M = 7.07$, $SD = .71$). Although participants were randomly assigned, we verified there were no systematic gender effects. Results show no difference between male and female participants across any of the variables.

Table 4*Means, Standard Deviations, and Bivariate Correlations*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. Overall work performance ^a	7.16	.68				
2. Promotion Opportunity	4.26	.59	.53***			
3. Salary Increase ^b	2617.15	985.53	.20	.25*		
4. Adaptive Performance	4.71	.49	.32**	.19	.07	
5. Proficiency	4.36	.57	.64***	.48***	.17	.44***

Note. $N = 66$, ^a = ratings provided on a nine-point scale, ^b = salary increase was a continuous monetary variable. All other scales used a five-point scale. * $p < .05$, ** $p < .01$, *** $p < .001$.

Furthermore, the inclusion of additional career-related outcomes of performance, namely promotion opportunity and salary increase recommendations (Allen & Rush, 1998; Kiker & Motowidlo, 1999; Orr et al., 1989), are useful extensions of the existing model and more fully represent the full spectrum of extrinsic career-related outcomes (Judge et al., 1995). Our results suggest that role congruent performance may benefit the individual above and beyond overall work performance and may even translate to more extrinsic outcomes as promotions and salary increases.

Study 2b

The first experiment demonstrated asymmetries in the reward recommendations for women high on adaptive performance. With this said, there are still little understanding of the underlying mechanisms explaining this effect. In this experiment, we replicate our previous findings in a different sample and simultaneously extend our previous field and experimental findings by testing the underlying mechanisms.

Participants

The participants for this study were 48 adults recruited through Amazon's Mechanical Turk (MTurk workers). We used a sample of MTurk workers because previous research has demonstrated they are more attentive to instructions than College students (Hauser & Schwarz, 2016) and because replicating in a different sample may increase the validity of results (Landers & Behrend, 2015). Verifying the replicability of our findings in a non-student sample is essential as the gender stereotype research has been widely criticised for finding effects in student samples but not being able to replicate them using working adults (Bretz, Milkovich, & Read, 1992). Participants were compensated \$2.00 USD for approximately 20 minutes of their time. Previous research has demonstrated that compensation levels do not systematically alter the quality of data obtained from MTurkers (Buhrmester, Kwang, & Gosling, 2011).

Participants were limited to those in the United States of America (97%) and Canada (3%). The participants were predominantly male (69%), with a mean age of 43.67 years ($SD = 10.58$). The majority were Caucasian (90%) with the remaining participants being of Asian descent. The participants were largely currently or recently (within the last six months) employed (92%) and represented a wide variety of industries (e.g., information and communication technology, retail and customer service). The vast majority (94%) of participants were at least somewhat familiar with performance appraisals.

Design and Procedure

We utilised the same between-subject design as in the previous study and participants followed the same procedure. The only difference between the two studies was the presentation of the mechanisms between the viewing of the vignette and the judgements on the focal employee's performance, promotion opportunity, and recommended salary increase.

Measures

All the measures for overall performance ($\alpha = .86$), promotion opportunity, salary increase recommendation, adaptive performance ($\alpha = .91$), and proficiency ($\alpha = .83$) were the same as the previous study. The mechanisms and their associated items were randomized to control for order effects. All mechanisms were rated using the same five-point Likert-type scale ranging from 1 ("*strongly disagree*") to 5 ("*strongly agree*").

Perceived competence. Existing measures of perceived competence were generally single items (e.g., Luksyte et al., 2017). However, for the purpose of the present study we used three items to measure perceived competence which allowed us to calculate an internal reliability coefficient. The items were: competent, knowledgeable, and capable ($\alpha = .86$).

Assumed self-transcendent values. Because participants were making attributions about the assumed self-transcendent values of the employee described in the vignette, existing scales of prosocial motivation (Rioux & Penner, 2001) and self-transcendent values

(Schwartz & Sagiv, 1995) were too broad for this study. Thus, we generated three items derived from our theoretical arguments as to why adaptive performance may be gendered. The items were “Anne/George values..”: harmony in the workplace, what is best for the work unit, and working as a team ($\alpha = .79$).

Results and Discussion

Means, standard deviations, and correlations are presented in Table 5. We tested for mean differences using a one-way ANOVA. First, we examined the manipulation check to see if a similar pattern emerges as in the previous study. In terms of proficiency, the means between women ($M = 4.73$, $SD = .46$) and men ($M = 4.48$, $SD = .46$) was marginally significant $F(1,46) = .3.68$, $p = .06$, $\eta^2 = .07$, and the difference between women ($M = 4.88$, $SD = .38$) and men ($M = 4.59$, $SD = .59$) for adaptive performance was statistically significant, $F(1,46) = 4.06$, $p = .05$, $\eta^2 = .08$. Second, we sought to replicate the findings from the previous study, namely those of the dependent variables of overall work performance, promotion opportunity, and recommended salary increase. Results supported a difference in both overall work performance $F(1,46) = 8.92$, $p < .01$, $\eta^2 = .16$ and promotion opportunity $F(1,46) = 9.16$, $p < .01$, $\eta^2 = .17$, but not for the recommended salary increase $F(1,46) = .57$, $p = .45$. These results partially replicate the findings of the previous study with consistent findings for promotion opportunity but inconsistent findings across the overall work performance and proposed salary increase criteria. Whereas women engaging in role congruent behaviour were rewarded with larger salary increases in study 2a, this finding was not replicated in the present sample. Conversely, women high on adaptive performance were rated higher than their male counterparts in the present study, but this finding was not observed in study 2a involving a student sample.

With that said, all the means of the dependent variables were consistent with our predictions, thus it is possible these differences did not reach significance due to the

Table 5*Means, Standard Deviations, and Bivariate Correlations*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	7
1. Overall Work Performance ^a	7.28	.77						
2. Promotion Opportunity.	4.42	.58	.58***					
3. Salary Increase ^b	3137.06	811.30	.22	.70				
4. Competence	4.66	.48	.70***	.56***	.31*			
5. Self-Transcend Values	4.48	.49	.47***	.31*	.27	.61***		
7. Adaptive Performance	4.74	.51	.60***	.35*	.19	.70***	.44**	
8. Proficiency	4.61	.47	.59***	.50***	.33*	.69***	.56***	.66***

Note. $N = 48$. ^a = ratings provided on a nine-point scale, ^b = salary increase was a continuous monetary variable. All other scales used a five-point scale. * $p < .05$, ** $p < .01$, *** $p \leq .001$.

relatively small sample employed in this study. These differences across samples may be an artefact of using student samples and attempting to replicate findings in a sample of working adults (Bretz et al., 1992). Finally, we verified whether male and female participants systematically differed in their ratings and found no evidence of this suggesting both groups have similar cognitive processes.

Having limitedly replicated the previous study, we sought to examine the potential mechanisms by first conducting one-way ANOVAs to identify mean differences in the proposed mediators, and second, we followed the recommendations of Hayes and Preacher (2014) to test for mediation. Consistent with our theoretical arguments, adaptive women were perceived to be more competent $F(1,46) = 10.76, p < .01, \eta^2 = .19$, and were ascribed more self-transcendent values $F(1,46) = 5.36, p = .03, \eta^2 = .10$ than adaptive men.

Building on these results, we employed the bootstrapping method (Hayes & Preacher, 2014; Preacher & Hayes, 2004; bootstrap = 20,000) to test our mediation hypotheses in relation to both overall work performance scores and promotion opportunity (male adaptive performance condition – role incongruent = 0, female adaptive performance condition – role congruent = 1). The first model tested the proposed mediation in relation to overall work performance scores as mediated by perceived competence. Logistic regression analysis revealed a non-significant direct effect of role congruent performance on overall work performance scores, $b = .12, SE = .17, p = .46, 95\% CI -.21 - .46$. However, there was a direct effect of role congruent performance on perceived competence $b = .37, SE = .12, p = .005, 95\% CI .12 - .62$ and the relative indirect effect was significant as the bootstrap interval did not include zero, $b = .42, SE = .17, 95\% CI .15 - .82$. Our second model tested the proposed mediation but examined ascribed self-transcendent values instead. The logistic regression analysis revealed a marginally significant direct effect, $b = .38, SE = .20, p = .07, 95\% CI -.03 - .78$. There was a marginally significant main effect of role congruent performance on

prescribed self-transcendent values, $b = .27$, $SE = .13$, $p = .05$, 95% CI .00 - .54 and the relative indirect effect was significant, $b = .17$, $SE = .11$, 95% CI .01 - .46. Thus based on these results, we conclude that the effect of role congruent performance on overall work performance scores is mediated by perceptions of competence and ascribed self-transcendent values.

We extended our analyses by testing the unique effect of our proposed mediators using simultaneous mediation by multiple variables (Preacher & Hayes, 2008). Employing the bootstrapping method (20,000 samples) revealed a significant indirect effect of role congruent performance on overall work performance scores through perceived competence $b = .42$, $SE = .18$, 95% CI .12 - .86, as expected. The indirect effect through ascribed self-transcendent values was no longer statistically significant $b = .00$, $SE = .08$, 95% CI -.17 - .18.

Next, we followed the same procedure as described above to examine the potential for role congruent performance to predict promotion opportunity through both competence and ascribed self-transcendent values. The first model examined perceived competence as the mediator. The results of a logistic regression did not demonstrate a main effect of role congruent performance on promotion opportunity, $b = .17$, $SE = .15$, $p = .25$, 95% CI -.12 - .47; however, the relative indirect effect of role congruent performance on promotion opportunity through perceived competence was significant, $b = .23$, $SE = .09$, 95% CI .09 - .44. The second model examined ascribed self-transcendent values as the mediator. The main effect of role congruent performance on promotion opportunity was marginally significant, $b = .32$, $SE = .16$, $p = .05$, 95% CI .00 - .64, as was the relative indirect effect, $b = .08$, $SE = .06$, 95% CI .00 - .25. Consistent with our previous findings in relation to overall work performance, perceived competence fully mediated the relationship between role congruent performance and promotion opportunity, $b = .24$, $SE = .10$, 95% CI .08 - .49, whereas

ascribed self-transcendent values did not, $b = -.01$, $SE = .06$, 95% CI $-.16 - .08$. To summarize, the mediation analyses demonstrate that perceived competence mediated the relationships between role congruent performance and both overall work performance scores and promotion opportunity.

The results of this second experimental study partially replicated and constructively extended the findings of both our previous field (study 1) and experimental study (study 2a) about how adaptive performance is evaluated differently when enacted by female and male employees. The results of this study provide additional evidence that women are rewarded more than men for being adaptive at work, particularly in terms of higher overall work performance scores and increased promotion opportunity. While adaptive women are perceived as more competent and ascribed more self-transcendent values, results of our mediation analyses demonstrate that perceived competence mediates the relationship between role congruent performance and both overall work performance scores and promotion opportunity. These results are the first to document the mediating processes through which role congruent performance impacts important employee outcomes.

General Discussion

The present study sought to inform our understanding of how different forms of individual work performance (proficiency, adaptivity, and proactivity) inform supervisors' assessments of subordinates' overall work performance. In answering this question, we make two noteworthy contributions to the literature. First, we address an important gap by seeking to understand how different forms of performance relate to supervisors' ratings of overall performance. This is essential as very few studies have considered different forms of individual work performance concurrently (Carpini et al., 2017; see Nguyen et al., 2016 for exception) and thus our understanding of the relative contribution of each form is limited. Second, we highlight the important role of adaptive performance in informing supervisors'

judgements of overall work performance. This is essential as few studies have considered the importance of this form of performance, particularly within an appraisal and reward setting. Furthermore, our contribution is bolstered through our integration of role and role congruity theories to explain differential pay-offs for women and men when engaging in adaptive performance. Taken together, this work contributes to our understanding of the dimensionality and nature of individual work performance.

In relation to the dimensionality of individual work performance, the results of the present study are consistent with our hypotheses that each form of individual work performance will have a significant main effect on supervisors' judgements of overall work performance. This finding is particularly important because the vast majority of the existent literature has focused on proficiency, and more recently on proactivity, with few studies considering the two concurrently, and only one published study considering proficiency, proactive, and adaptive performance simultaneously (Nguyen et al., 2016). The finding that proficiency is the strongest predictor of supervisors' ratings of overall performance is consistent with a large body of research in this area (N. P. Podsakoff et al., 2009). This is consistent with the notion that supervisors are likely to consider the formal requirements of a job when evaluating the extent to which job incumbents contribute to organisational success (Campbell et al., 1993; Johnson, 2001). Additionally, the finding that proactive performance is also valued by supervisors is consistent with much of the research on this form of performance (Crant, 2000; Morrison, 2011). However, it is interesting to note its comparatively smaller contribution when considered within the context of proficiency and adaptive performance. This may be due to the risky nature of proactive performance such that it may not always be appreciated by managers (Bolino, 1999; Grant & Ashford, 2008). Together, these results provide additional support for the multidimensionality of individual

work performance and the need to distinguish between adaptive and proactive forms (Carpini et al., 2017; Griffin et al., 2007; Neal et al., 2011; Spitzmuller & Van Dyne, 2013).

Our findings are also particularly interesting in light of those of Nguyen and colleagues (2016) who did not observe a main effect of either proficiency or adaptive performance on supervisors' ratings of overall performance, but did observe one for proactive performance. The inconsistencies in these findings may be at least partially reconciled due to sample and context differences. While the present study was conducted with managers across a variety of industries, the work of Nguyen et al. was conducted in the emergency department of a large hospital. Given the inherent uncertainty of emergency medicine, it is possible that under such extreme conditions the ability to adapt effectively will be most salient to observers. It is also possible that under extreme levels of uncertainty, the opportunity to engage in proactive behaviours is attenuated by the broader context. Thus, it is possible under such extreme working conditions that effective adaptation is a precursor to proficiency as demands continuously fluctuate. On the other hand, most managers will not experience the same level of extreme uncertainty that an emergency department offers and thus may have greater opportunity to enact various prescriptive and emergent roles.

Given so few studies have examined the relationship between various forms of performance and supervisors' assessments of subordinate overall performance, we conducted a series of simple post-hoc regression analyses to further tease the relationships apart. As expected, when we include proficiency along with either proactive or adaptive performance, the standardised beta for both emergent forms of performance increase significantly (.09 and .08 respectively) suggesting the two have significant overlap with one another. This also highlights the need for caution when interpreting results that do not include the full spectrum of performance as the observed effects may be larger than expected due to the omission of one of the forms of performance. Finally, it is important to interpret the relative size of the

coefficients with caution as it is possible the context will determine the relative contribution of each of these forms of performance on supervisors' ratings (Griffin et al., 2007).

In relation to the nature of individual work performance, the present study contributes to our understanding by putting the spotlight on adaptive performance. Out of the three forms of performance, adaptive performance has received very little theoretical and empirical attention (Carpini & Parker, 2017). By lending on insights generated from the application of role congruity theory (Eagly & Wood, 2011) to proactive and proficient performance (Heilman & Chen, 2005; Luksyte et al., 2017; Proudfoot et al., 2015), we articulated a theory of adaptive performance such that it would be role congruent for women, who are believed to be communal and cooperative, and role incongruent for men, who are ascribed more agentic characteristics. The results of our field study and two follow-up experimental studies provide support for these propositions such that women who engaged in high-levels of adaptive performance systematically received greater extrinsic rewards than their male counterparts.

These results are particularly interesting in light of established research examining the extent to which helping and innovative work behaviours are ascribed to men and women. In a series of studies, Heilman and Chen (2005) found men were rewarded more for their helping behaviours whereas women were not; whereas withholding helping negatively impacted the evaluations of women but not men. The authors explained these findings by arguing role congruent performance is not rewarded whereas not behaving consistently with role expectations would result in retribution. Although these findings are robust, they are contrary to those observed by Luksyte et al. (2017) who observed innovative work behaviour was positively assessed when enacted by a male, for whom the behaviour is considered role congruent, but did not impact performance evaluations for women, for whom the behaviour is role incongruent. The present findings are more in-line with the latter findings, suggesting that perhaps the form of performance and level of contribution may be boundary conditions

of the application of role congruity theory to forms of individual work performance. Thus, women engaging in highly adaptive performance may be one of few occasions where role congruent performance is systematically rewarded.

Interestingly, the majority of research lending on role congruity theory seeks to explain why women occupy less leadership positions than men (Eagly & Karau, 2002; Heilman, 1983; Lyness & Heilman, 2006). The resulting perspective often points to the perceived lack of fit between the ascribed characteristics of women and the prescribed roles of leaders (Heilman, 1983) and point to the “think-manager think male” stereotype (Koenig, Eagly, & Mitchell, 2011). Our findings also contribute to this discussion by suggesting women who engage in adaptive performance may be perceived more likely to be promoted than their highly adaptive male counterparts, despite the gender-role misfit. This suggests that the application of the role congruity theory to explain differential pathways through which men and women ascend organisational hierarchies may be more complex than previously thought and depend on the form of performance (Tharenou, 1997; Tharenou, Latimer, & Conroy, 1994). Indeed, it is possible that women who are highly adaptive at work may be rewarded with higher overall work performances which may assist them in securing an internal career sponsor, which has been demonstrated to be related to both career progression and salary (Ng, Eby, Sorensen, & Feldman, 2005).

Finally, the present study is one of few that explicitly test the underlying mechanisms relating role congruent performance and its asymmetrical outcomes. Our results showed mean differences between role congruent and role incongruent performance such that women engaging in adaptive performance were perceived as more competent and more self-transcendent than men. When considered together, our results suggest competence fully mediates the relationship between role congruent performance and extrinsic outcomes. These results complement those of Heilman and Chen (2005) who did not find mean differences on

perceived competence between men and women engaging in helping behaviour, but did observe a mean difference in interpersonal civility suggesting the effect is mediated by increased perceptions of interpersonal regard as opposed to competence. Together these results suggest that role congruent performance will result in asymmetrical outcomes through differing mechanisms that are aligned with the form and level of contribution of the behaviour. Given our measure of adaptive performance is largely task-oriented, it is logical to expect perceptions of competence to be particularly important. Similarly, helping is by virtue of its nature an interpersonal construct (P. M. Podsakoff, MacKenzie, Paine, & Bachrach, 2000; Van Dyne et al., 1995), thus a relational mediator is logical. However, this may not be the case if more interpersonal forms of adaptive performance are included such as sportsmanship and organisational citizenship behaviour directed at the supervisor (Carpini & Parker, 2017).

Despite the contributions of this study there are several notable limitations. First, in relation to study 1, performance and overall appraisals were provided by employees' managers at a single time point which means our results are limited by common method bias. With this said, our results did show that managers could distinguish between the various forms of performance, and these distinctions meaningfully accounted for variance in their overall appraisals of employee performance. There is an argument to be made that using a single source for the assessment of specific work behaviours (forms of performance) as well as the judgement of overall work performance is indeed sensible because the different behaviours must be visible and salient to the observer making the appraisals for them to weigh on final judgements of overall work performance. Thus, using the same source (supervisors) for both ratings may be most appropriate to the present research question (Grant et al., 2009; Grant & Rothbard, 2013).

A second limitation of the present research is that it has focused uniquely on forms of performance and has not considered the relative levels of contribution (Griffin et al., 2007). Recognising that employees can contribute to organisations through their specific jobs (e.g., adapting to change in how their work is done), in their work units (e.g., adapting to how their work unit operates), and in their organisations more broadly (e.g., adapting to changes in organisational structure) may also be informative in both understanding the relative contribution of different forms and levels of contribution to supervisor overall work performances and to the gendered nature of performance. Indeed, research has already begun testing this proposition; research by Whiting et al. (2008) has demonstrated that voice, helping, and loyalty contribute to supervisor ratings of performance uniquely. Elaborated tests of these findings would be informative, particularly considering contextual factors such as uncertainty and interdependence that may accentuate or attenuate these relationships (Carpini et al., 2017). For example, when interdependence is low then supervisor ratings are likely to be more heavily influenced by task proficiency as opposed to team member proficiency; whereas when interdependence is high, then both task and team member proficiency may play larger parts in informing supervisor's overall assessments of employees (Van der Vegt & Van de Vliert, 2003).

A third limitation is in relation to the experimental work which did not account for low levels of adaptive performance because the behaviour of the paper-people described in the vignettes was not manipulated. As previously noted, scholars have observed differential patterns when examining both high and low levels of OCBs (Heilman & Chen, 2005) and proactive performance (Luksyte et al., 2017) suggesting future research examining high and low levels of adaptive performance would be informative. For example, similar to how men are penalised for not behaving proactively (Luksyte et al., 2017), it is possible women who are not adaptive will also be penalised to a similar extent. This is certainly consistent with the

interaction observed in the field sample (study 2), although our results can only postulate this effect. Furthermore, we adopted a between-subject design to demonstrate proof of concept; however, future research should replicate this work using a within-subject design where participants view and rate men and women across different levels of adaptive performance (Aguinis & Bradley, 2014; Heilman & Chen, 2005).

The present study has important implications for all organisations. Managerial jobs in particular are highly complex, unpredictable, and interdependent (Lenney, Mitchell, & Browning, 1983) which make defining the criteria for good performance difficult. Our finding that all three forms of performance contribute uniquely to supervisor's assessments of employee performance is important as organisations can take appropriate steps to engender and facilitate these forms of performance. For example, research has highlighted the importance of knowledge and skill for all forms of performance (Carpini et al., 2017) suggesting that organisations should invest in training and upskilling their workforce to support all three forms of performance.

A further confounding issue is that managerial roles face high evaluation ambiguity because "the degree to which tasks and objectives can be defined and performance measured" (Auster & Drazin, 1988, p. 217) is limited and thus stereotypes and other cognitive biases can confound evaluation decisions (Davison & Burke, 2000; Dipboye, 1985). Additionally, appraisers should be trained to recognise the different types of employee performance and thus appropriately reward them through formal and informal processes. While the majority of the existent literature has focused on proficiency and proactivity in relation to supervisor's ratings of subordinate performance, the present findings suggest more attention should be paid to adaptive forms.

Although not explicitly the focus of the present research, it is interesting to note that there were no systematic differences in the responses of male and female participants in

either experimental study. These null findings are consistent with those of previous scholars (Heilman & Chen, 2005; Heilman, Wallen, Fuchs, & Tamkins, 2004; Luksyte et al., 2017) and strongly suggest that gender stereotypes are generalizable across the sexes and are indeed as pervasive and deeply rooted as previously believed (Heilman et al., 1995, 1989). This observation suggests that organisations should target interventions to manage cognitive biases in overall work performance and the distribution of rewards for all managers (Arvey & Murphy, 1998; Levy & Williams, 2004).

The finding that adaptive performance is gendered is also important, particularly if the aforementioned implications are enacted. Recognizing gender stereotypes at work has amassed a substantial amount of attention from both practitioners and researchers alike (Heilman, 2012) and overall work performances have long been criticised for being discriminatory (Roberson, Galvin, & Charles, 2007). These results speak to the sizable literature calling for those appraising the performance of others to undergo training to become more aware of inherent biases when evaluating the performance of others (Heilman, 2012; Marlowe, Schneider, & Nelson, 1996). By training appraisers in the potentially detrimental effects of biases, organisations can contribute to the equitable treatment of employees and can ensure all employees are recognised for their different types of contributions at work. Given our findings suggest that women will be rewarded for their adaptive performance more than their male colleagues, it is possible that organisations are inadvertently decreasing the propensity for male employees to adapt at work by failing to recognise these contributions. This is problematic as organisations require a dynamic and flexible workforce (Jundt et al., 2015) that fulfil both prescribed and emergent roles at work (Griffin et al., 2007; Welbourne et al., 1998).

Conclusion

The question “what kinds of performance are valued at work” has attracted a great deal of theoretical and empirical attention over the past century (Campbell & Wiernik, 2015; Katz & Kahn, 1966). Lending on the integrative model of positive workplace performance (Griffin et al., 2007) the present research integrated role theory to examine the unique contribution of three forms of performance: proficiency, adaptive, and proactive performance. Our results demonstrate that each of these three forms of performance uniquely contribute to supervisors’ appraisals of employees overall performance at work. Building on these findings, we then integrated an additional element of role theory into our framework – role congruity and gender stereotypes (Heilman, 2012; Heilman et al., 1995). In doing so, we built theory around the potential gendered nature of adaptive performance. Across one field study and two experimental studies, we demonstrated that women are rewarded more for their adaptive performance relative to their male counterparts and that these effects appear to be mediated through increased perceptions of competence accompanying role congruent performance. Together, these results shed light on the complex relationship between individuals, their performance, and managers’ assessments of subordinate’s performance with both important theoretical and practical implications

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Appendix A

Study 3 Vignette – Female Sample

Anne Baker

Sales Manager

Gateway Teleco Services Inc.

Supervisor Feedback

Anne joined my unit two years ago. Anne also adapts well to changes in her core tasks and in the way our team works. She has dealt effectively with changes affecting our work unit (e.g., new team members and product line). Anne readily and easily adjusts plans, goals, actions, and her priorities to deal with unpredictable and changing circumstances. She is very effective in uncertain situations as she adapts ways of working for herself that help her achieve her objectives. Anne is also flexible and open-minded when dealing with other team members and our clients.

Note. The only difference between the female and male vignette was that “Anne” was replaced with “George” and the accompanying pronouns were adjusted to reflect a male. This vignette contains 6 adaptive performance elements drawn from Pulakos et al. (2000) and Griffin et al. (2007).

Chapter 4 Foreword

The previous chapter provided important insights into the dimensionality and consequences of performance. Across two studies, I demonstrated the distinctiveness of each form of performance (proficiency, adaptivity, and proactivity) as well as developed and tested new theory about the nature of adaptive performance. Whereas chapter 3 (article 2) focused on adaptive performance, in the following chapter I turn my attention to proactive performance and its consequences.

Proactive performance is distinct from other forms of performance because it is self-starting, change-oriented, and future focused (Parker & Collins, 2010). One of the most highly researched forms of proactive performance is voice (Podsakoff et al. 2014). Voice is defined as the verbal communication of change-oriented ideas or suggestions (Van Dyne & LePine, 1998). Within the team context, voice has important implications for others due to their embeddedness within an interdependent network. When a team member voices it places behavioural requirements on team members – specifically to adapt. As such, it is possible that voice has its impact on team-level outcomes by acting as a catalyst for team adaptation. Furthermore, I lend on minority influence and dissent theories to propose that the voice of a single team member can instigate team-wide changes if that team member occupies a central position within the team's network (Li et al. 2015).

To test my proposed model, I collected field data from 65 operating theatre teams performing elective surgery. Elective surgery is distinct from emergency surgery in so far as the patients and procedures are known in advance. Within this context, patient safety and surgical efficiency are considered critical team outcomes (Vashdi et al. 2013). The present study focuses on the latter; recognising that medical errors are positively correlated to longer surgical times (Carpini et al. 2015). Additionally, because efficiency is the objective time it takes to perform a surgery relative to the expected time, we introduce team-level role clarity

as a critical boundary condition constraining the relationship between team adaptive performance and team efficiency. When teams are characterised by high role clarity, then they should be able to respond to changes quicker than if the roles of the team members are unclear. Finally, we focus on the maximum voice of the nurses in the operating theatre team because they occupy a central position in the team’s communication and coordination structure. Results provide support for the proposed model.

Chapter 4 addresses several recommendations from Chapter 2 (Carpini et al. 2017) in so far as it provides empirical evidence for the utility of voice within the team context and illuminates a potential pathway through which the effect occurs. Finally, relevant to the team-outcome of interest –efficiency – I identify team-level role clarity as a critical boundary condition. As such, this study addresses the dearth of scholarship on the consequences of proactive performance and tests a potential explanatory mechanism (Figure 1).

Article 3. *Nurse Voice as a Catalyst in the Operating Theatre: How Voice Instigates Team Adaptation and Drives Team Efficiency*



Note. This study focuses on the consequences of individual proactive performance (blue box) and integrates team-level adaptive performance as an explanatory mechanism (red box).

Figure 1. Focus of Chapter 4 – How Proactive Performance relates to Team Outcomes through Team Adaptive Performance

Nurse Voice as a Catalyst in the Operating Theatre:
How Voice Instigates Team Adaptation and Drives Team Efficiency

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Abstract

The overarching purpose of the present paper is to understand the role of voice in promoting team adaptive performance and, ultimately, team efficiency (measured objectively as the actual surgical time taken relative to the expected time). Teams are an essential building block of modern organisations and often function within dynamic and uncertain work contexts. Teams operating under such conditions must rely on the active participation of team members in shaping the team's functioning. One way in which team members can shape team processes is through proactive voice. By voicing, team members anticipate future requirements, self-initiate change within the broader team, and place requirements for adaptation on the rest of the team. Using multi-source and objective data from 65 surgical teams, the present study suggests the maximum voice from nurses can act as a catalyst for broader team adaptation, which then translates into more efficient surgical procedures. However, the extent to which teams benefit from adaptation is contingent upon the role clarity of team members such that only teams characterised by high-levels of role clarity achieve efficiency gains. The present study makes several important contributions to the literature. First, the present study contributes to addressing the dearth of scholarship examining the outcomes of individual voice and team adaptive performance. Second, by focusing on team adaptive performance, we explicate one potential pathway through which voice translates into team-level outcomes. Third, by integrating role clarity at the team-level, we provide evidence of a critical boundary condition in the extent to which adaptivity yields functional team outcomes. Practical recommendations are discussed as well as future directions.

Keywords: Voice, team adaptive performance, efficiency, role clarity, operating theatre, communication

Nurse Voice as a Catalyst in the Operating Theatre:

How Voice Instigates Team Adaptation and Drives Team Efficiency

“One voice can change a room, and if one voice can change a room, then it can change a city, and if it can change a city, it can change a state, and if it change a state, it can change a nation, and if it can change a nation, it can change the world. Your voice can change the world.”— Barack Obama

Speaking-up within the team context, such as making suggestions to resolve issues and alter current working processes and procedures to help the team reach its objectives, is a form of proactive work performance that is believed to benefit the individual (Parker & Collins, 2010; Seibert, Kraimer, & Crant, 2001; Van Dyne & LePine, 1998; Whiting, Podsakoff, & Pierce, 2008), the immediate team (De Dreu, 2002; De Dreu & West, 2001; LePine & Van Dyne, 1998), and the organisation at large (Crant, 2000; Katz, 1964; Morrison, 2011). Today, many organisations rely on employees working as part of a team to manage increasingly complex, dynamic and uncertain business environments (Mathieu, Maynard, Rapp, & Gilson, 2008; Sundstrom, De Meuse, & Futrell, 1990). Therefore, it is imperative that team members speak-up and actively contribute to the team in reaching its objectives.

Speaking-up or “voice” is defined as the self-initiated verbal transmission of future focused change-oriented suggestions (Parker, Williams, & Turner, 2006; Van Dyne & LePine, 1998) and can be directed toward both leaders and peers (Liu, Zhu, & Yang, 2010). Proactive voice is distinct from related constructs such as information sharing, grievance filing, and complaining because proactive voice is intended to constructively disrupt the *status quo* (Klaas, Olson-Buchanan, & Ward, 2012; Van Dyne, Cummings, & McLean Parks, 1995). Research on voice has increased more than ten-fold since its inception (Maynes & Podsakoff, 2014) making it one of the most highly research forms of work performance (Mowbray, Wilkinson, & Tse, 2015; N. P. Podsakoff, Podsakoff, MacKenzie, Maynes, &

Spoelma, 2014). The unique contribution of proactive voice within a dynamic and uncertain team context is the focus of this paper.

Early work on voice emphasised the overall benefits of creating a team context conducive to voice and focused on increasing the average amount of voice from team members (Edmondson, 1999; LePine & Van Dyne, 1998). The underlying assumption of this perspective is that higher levels of overall voice will result in more positive outcomes for the team (Morrison, 2011). This is consistent with a general trend in the teams literature to consider teams as the sum of their parts (Mathieu et al., 2008). That is to say, a team's performance is determined by simply adding up the individual contributions (voice) of each team member. From this perspective, every member of the team contributes to the success of the team equally and the distribution of voice is ignored (Kozlowski & Klein, 2000).

Despite the popularity of this method in studying voice within teams, simply taking the average or sum score of voice within the team context has been criticised for potentially masking important information (Barrick, Stewart, Neubert, & Mount, 1998; Bashshur & Oc, 2015) and because few tasks in modern organisations are achieved by simply adding up individual work (additive tasks; Steiner, 1972). Rather, many teams are charged with performing complex and highly interdependent tasks where the overall performance of the team is determined by asymmetrical individual contributions (Kramer, Bhawe, & Johnson, 2014; O'Boyle & Aguinis, 2012). Under such conditions, the team's overall performance is determined by the highest performing team member (disjunctive tasks; English, Griffith, & Steelman, 2004). For example, when attempting to solve a complex problem, a single team member who voices a novel approach to the problem can disproportionately influence the team's overall performance because that person instigates changes in how the team approaches the problem. Following on, it seems reasonable to propose that just one team member who is willing to speak-up can alter a team's processes and outcomes.

Although scholars in related fields such as personality (Barrick et al., 1998; Bell, 2007; Kramer et al., 2014) have examined the potential for a single team member to have a disproportionate impact on the rest of the team, the application of this perspective is infrequently applied to the study of voice in teams (Li, Zhao, Walter, Zhang, & Yu, 2015; Mathieu et al., 2008; Oc, Bashshur, & Moore, 2015). As such, important questions arise: can voice from a single team member impact the team's outcome? And if so, how does voice impact the team outcome, in other words, what is the mechanism and what boundary conditions might exist?

To address the aforementioned questions, we lend on the growing literature on minority influence (Grant & Patil, 2012) and dissent (De Dreu & West, 2001). Both theories highlight the importance of at least one team member's willingness to speak-up and voice a challenge, idea, or suggestion. By voicing, it is believed that one person in a team can trigger more complex thinking, better problem solving, and the identification of new or improved ways of functioning (Bashshur & Oc, 2015; Burris, 2012; Van Dyne & LePine, 1998). An underlying assumption of both minority influence and dissent theories is that voice from a single team member can shape important team outcomes through team processes.

The relevant outcomes of a team is a function of the team's task and characteristics (Guzzo & Dickson, 1996; Mathieu et al., 2008; Steiner, 1972). Whereas previous research examining voice has often looked at research and development teams where innovation is a critical team outcome (De Dreu & West, 2001), the present study considers voice within the elective surgery context. Elective surgery differs from emergency surgery in so far as the patients and procedures are known in advance (Curtis, Russell, Stoelwinder, & McNeil, 2010; Siciliani & Hurst, 2005). In the case of elective surgery, patient safety and surgical efficiency are critical indicators of team effectiveness (Vashdi, Bamberger, & Erez, 2013; Vashdi, Bamberger, Miriam, & Weiss-Meilik, 2007). Previous research also suggests that surgical

efficiency is a proximal indicator of patient safety as the occurrence of complications is associated with increased surgical time (Carpini, Parker, & Flemming, 2015). Within the surgical context, we consider nurses as the minority in both status and power as compared to physicians⁶ (Gardezi et al., 2009). As such, we consider the potential for the voice of at least one nurse (maximum nurse voice) to shape broader team processes resulting in increased surgical efficiency. Consistent with previous teams research (Chen & Mathieu, 2008; Mathieu et al., 2008), the extent to which a surgical team is more efficacious than another is likely a function of the underlying team processes which we argue are shaped by nurse voice.

Team processes are the mechanisms mediating the relationship between team inputs (e.g., design features, intelligence, personality, and diversity; Bell, 2007; Devine & Philips, 2001; Horwitz & Horwitz, 2007; LePine, Piccolo, Jackson, Mathieu, & Saul, 2008; Stewart, 2006) and team outputs (e.g., effectiveness, and satisfaction; Mathieu, Maynard, Rapp, & Gilson, 2008; McGrath, 1964). When performance is embedded within a team structure, the achievement of outcomes is a function of team members' individual contributions as well as the underlying team processes responsible for the conversion of individual-level inputs, such as voice, into team-level outputs (Marks, Mathieu, & Zaccaro, 2001; McGrath, 1964). By definition, voice within the team context places demands on other team members to change (Carpini, Parker, & Griffin, 2017; Van Dyne et al., 1995) and as such team adaptive performance becomes particularly important (Burke et al., 2006). Specifically, the voice of nurses within the surgical team context is critical as nurses play an important role in coordinating the various professional groups (nurses, surgeons, anaesthetists, and technicians) in delivering safe and efficient patient care (Awad et al., 2005; Garon, 2012). Therefore, due to the coordinating and spanning role nurses play in the operating theatre, it is particularly likely the voice of a nurse will trigger team adaptive performance.

⁶ For the purpose of this study we combine both surgeons and anaesthetists under the same general category of "physicians" as both are doctors but differ in their respective specialties (Vashdi et al. 2015)

Consistent with previous research, we define team adaptive performance in terms of team behaviours in response to change (Griffin, Neal, & Parker, 2007; Han & Williams, 2008; Pulakos, Arad, Donovan, & Plamondon, 2000). Team adaptive performance is distinct from closely related constructs including team adaptation (LePine, 2005) and adaptive capacity (Randall, Resick, & Dechurch, 2011) which are primarily concerned with the ability of teams to adapt or the change and maintenance of team performance following an external demand (Baard, Rench, & Kozlowski, 2014). When teams adapt to changing circumstances, for example in response to the voice of a nurse, the team should be better positioned to achieve their goals, in this case for more efficient surgical procedures.

However, the extent to which the team benefits from their adaptation is likely to be bounded by certain team characteristics. Given surgery is a complex task involving the coordination of multiple professional groups (Davison, Hollenbeck, Barnes, Slesman, & Ilgen, 2012; Marks, Dechurch, Mathieu, Panzer, & Alonso, 2005), the clarity of the individual roles of each member within the team is likely to function as an important boundary condition. According to role theory (Katz, 1964; Katz & Kahn, 1966), “roles within groups are considered to be a set of prescriptions that define the behaviors required of an individual member who occupies a certain position” (Bray & Brawley, 2002, p. 234). Given surgery is a highly interdependent task (Edmondson, 2003) the extent to which the team is characterised by high role clarity is likely to be a critical factor shaping whether the team will adapt efficiently. For example, if a circulating nurse (refer to Appendix for full description of surgical team member roles) notices that a key piece of equipment is missing from the store room before it is needed and voices this early on, then both the surgical and anaesthetic teams can adapt their approaches accordingly; however, the extent to which the adaptation is efficient (as opposed to effective) is likely to be a function of how clear everyone in the team is in regard to how the change impacts them. When the team as a whole is characterised by

high role clarity, the implications of any changes to the interdependent team system are clear for individual team members (Rico, Sánchez-Manzanares, Gil, & Gibson, 2008).

The overarching goal of the present study is to elaborate the process through which voice, as an individual contribution to a team, translates to team-level outcomes – in this instance surgical efficiency – and how this process is bounded by team role clarity, an important team characteristic. The operating theatre⁷ is an appropriate context to examine our hypotheses because it is characterised by high levels of dynamism and uncertainty, all contextual characteristics believed to enhance the importance of both adaptive and proactive performance (Baard et al., 2014; Griffin et al., 2007; Parker & Collins, 2010; Van Dyne & LePine, 1998). The present article is organised around the previously discussed research objectives, with a visualisation appearing in Figure 1. We begin by presenting our hypothesis that the maximum voice of nurses is positively related to team surgical efficiency. Next, we introduce team adaptive performance as a potential mediating mechanism through which voice translates to team efficiency. That is, the voice of one nurse can act as a catalyst for broader team-wide adaptation. We further qualify the relationship between team adaptive performance and team efficiency by introducing team-level role clarity as an important boundary condition such that only teams characterised by high-role clarity will benefit from adaptive performance in terms of enhanced surgical efficiency. We tested our hypotheses lending on a sample of real surgical teams and collected both multi-source (voice, adaptive performance and role clarity) and objective data (surgical efficiency). Having obtained support for our hypotheses, we conclude by discussing the theoretical and practical implications of this research as well as future directions.

⁷ “Operating theatre teams” is synonymous with “operating room teams” or “surgical teams”.

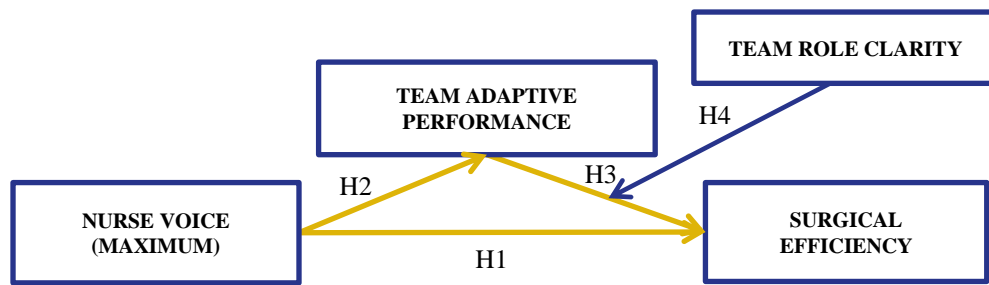


Figure 1. **Proposed Model Demonstrating Down-Stream Effects of Voice on Team Adaptive Performance and Efficiency**

Conceptual Foundations and Hypotheses

Consistent with previous research (Detert & Burris, 2007; Parker et al., 2006; Van Dyne & LePine, 1998) voice is defined as the self-initiated, verbal communication of constructive change-oriented suggestions, directed toward either peers or a leader (Liang, Farh, & Farh, 2012; Liu et al., 2010). In pursuit of a more favourable outcome or the avoidance of a potential problem, voice intentionally disrupts the *status quo* and as such is potentially interpersonally risky (Edmondson & Lei, 2014; LePine & Van Dyne, 1998; Morrison, Wheeler-smith, & Kamdar, 2011). To date, the vast majority of research on voice has been devoted to understanding its nature and antecedents (Edmondson & Lei, 2014; Liang et al., 2012). The little research that has sought to examine the consequences of voice have mostly employed subjective ratings of team performance (Detert, Burris, Harrison, & Martin, 2013; Li et al., 2015; Maynes & Podsakoff, 2014; Tornau & Frese, 2013; Whiting, Maynes, Podsakoff, & Podsakoff, 2012) and innovation (De Dreu, 2002; De Dreu & West, 2001). Additionally, there remains a dearth of scholarship considering critical team-level outcomes of voice such as objective efficiency and productivity (Bashshur & Oc, 2015; Morrison, 2011, 2014), a gap which is surprising given that almost every discussion of voice commences with the broader positive implications of voice and the potential pitfalls associated with the lack thereof (Grant, 2013; Morrison, 2014).

To address the dearth of scholarship examining objective team outcomes of voice, the present study examines surgical efficiency as a key outcome of surgical teams. Broadly speaking, “efficiency refers to an input-output ratio or comparison, whereas effectiveness

refers to an absolute level of either input acquisition or outcome attainment” (Ostroff & Schmitt, 1993, p. 1345). Within the surgical context, surgical efficiency is defined as the difference in the time the procedure was expected to take (booking time) and the actual surgical time. Although team effectiveness has traditionally been a central variable in the study of teams (for review, see Lepine, Piccolo, Jackson, Mathieu, & Saul, 2008; Mathieu et al., 2008), some scholars have argued efficiency is a more informative measure of performance because it inherently adjusts for the initial inputs, thus making comparison easier and more accurate (Beal, Cohen, Burke, & Mclendon, 2003).

Although efficiency is an attractive outcome for all industries (Adler, Goldoftas, & Levine, 1999), it may be particularly critical in health care settings (Vashdi et al., 2013). Several studies have pointed to the expanding and simultaneously aging world population as major drivers of increased demand for health care, particularly elective surgery (Curtis et al., 2010; Etzioni, Liu, Maggard, & Ko, 2003). Increased demand for elective surgery around the world is resulting in increased waiting list times, a major concern for more than fifty-percent of all countries belonging to the Organisation for Economic Co-Operation and Development (OECD; Siciliani & Hurst, 2005). The situation is further confounded by labour shortage projections across most surgical specialties by 2025 (Etzioni et al., 2003; US Department of Health and Human Services, 2016). Together, drastic changes in the world’s demographics coupled with labour shortages means surgical efficiency is a necessity to ensure a sustainable health care system in the near future. Given increasing demands for elective surgery, it is essential procedures are completed safely and efficiently which is likely to be dependent on the inputs of the team members (LePine et al., 2008; Mathieu et al., 2008).

In the present study, we focus specifically on the voice of nurses as critical team inputs because nurses play a critical coordinating role between professional groups (nurses, surgeons, anaesthetists, and technicians) within the operating theatre (Awad et al., 2005;

Lingard, Reznick, Espin, Regehr, & DeVito, 2002). As such, nurses occupy a central position in the communication network in the operating theatre (Lingard et al., 2006, 2002) and thus are likely to exert a disproportionate influence on the team's overall functioning (Li et al., 2015). In addition, because nurses are of relatively lower status and power (Gardezi et al., 2009) their voice should be particularly important in driving efficiency because of constraints put on their propensity to communicate change-oriented suggestions (Gardezi et al., 2009). Thus, voice on the part of nurses is likely to be subject to more personal vetting which should increase the overall quality of the voice (Detert et al., 2013). Together, the central position of nurses within the surgical team communication network and the increased interpersonal risk of their voice, means that voice on the part of nurses should disproportionately influence team outcomes.

Consistent with both minority influence (Grant & Patil, 2012) and dissent (De Dreu, 2002; Nemeth, 1986) theories, the present study examines the potentially disproportionate influence of nurse voice. Nurses are, by virtue of their hierarchical position within operating theatres, low power and a minority (Lingard et al. 2006). More specifically, we consider the maximum voice of nurses as a characteristic of the team (Chan, 1998) for several reasons. First, nurses occupy a central role within the operating theatre team (Lingard et al. 2006) and as such are in a position to disproportionately influence team processes and outcomes (Li et al. 2015). Second, surgery is highly complex and interdependent such that the team's outcome is not simply the sum of the work of individual team members, but rather is determined by asymmetrical contributions (disjunctive task; Steiner, 1972). When tasks are disjunctive the team's ultimate performance is largely determined by disproportionate contributions from team members (Barrick et al. 1998; Ng & Van Dyne, 2005). As such, nurses are optimally positioned with the surgical team to influence team processes and outcomes. Third, and related to the specific behaviour, voice by definition has immediate

implications for team members (MacKenzie, Podsakoff, & Podsakoff, 2011; Van Dyne et al., 1995) regardless of whether others voice or not. As such, it is not the average voice from nurses that really matters but rather that at least one nurse is willing to voice. As such, the maximum voice of nurses in a theatre team is an indicator of their overall influence on team processes and outcomes; it only takes one nurse who is willing to speak up to trigger broader team adaptation. Fourth, scholars have noted that too much voice within a team can be as dysfunctional as not enough because the team devotes too much time to the consideration of multiple alternatives and fails to commit to any single course of action (Morrison, 2011) which would surely negatively impact team efficiency. Therefore, it is not necessary for nurses on average to voice (high mean), but rather it takes only one nurse who is willing to actively contribute to the team to affect change (maximum voice). As such, we hypothesise the following:

Hypothesis 1. The maximum score of nurse voice will be positively related
to surgical team efficiency.

Up to this point, we have discussed how the maximum voice of nurses can directly relate to a critical team outcome – in this case, surgical team efficiency. Next, we propose the underlying mechanism – team adaptive performance – to explain how voice translates to increased surgical efficiency within the team context.

The notion that a single team member can alter the course of a whole team rests at the heart of both minority influence (Grant & Patil, 2012) and dissent (De Dreu & West, 2001; Nemeth, 1986) theories. Within the team context, voice is a relatively unique type of team member contribution (Griffin et al., 2007) because voice is inherently interpersonal and change-oriented (McClean, Burris, & Detert, 2013). As such, within the interdependent context of teams (Kozlowski & Ilgen, 2006) the voice of a single team member will have ramifications for team members. When a team member voices that person creates behavioural

requirement for interdependent-others to adapt accordingly (Carpini et al., 2017). In other words, the voice of a single team member can act as a catalyst for broader team adaptive performance as the team actions the content of the voice. It is likely teams adapt as a consequence of voice because the voice triggers divergent thinking and improved decision making (De Dreu & West, 2001; Nemeth, 1986). As such, individual team member's voice can contribute to the dynamic updating of cognitive and behavioural requirements of a team (Burke et al., 2006), particularly when the team is operating under interdependent, complex and uncertain working conditions.

Following on from our previous hypothesis, we propose the maximum voice of nurses is most important in predicting team-level adaptive performance because nurses occupy a central position in the surgical team network and as such are likely to have disproportionate influence over the team's coordination and performance (Li et al., 2015). Integrating voice as a potential trigger of team-level adaptive performance contributes to the teams literature as few studies have considered this possibility to date (Mathieu et al., 2008) and contributes to our understanding of dynamic team processes (Burke et al., 2006). Consistent with this line of reasoning, we hypothesise:

Hypothesis 2. The maximum score of nurse voice will be positively related
to team adaptive performance.

As discussed above, we believe the voice of a nurse can instigate team-wide adaptation because voice is change-oriented and the team structure means changes are likely to impact interdependent others (Kozlowski & Bell, 2003; Kozlowski, Gully, Nason, & Smith, 1999a). Next, we propose that team adaptive performance is the mechanism through which voice enhances team efficiency. This is because teams that adopt constructive recommendations are likely to excel relative to teams that do not benefit from the voice of team members (LePine & Van Dyne, 1998; Morrison, 2014; Morrison et al., 2011).

In the present model, team adaptive performance is the mediator through which voice is postulated to increase team efficiency. Team adaptive performance is an essential ingredient of effective teams when they are operating in dynamic and complex environments, such as the operating theatre (Han & Williams, 2008; Salas, Cooke, & Rosen, 2008). Team adaptive performance is the behavioural response of the team in response to environmental change, for example voice from a team member (Han & Williams, 2008). Team adaptive performance is distinct from closely related constructs such as team adaptation and team adaptive capacity (Maynard, Kennedy, & Sommer, 2015; Smith, Ford, & Kozlowski, 1997) as these constructs are characteristics of the team or underlying processes (Chen, Thomas, & Wallace, 2005). Additionally, team adaptive performance is different from team monitoring and backing up (Li et al., 2015; Marks et al., 2001) because these team behaviours are conceptually similar to team-level helping (Ng & Van Dyne, 2005) and lack the critical element of change which is inherent in adaptive performance (Pulakos et al., 2000). Unlike voice where a single individual can shape a team's outcomes, team adaptive performance requires the team as a whole to change and as such is best measured cumulatively.

To date, the vast majority of research on team adaptivity views adaptivity as an ends in and of itself (Chen et al., 2005) or as part of a larger learning feedback loop (West, 1996). As such, little research has considered the potential for team adaptivity to result in other important team outcomes such as objective efficiency (Burke et al., 2006). This is surprising given logic would dictate that teams that adapt to changing situational demands more are also likely to be both more effective and efficient. Of the limited research that has examined the relationship between team adaptive performance and team efficiency (e.g., Ancona & Caldwell, 1992; Pinto, Pinto, & Prescott, 1993; Seers, Petty, & Cashman, 1995), the studies have been limited by common method bias (Philip M Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In extending the existent literature, we assess the extent to which team

adaptive performance (average across the team) is related to surgical team objective efficiency. As such, we hypothesise:

Hypothesis 3. Team adaptive performance will be positively related to surgical team efficiency.

Hypothesis 4. Team adaptive performance will mediate the relationship between maximum nurse voice and surgical team efficiency.

We have discussed how the voice of a single nurse may translate to surgical team efficiency through both direct and indirect pathways. In the case of the indirect pathway, we introduced team adaptive performance as a critical behavioural response to voice at the team level. Elaborating the direct and indirect pathways contributes to our understanding of the outcomes of voice within the team context (Bashshur & Oc, 2015; Li et al., 2015; Morrison, 2011). However, the extent to which a team is able to generate efficiency gains as a consequence of their adaptation is likely to be shaped by broader team characteristics (Maynard et al., 2015). Next, we propose the relationship between team adaptive performance and efficiency is moderated by the team's collective role clarity. More precisely, we suggest teams characterised by high levels of role clarity will be able to generate efficiency gains from their adaptive performance whereas teams low on role clarity will not. By integrating role clarity as a boundary condition, we explain when team adaptive performance will translate into team efficiency (Mathieu et al., 2008; Polyhart & Bliese, 2006).

Role clarity is defined as having “the necessary information available to a given organizational position” (Rizzo, House, & Lirtzman, 1970, p .151) and refers to the clarity of the behavioural expectations placed on an individual as part of a broader social network (Katz & Kahn, 1966). An individual experiences role ambiguity when role clarity is low (House & Rizzo, 1972). Cumulatively, research has demonstrated the detrimental effects of role

ambiguity across a wide range of individual behavioural and attitudinal outcomes (low role clarity; Fisher & Gitelson, 1983; Fried, Ben-David, Tiegs, Avital, & Yeverechyahu, 1998; Jackson & Schuler, 1985; Tubre & Collins, 2000; Van Sell, Brief, & Schuler, 1981). Because role clarity emerges as a function of interdependencies, it is not surprising to find that the detrimental effects of role ambiguity are exacerbated by job interdependency (Jackson & Schuler, 1985).

To date, role clarity has been examined at the individual level of analysis; however, lending on the distinction between team processes and emergent states (Marks et al., 2001), role clarity may exist at the team level as an emergent state reflecting team member cognition. That is to say, teams as a whole can be characterised by their collective role clarity. Because surgery is by nature a disjunctive task relying heavily on interdependent others, and the extent to which an individual experiences role clarity is a function of the team context (Barrick et al., 1998), we propose the mean level of role clarity within the team is an appropriate operationalisation of team role clarity.

Within the team context, team adaptation places behavioural demands on team members in the form of requiring new or modified role behaviours and the extent to which a team is able to achieve their collective goal hinges on the team's ability to coordinate across roles (Kozlowski, Gully, Nason, & Smith, 1999). At the team level, role clarity is likely to shape the relationship between team adaptive performance and efficiency. When all team members are clear in their respective roles (high team role clarity) the implications of adaptive performance on the individual roles of team members is clear and thus team members can quickly modify their behaviours within the interdependent network. Conversely, when team members are not particularly clear in their roles (low team role clarity) any adaptation at the team level is likely to result in additional ambiguity which will attenuate the contribution of team members (Van Sell et al., 1981). Team role clarity is

particularly important when considering our dependent variable, surgical team efficiency, because the speed with which the team will reconfigure as a consequence of adaptive performance will be critical to the efficiency of the team. Consistent with this line of reasoning we hypothesise the following:

Hypothesis 4. Team role clarity (mean) will moderate the relationship between team adaptive performance and surgical efficiency such that teams high in role clarity will also be more efficacious and those teams low on role clarity will be less.

Hypothesis 5. Team adaptive performance will mediate the relationship between maximum nurse voice and surgical team efficiency when team role clarity is high.

Method

Data and Procedure

To test our hypotheses, we collected data from 65 operating theatre teams performing elective surgeries at two tertiary hospitals in Australia (hospital 1 = 34 teams, hospital 2 = 31 teams). Elective surgeries are those that are scheduled in advance whereas emergency surgeries are based on external demand (Gerchak, Gupta, & Henig, 1996). Both hospitals were within the same health service resulting in high similarity in how cases are booked and staff allocated to each theatre. Surgical teams operated in one of three surgical specialties: reconstructive hands and plastics (58%) and general surgery (37%) with the remaining procedures coming from obstetrics and gynaecology (5%). These three specialties were selected because interviews with consultant surgeons prior to data collection confirmed the three specialties had similar team compositions (e.g., number of staff from each professional group, see Appendix A for staff role description) and handled procedures of similar complexity. Teams varied in size between six and nine with each one made up of at least one

consultant surgeon, one assisting surgeon, one scrub nurse, one circulating nurse, one anaesthetist, and one anaesthetic technician⁸. Procedures differed in their length from 30 minutes to 6 hours in length.

Each surgical team was observed over the course of an entire operating theatre list⁹ and paper-pencil surveys were distributed at the end of the list to all available staff. Informed consent was obtained and all theatre staff were given a small non-monetary reward (e.g., chocolate). On average, more than half of the team members responded to surveys ($M = 55\%$, $SD = 26.5\%$). Every effort was made to ensure at least one member of each professional group (surgeons, nurses, anaesthetists) responded to a survey to ensure teams were accurately represented. Although some participants were members of multiple teams over the course of data collection, none of the surveyed teams were identical in their composition. This is consistent with previous research that has pointed to the large number of medical staff and the complexity of scheduling demands which result in unique surgical teams (Vashdi et al., 2013).

Participants

Eighty-three medical professionals representing 65 unique teams participated in the study, completing a total of 253 surveys. On average, each participant completed 2 surveys ($SD = 2.4$ surveys). The same participants were present across multiple teams with each participant completing on average 2 surveys. The sample was made up of nurses (39%), anaesthetists (28%), surgeons (20.5%), and technicians (4%; 8.5% did not identify their professional group) with an average of 11.8 years of experience in their current role ($SD = 9.1$ years). The majority of participants were female (76.5%) with a mean age of 36 years ($SD =$

⁸ A “consultant” is the equivalent of an “attending” surgeon in the USA. An “anaesthetist” is equivalent to an “anaesthesiologist” in the USA. “Anaesthetic technicians” are the equivalent to anaesthetic nurses in other countries. Scrub nurses are within the sterile zone and handle instrumentation whereas circulating nurses provide external support by getting necessary equipment and managing the theatre system.

8.9 years), and identified as Caucasian (63%), Asian (26.9%), or other (e.g., Arab, African, 7.1%).

Measures

The surveys were distributed at the end of the operating theatre list. Because lists ranged in duration from 4 to 7 hours, it was essential to make the survey instrument as concise as possible. Following a two-step process (Grant, Parker, & Collins, 2009), we reviewed the initial published validation study for each scale and selected the highest loading items. Second, we carefully examined the selected items and verified the items maintained construct content validity (Hinkin, 1998). The items were pilot tested on a focus group of two surgeons, two nurses, two anaesthetists, and three senior theatre managers to ensure the items were contextually relevant and clear. In addition, the participants were instructed to report on the last procedure of the list only. This decision was made as pilot observations found that the operating theatre team membership changed significantly over the course of the day. Reflecting on the last procedure of the day ensured all participants were reporting on a common experience and minimised recall biases (Chattopadhyay, Finn, & Ashkanasy, 2010).

All participants were instructed, “Thinking about your last experience in the OT [where OT is a known acronym for “operating theatre”], please indicate the extent to which you agree with each of the following statements. In my last OT experience...” All self-report ratings were provided on a five-point Likert-like scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

Nurse Maximum Voice. We used three items from the Liang, Farh, and Farh (2012) measure of voice. In the initial validation study, the authors reported factor loadings, all of which were above .71. As such, we selected the three highest loading contextually appropriate items. For example, the item, “proactively suggest new projects which are beneficial to the work unit” was not appropriate to the work of an operating theatre team and

was excluded. The final three items were: “I raised suggestions to improve the OT team’s working procedures”, “I proactively voiced out constructive suggestions that helped the OT team reach its goals”, and “I proactively developed and make suggestions for issues that might influence the OT”. The abridged scale had an internal reliability coefficient of .86 which is similar to that reported by the initial authors for the full length scale. Consistent with our hypotheses, the mean of the three items for each team member was calculated, and the highest nurse score in each team used in subsequent analyses.

Team Adaptive Performance. We used two items from the Griffin, Neal, and Parker (2007) team-member adaptive performance subscale with referent shift to the team-level (Chan, 1998). The original scale only contained three items and one item, “learnt new skills or taken on new roles to cope with changes in the way your unit works” was deemed to be inappropriate for the context, and thus only two items remained with the initial validation suggesting high factor loadings. The two items, with a team-level referent, were “the OT team dealt effectively with changes affecting its work”, and “the team responded constructively to changes in work demands”. The two items were significantly correlated to one another, $r = .72^{**}$ and accurately reflect prior theorising about team adaptive performance as defined by functional outcomes for teams in the face of change (Burke et al., 2006; Klein & Pierce, 2001). We verified whether aggregation was appropriate by calculating interclass correlation coefficients (ICC[1] and ICC[2]; Bliese, 1998). Whereas ICC(1) indicates the proportion of variance in team adaptive performance attributable to surgical team membership, ICC(2) indicates the reliability of team mean scores (Bliese, 2000). The team adaptive performance measure had an ICC(1) = .05 and ICC(2) = .74. Although ICC(1) is lower than the generally acceptable level of .10, Bliese (1998) notes ICC scores are influenced by group size and may be lower in smaller groups.

Team Role Clarity. We used two items from previous research examining role clarity (House & Rizzo, 1972; Lang, Thomas, Bliese, & Adler, 2007; Rizzo et al., 1970). The two items were, “I felt my role within this team was clear” and “I knew exactly what was expected of me”. The two items were strongly correlated to one another, $r = .70^{**}$ and have been used extensively in previous research. Individual scores were aggregated to the team level. We used an additive model in this instance because we were interested in the actual clarity of each individual within the team as opposed to their perception of the clarity of team members more generally or the agreement between team members (Chan, 1998). Both $ICC(1) = .11$ and $ICC(2) = .82$ were within acceptable ranges (Bliese, 2000).

Team Surgical Efficiency. Two objective pieces of information were used in calculating team surgical efficiency – the booking time and the actual time. The booking time represents the estimated amount of time the case will take in the opinion of the consultant surgeon when booking the case. The booking time takes into consideration the particular procedure and its complexity as well as existing patient comorbidities that may make the procedure more complex or increase the potential for complications which slow surgical progress. The actual surgical time was recorded by the trained observer who timed the procedure from the time it was commenced (knife to skin) to when the operation was terminated (surgeon declaration and commencement of post-surgery checklists). Team surgical efficiency was calculated by subtracting the booking time from the actual time such that a positive result indicated surgical efficiency (the number of “saved” minutes). We further divided the resulting number by the booking time to account for the relative efficiency such that a ten-minute efficiency on a 30 minute (.33 efficiency) procedure is far larger than a ten minute efficiency on a 60 minute (.17 efficiency) procedure. This transformation process is consistent with the prior work of Vashdi et al. (2013) within the surgical context. Furthermore, based on pilot interviews with medical and theatre management staff, this

measure of team surgical efficiency is believed to control for the highest number of patient and surgical covariates and was minimally invasive while being consistent with governmental definitions of theatre efficiency (Office of the Auditor General Western Australia, 2015).

Results

Based on recent recommendations intended to increase statistical power while reducing type II error for small sample sizes (for a review of this issues please refer to Aguinis & Harden, 2009; Tonidandel, Williams, & LeBreton, 2014), we report and interpret p -values at .05 and at .10, and calculated 95- and 90-percent bias corrected confidence intervals (Parker, Johnson, Collins, & Nguyen, 2013). Additionally, it is important to note the sample size will vary across analyses as complete data was only available for 44 teams. As such, the sample size reported in the following analyses will depend on the amount of data available to test the specific hypothesis. Furthermore, even though the data is nested within individuals because the same individuals appeared in multiple teams, we elected to model the data at a single-level given the relatively small sample size.

Prior to merging the data from both hospitals, we conducted an independent samples t -test to ensure no systematic differences exist between the two sites. Results of this analysis did not yield any statistically significant differences and thus the two samples were merged for subsequent analyses: nurse voice $t(51) = -.62, p = .54$, team adaptive performance $t(62) = 1.02, p = .31$, role clarity $t(62) = .05, p = .96$, and team surgical efficiency $t(47) = -.19, p = .85$.

We then sought to establish the distinctiveness of the team adaptive performance and team role clarity constructs as they were measured from a common source and time point (P. M Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). We achieve this by comparing a series of competing CFA models. First, we estimated a single-factor baseline model which fit the data poorly (Kline, 2005; Marsh, Hau, & Wen, 2004), $\chi^2(14) = 343.90, p > .001$, CFI = .38, RMSEA = .31, and TLI -.24, IFI .40. Following on, we compared two models both

identifying two-factors. The first two-factor model combined both team adaptive performance and voice and identified role clarity as a separate construct. This model fit the data poorly, $\chi^2(13) = 265.47$, $p > .001$, CFI = .52, RMSEA = .28, and TLI -.02, IFI .54. A second two-factor model combined team adaptive performance and role clarity with voice as a separate factor. This model also fit the data poorly, $\chi^2(13) = 106.22$, $p > .001$, CFI = .82, RMSEA = .17, and TLI .62, IFI .83. Finally, we estimated the hypothesised model with three distinct but correlated factors. The hypothesised model fit the data very well, $\chi^2(11) = 12.30$, $p = .342$, CFI = .99, RMSEA = .022, and TLI .99, IFI .99.

Given all the data was self-report we also adopted the recommendations of Fornell and Larcker (1981) to ensure adequate convergent and discriminate validity. First, we calculated the average variance extracted (AVE) for each of the three factors in our hypothesised model by taking the average squared factor loading of each item. Team adaptive performance had an AVE of .61, role clarity .71, and voice .67. In all instances the AVE was above the recommended .50 threshold for convergent validity (Fornell & Larcker, 1981). In estimating the discriminate validity of the measures, we took the squared correlation between factors and compared it against the AVE for each factor. In all instances, the AVE for each factor was much larger than the squared correlation between factors: team adaptive performance and role clarity .09, team adaptive performance and voice .01, and role clarity and voice .05. Together, the results of our CFAs and our supplementary analyses suggest the variables included in our model have very good convergent and discriminate validity.

The means, standard deviations, and correlations of the constructs contained in this study are presented in Table 1. We also acknowledge other team compositional models exist such as the minimum and standard deviation. To ensure full transparency of the data and to test potential competing models, we include an additional correlation matrix in the Appendix which includes additional team composition variables. In testing our proposed model and

hypotheses, we commence with the direct relationships (hypotheses 1, 2, 3), then consider the moderation effect (hypothesis 4), and then report the full moderated mediation (hypothesis 5).

Hypothesis 1 proposed that the maximum score of nurse voice will have a significant direct effect on team surgical efficiency. Results of listwise linear regression showed a significant effect of nurse voice on team surgical efficiency, supporting the hypothesis ($N = 44$), $b = .22$, $SE = .11$, $p = .04$, 95% CI .01 - .44, $R^2 = .07$. Hypothesis 2 proposed that nurse voice is positively correlated with team adaptive performance. Results of a listwise linear regression support this hypothesis ($N = 54$), $b = .16$, $SE = .08$, $p = .06$, 95% CI -.01 - .32, $R^2 = .05$. Hypothesis 3 proposed team adaptive performance directly relates (positively) to team surgical efficiency. However, our results do not support this direct effect, $b = .28$, $SE = .20$, $p = .18$, 95% CI -.13 - .68, $R^2 = .02$.

Hypothesis 4 proposed that the relationship between team adaptive performance and team surgical efficiency is dependent on the extent to which team members are clear in their respective roles. We tested this moderation following the recommendations of Aiken and West (1991) and Dawson (2014). The results of our moderation analysis supported our hypothesis such that high role clarity coupled with low team adaptive performance was associated with lower team surgical efficiency, but the presence of high role clarity and high adaptive team performance was positively related to increased team efficiency. Interestingly, when teams report low role clarity, there is little difference in whether the team is high or low on adaptive performance suggesting the observed moderation is only significant when team role clarity is high (Table 2 and Figure 2).

As a final step I employed the bootstrapping method (Hayes, 2012; Hayes & Preacher, 2014; Preacher & Hayes, 2008; bootstrap = 10,000, 90%CI) to test the full moderated mediation (Figure 1). The direct effect of nurse voice on team surgical efficiency

was not statistically significant, $b = .17$, $SE = .11$, $p = .13$, 90% CI $-.02 - .36$; however the index of moderated mediation was, $b = .21$, $SE = .17$, 90% CI $.01 - .54$. An examination of

Table 1*Means, Standard Deviations, and Bivariate Correlations*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. Nurse Promotive Voice (Max)	3.88	.53				
2. Team Adaptive Performance ^a	3.88	.29	.31*			
3. Team Role Clarity ^a	4.22	.34	.25 [†]	.27 [†]		
4. Team Surgical Efficiency	.01	.39	.31*	.21	-.05	
5. Team Size	3.89	1.85	-.24 [†]	-.14	-.04	-.14

Note. $N = 44$, ^a These variables are team aggregates. * $p < .05$, ** $p < .01$, [†] $p \leq .10$. Team size is a continuous variable based on the number of completed surveys returned from a given team.

Table 2

Regression Results of Surgical Efficiency on Team Adaptive Performance as Moderated by Team Role Clarity

	Model 1				Model 2			
	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>b</i>	<i>SE</i>	β	<i>t</i>
<u>Step 1</u>								
Team Adaptive Performance	.34	.21	.24	1.61	.38	.20	.26	1.85 [†]
Team Role Clarity	-.18	.17	-.16	-1.06	-.14	.17	-.12	-.83
<u>Step 2</u>								
Team Adaptive Performance x					1.30	.58	.31	2.23*
Role Clarity								
Adjust R-square – Team				.02				.10*
Adaptive Performance x Role								
Clarity								
Δ Adjusted R-square								.09*

Notes. *N* = 50. **p* < .05, [†]*p* ≤ .10.

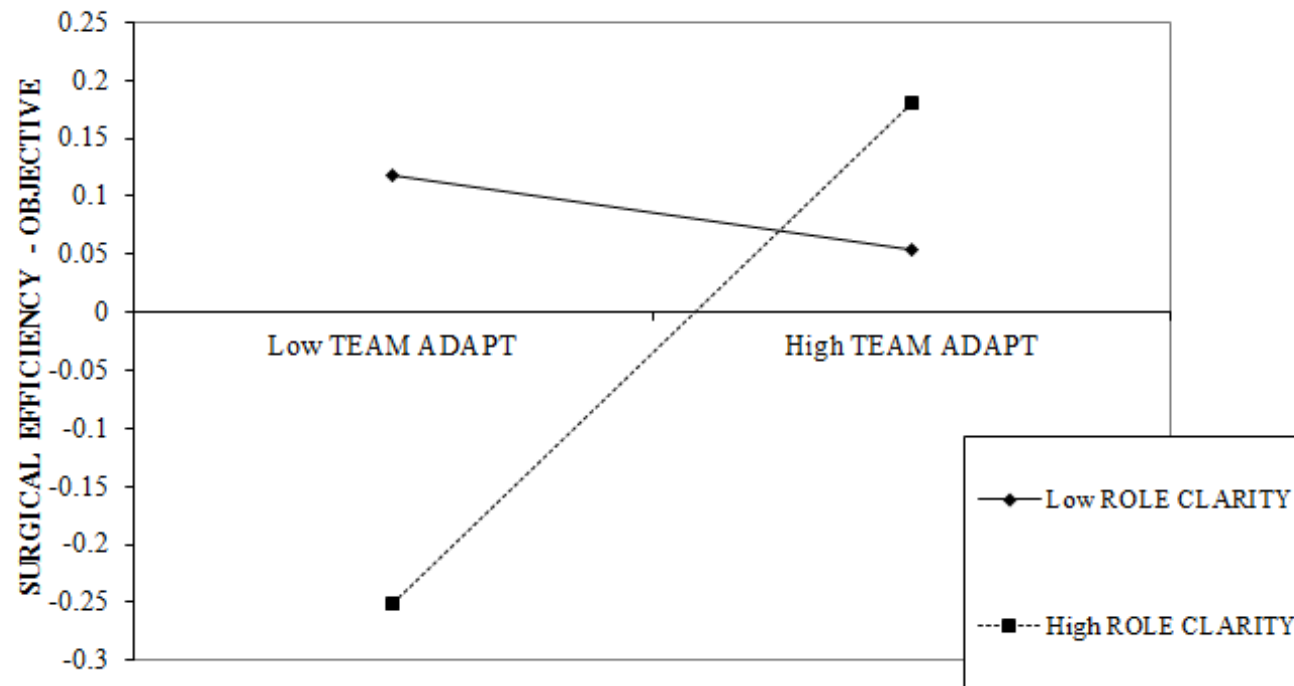


Figure 2. Moderating Effect of Role Clarity on the Relationship between Team Adaptive Performance and Team Surgical Efficiency.

the interaction terms calculated at the mean, plus/minus one standard deviation from the mean suggest that the moderation effect is only statistically significant when role clarity is high, $b = .11$, $SE = .08$, 90% CI .01 - .28. These results suggest that nurse's voice acts as a catalyst for team adaptive performance which is converted to more efficient team performance, but this effect is dependent on team members being clear on their respective roles within the team.

Discussion

The present study sought to articulate the mechanism through which voice translates into team efficiency and an important boundary condition of this effect. Results from 65 surgical teams suggest voice from a nurse can initiate broader team adaptation which subsequently contributes to team efficiency; however, this effect is bounded by the level of role clarity in the team: only team with high role clarity showed the beneficial effects of nurse voice. The current study contributes new insights to multiple interconnected literatures by (a) demonstrating individual voice and team-level adaptive performance are related to objective team efficiency, (b) articulating the mechanism through which voice contributes to team-level outcomes, and (c) introducing team-level role clarity as a boundary condition to the relationship between team adaptive performance and efficiency. Above and beyond the theoretical strengths, this study examined real teams, collected multisource data, and relied on an objective measure of team efficiency. We now turn to the theoretical and practical implications of our findings.

Theoretical Implications

The present findings have several important theoretical implications for voice research. First, a primary theoretical contribution of the present study is to expand the existing repertoire of team-level outcomes associated with both proactive voice and team adaptive performance. Several scholars have noted the relative dearth of scholarship

examining the outcomes associated with voice when compared to the large body of literature on its antecedents (Bashshur & Oc, 2015; Morrison, 2011, 2014). This is particularly true when considering outcomes at the team-level of analysis (Detert et al., 2013). The present study contributes to this important gap in the literature by demonstrating that voice does in fact contribute to team efficiency. This complements existing research that has shown voice to be associated with team-level innovation (De Dreu & West, 2001) and unit performance (Detert et al., 2013). As such, the present study contributes to our understanding of the effects of voice at the team-level of analysis and further broadens the scope of potential outcomes that may be associated with this form of behaviour in work teams. In addition, it is possible that team-efficiency is a more distal outcomes of voice with enhanced team decision making (Nemeth, 1986), error correction, group harmony, and learning (Edmondson, Bohmer, & Pisano, 2001) as more proximal intermediating outcomes (Morrison, 2011). Similarly, the team adaptation literature has largely considered team adaptation as the outcome of interest or examined broadly defined team effectiveness as the criteria of interest (Chen et al., 2005; Maynard et al., 2015). With this said, the present research also suggests this literature may benefit from an enhanced criteria associated with team-level adaptation.

Second, our finding that nurse maximum voice was positively related to both team adaptive performance and surgical efficiency contributes to the growing literature on minority influence in teams (Grant & Patil, 2012; Nemeth, 1986). Previous research by Li, Zhao, Walter, Zhang, and Yu (2015) found maximum voice in a team to be positively related to team backing up and monitoring behaviour but not to team effectiveness; maximum voice was only related to team effectiveness when the voice was enacted by an individual occupying a central position within the team's network. Leveraging a social network theory perspective to the present findings suggests that, although nurses occupy a low-status position in operating theatres, their roles as coordinators positions them as central nodes within the

team's network and as such their voice has a disproportionate effect on the team's processes and outcomes (Balkundi & Harrison, 2006; Borgatti, Mehra, Brass, & Labianca, 2009).

Third, the present study also provides unique insights into the mechanisms through which individual voice translates into team-level outcomes. The present study points to team adaptation as a critical processes mediating between voice and team efficiency. While current framework of team adaptation (e.g., Burke et al., 2006) do not consider the voice literature, the present study suggests that integration across these literatures may be fruitful in understanding triggers for team adaptation beyond team structure, composition, mental models and reactive processes such as information sharing (Maynard et al., 2015). The integration of these literatures would be a natural extension considering previous research has noted that voice behaviour, regardless of whether it is directed at peers or leaders, has important implications for the entire interdependent network of team members (Carpini & Parker, 2017; Griffin et al., 2007; McClean et al., 2013).

Fourth, the present study also extends research on role clarity by considering it at the team-level. Role clarity has been traditionally conceptualised as an individual level phenomena; however, role clarity refers to the extent to which one is clear on the expectations placed on himself by interdependent others (Spreitzer, 1996) and as such is a function of the social context. Existent research on role clarity largely considers it an antecedent of individual-level outcomes such as stress, engagement, and performance (Beauchamp & Bray, 2001; Beauchamp, Bray, Eys, & Carron, 2002; Jackson & Schuler, 1985); however, the present study also points to role clarity as a potentially important moderator at the team-level. Conceptualising role clarity at the team-level also contributes to the job design literature which has already begun to consider job characteristics at higher-levels of analysis (Stewart, 2006).

Limitations and Future Directions

The present study has several notable limitations. First, the present study is limited in its potential to make causal claims as both voice and adaptive team performance were measured at the same time point. Unlike previous work lending on student action teams in laboratory settings (e.g., Chen et al., 2005; Randall et al., 2011) that could assess teams over time, the present study adopted the recommendation of Salas and colleagues (2008, p. 544) and examined teams “in the wild”. A practical limitation of conducting research in field settings characterised by highly complex and dynamic work is that teams are not always available for multiple survey administrations over a given episode. With this said, such challenges may be in-part overcome by leveraging mixed methods (Bryman, 2006; Gibson, 2016). For example, the use of structured field observations may prove helpful in disentangling the causal claims between voice and team adaptive performance as presented in this study. However, the use of an objective measure of team efficiency does preclude the possibility of reverse causality in this instance.

A second related limitation is the use of reduced scales in assessing constructs. Although a common practice across organisational behaviour and human resource management research (Grant, 2013; Grant et al., 2009; Li et al., 2015), the use of two items as opposed to three prevents us from calculating the internal reliability coefficient (Cronbach & Meehl, 1955) and thus must rely on the correlation between items in assessing the reliability of the items. Although some scholars have pointed out that single-item measures are not inherently deficient and are commonly used for a variety of constructs (e.g., job satisfaction and turnover; Wanous & Hudy, 2001; Wanous, Reichers, & Hudy, 1997) the validity of shortened measures continues to be a contentious issue (Diamantopoulos, Sarstedt, Fuchs, Wilczynski, & Kaiser, 2012) and additional validation work is required for the scales used in the present study. The issue of convergent and discriminate validity is somewhat

alleviated by the supplementary analyses conducted following the recommendations of Fornell and Larcker (1981).

A third limitation is the relatively small sample size. Although previous research has used samples of similar sizes across both laboratory (e.g., Chen et al., 2005; Randall et al., 2011) and field settings (Edmondson, 1999), and a simulation study estimated a sample size of 50 or above is required for level two analyses (Maas & Hox, 2005), a small sample size can limit the use of multivariate statistics, path analyses, and the number of variables in a model (Aguinis & Harden, 2009; Tonidandel et al., 2014). The collection of data from real surgical teams is extremely difficult and future research may seek to address the sample size issue by combining field teams with simulated teams to assess the robustness of the findings.

A fourth limitation and opportunity for future research is that the present research does not capture the full process of adaptation within the team (Burke et al., 2006), but rather focuses uniquely on the outcome which is adaptive performance. Although there is a great deal of research examining the process of adaptation, it is largely laboratory-based and thus capturing these processes in the field would be beneficial (Salas et al., 2008). This is particularly important given the dearth of scholarship examining the impact of voice on team adaptation. It is possible that voice, due to its proactive nature, may operate differently from other related constructs such as knowledge sharing, because it is change-oriented.

A fifth limitation and opportunity is that the present study only considered voice behaviour and failed to differentiate the form (Liang et al., 2012; Maynes & Podsakoff, 2014). For example, scholars have differentiated between promotive and prohibitive voice (Liang et al., 2012, p .74 - 75). Promotive voice is defined by the “expression of new ideas or suggestions for improving the overall functioning of the work unit” whereas prohibitive voice is the “expression of concern about work practices, incidents, or employee behavior that are harmful”. In the present study, we only included the promotive voice scale. With this said,

the difference in voice content (Morrison, 2011) between promotive and prohibitive voice may be theoretically and practically important; it is possible promotive voice may be more conducive to team efficiency gains and prohibitive voice may for health and safety outcomes. Other framework such as that by Maynes and Podsakoff (2014) which distinguishes between supportive, constructive, defensive, and destructive voice may also be useful frameworks for investigating the outcomes of voice at the team-level.

Future research may also seek to clarify to whom the voice is directed (Detert et al., 2013; Morrison, 2014). Scholars have noted that voice can be directed toward different targets, namely peers or leaders (Liu et al., 2010). By elaborating the specific target of voice, it may be possible to further elaborate how voice relates to team outcomes and how the context may shape the relationship. For example, when the team is characterised by high-power distance and low psychological safety (Edmondson, 1999), it is possible low-status nurses will direct voice to peers as opposed to the broader team (Oc, Bashshur, & Moore, 2015). This may mean that voice is enacted upon by the nurses alone, or may result in the nurses coming together to advocate as a group to the rest of the team. Conversely, when the broader team is characterised by open communication, low-power differences, and psychological safety, it is possible voice from nurses will be directed toward physicians more. Some research provides preliminary support for this idea having demonstrated that the perceived openness of managers is positively related to subordinate voice, and that this effect is mediated by felt psychological safety (Detert & Burris, 2007).

The present study only included voice because it is the most widely research form of proactive behaviour (Maynes & Podsakoff, 2014; Morrison, 2014). However, other forms of proactive behaviour can also contribute to team adaptive performance and team efficiency. For example, taking charge, defined as “voluntary and constructive efforts to effect organizationally functional change with respect to how work is executed” (Morrison &

Phelps, 1999; Parker & Collins, 2010, p. 637), may also be useful in examining how individuals instigate change within the broader team context. Although some have argued voice and taking charge are functionally equivalent (Thomas, Whitman, & Viswesvaran, 2010), the team context may accentuate their differences. Whereas voice inherently requires the verbal transmission of change oriented information (Van Dyne & LePine, 1998), taking charge does not necessarily require others to be aware before changes are instigated. For example, a nurse may proactively anticipate the need for an x-ray technician and may voice this need to the team, or he may take charge and call the technician himself. Taking a more fine-grained approach to the measurement of proactive constructs by considering the form and level of visibility (Klaas et al., 2012) is consistent with the recommendations of Carpini et al. (2017).

Future research should also consider how team development processes may shape the relative value of both adaptive and proactive performance (Carpini et al., 2017). The Marks, Mathieu, and Zaccaro (2001) temporally-based framework of team processes distinguishes between transition and action phases in task accomplishment. Action phases are defined as “periods of time when teams are engaged in acts that contribute directly to goal accomplishment” whereas transition phases are “periods of time when teams focus primarily on evaluation and/or planning activities” (Marks et al., 2001, p. 360). It is possible that proactive behaviour will be most useful during transition phases as constructive changes can be made then implemented as opposed to voice during action phases which may require the team stop task-oriented work to reorganise.

In the present study, operating theatre teams were conceptualised as including all professional groups; however, it is also possible to position the operating theatre as a multi-team system made up of teams of nurses, surgeons, and anaesthetists (Lingard et al., 2002). Multi-team systems are defined as two or more interdependent teams working toward a

common goal (Marks et al., 2005). The three teams work both interdependently and independently during different phases of the surgical procedure (see Appendix for a description of procedure stages) which means sub-teams will sometimes, but not always, be in the same team stage of action or transition. For example, while the surgeons may be engaged in an action phase, whereas the circulating nurses may be in a transition phase.

Therefore, it is possible that proactivity from nurses will be more effective when both the nurse and surgeon teams are in transition phases, whereas voice from nurses when the surgical team are in an action phase may be distracting and result in less favourable outcomes. Some research examining multi-teams have found that boundary spanning behaviours (like voice) can have both positive and negative effects on team performance (Davison et al., 2012; Lanaj, Hollenbeck, Ilgen, Barnes, & Harmon, 2013). Integrating each team's current temporal phase may help to reconcile conflicting findings.

The finding that role clarity and voice are positively correlated with one another is interesting particularly in light of previous arguments that high-levels of role clarity may attenuate voice (Crant, 2000; Grant & Ashford, 2008). It is possible that when coupled with high psychological safety or team cohesion (Undre, Sevdalis, Healey, Darzi, & Vincent, 2006), high role clarity enhances voice because one's membership to the team becomes more salient than one's specific role within the team. As such, individuals are willing to voice because they are motivated to contribute to the team as a whole and do so by leveraging their role-specific knowledge (Schipper, Edmondson, & West, 2014). Additionally, a team characterised by high role clarity may be better suited to manage a highly uncertain work environment because the uncertainty is external to the team.

Practical Implications

The present study offers several important practical recommendations, particularly within the medical context. First, a plethora of research within the medical field has

highlighted the tension between nurses and physicians in the operating theatre (Flin, Yule, McKenzie, Paterson-Brown, & Maran, 2006; Gardezi et al., 2009; Makary et al., 2006; Yule, Flin, Paterson-Brown, & Maran, 2006) suggesting there is ample opportunity to support healthier functioning between the professions. Whereas previous research has highlighted the need for nurses and physicians to communicate effectively to enhance patient safety (Espin et al., 2006; Kolbe et al., 2012; Lingard et al., 2006), the present research demonstrated the critical role of nurses in enhancing surgical efficiency. Together, findings that constructive communication enhance patient safety and support a sustainable health care system should contribute to motivating better communication practices in the operating theatre.

Second, it is possible established interventions such as pre-operative briefings, short meetings between operating theatre staff prior to the commencement of an operating list (Carpini, Parker, et al., 2015; Lingard et al., 2006; Vashdi et al., 2007), may increase the propensity of nurses to voice and may increase the adaptive potential of teams (West, 1996). Because pre-operative briefings are intended to be collaborative meetings between professionals with the explicit purpose of sharing information (Carpini, Flemming, & Parker, 2015), it is possible they will enhance the psychological safety of theatre staff. Psychological safety “describes people’s perceptions of the consequences of taking interpersonal risks in a particular context” (Edmondson & Lei, 2014, p. 23) and is a well-documented antecedent of voice in team settings (Edmondson, 1996; Edmondson & Lei, 2014; Nembhard & Edmondson, 2008).

Additionally, pre-operative briefings may also enhance team reflexivity, defined as “the conscious reflection on team functioning” (Schipper, Homan, & Knippenberg, 2013, p. 770), because briefings before the list starts sets a collaborative norm within the team which can shape future interactions (Carpini, Parker, et al., 2015). If teams are actively reflecting on how they are doing, then it is also possible team members will be better positioned to

proactively contribute to the team (Gurtner, Tschan, Semmer, & Na, 2007; Schippers, West, & Dawson, 2015) and will be in a better position to adapt to changing circumstances (Frese, Kring, Soose, & Zempel, 1996; Schippers et al., 2014; Schippers, Hartog, & Koopman, 2007). This is consistent with previous research demonstrating more reflexive teams are also more innovative (Schippers et al., 2015).

Third, the present study highlights the importance of role clarity within theatre teams. Team role clarity may be enhanced through pre-operative briefings (Carpini, Flemming, et al., 2015) and as such position operating theatre teams to leverage their adaptive performance in achieving efficiency gains. Because each team member knows their role within the team, adaptation is smoother. Additionally, the finding that role clarity and voice are positively correlated to one another suggests that enhancing team role clarity does not necessarily mean building walls between professional groups. Rather, it is possible to emphasise the role of each individual as a part of a broader team. This means the uncertainty inherent in the working environment does not necessarily create uncertainty in the immediate team context.

Fourth, the present study demonstrates the utility of nurses' voice in driving surgical efficiency, an outcome also associated with increased team satisfaction amongst surgeons (Carpini, Flemming, et al., 2015). As such, the contribution of nurses in theatre may help improve the overall experience of surgeons in theatre. This is critical in light of a growing concern for the psychological well-being of physicians, particularly surgeons, who are at increased risk of burnout and suicidal ideation compared to the general population (Elmore, Jeffe, Jin, Awad, & Turnbull, 2016; Ramirez, Graham, Richards, Cull, & Gregory, 1996; Shanafelt et al., 2011). These results suggest that the proactive participation of nurses can actually support a healthier work environment and may contribute to attenuating the mental health crisis amongst medical practitioners.

Fifth, applying the argument of Beal et al. (2003) that efficiency is more informative than effectiveness, consider two surgical teams performing elective general surgery on a half-day operating theatre list¹⁰ that runs from 8am to noon. In this example, the two theatres are assigned three equivalent 60 minute cases each. Assuming both lists are completed during the assigned time slot, using a measure of surgical effectiveness, both theatres were equally effective. However, if one was to observe that one theatre ran a ten-percent efficiency over the course of each procedure, relative to the other theatre that simply ran on-time, the difference would equate to \$2,700 based on an average cost of \$150 per minute in theatre (Macario, 2010). Not only is this potential cost-saving important, but over the course of a full-day, a 10% efficiency across six procedures would allow thirty-six minutes at the end of the day – the amount of time required for many simple elective procedures - which would go a long way to resolving long wait lists.

Conclusion

The extent to which teams adapt to challenging and uncertain situational demands is critical to their success. Little is known about the potential for the voice of individual team members to initiate team-level adaptation, and even less is known about the relative advantages of team adaptation and the conditions under which this adaptation is most constructive. The present research sheds light on these issues by demonstrating the voice of nurses can act as a catalyst for surgical team adaptation which increases the efficiency of surgical procedures, but only when the team as a whole is characterised by high role clarity. The results of this work speak to important theoretical implications and practical recommendations.

¹⁰ An operating theatre list is a collection of individual surgical procedures assigned to a given operating theatre. Lists contained between 1 and five surgical procedures.

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Appendix

Operating Theatre (OT) Procedure Overview and Staff Role Descriptions

Procedure Stage	Brief Description of Core Tasks and Staff
Patient Arrival, Positioning, and Consent	<p>Patient arrives in a hospital bed and is transferred from the bed to the operating table with the assistance of porters. Once on the operating theatre table, the patient is positioned for induction. The circulating nurse reads out the World Health Organisation (WHO) consent section and the patient provides final verbal consent.</p> <p>This portion of the procedure is primarily directed by the circulating nurse, the anaesthetic team, and the porters.</p>
Induction	<p>The anaesthetist and the technician induce the patient. During this phase of the procedure, the lead anaesthetist is the team leader. The nurses and surgeons are generally not involved.</p> <p>This stage transitions to the establishment of the sterile-field when surgical drapes are put around the surgical area. Only “scrubbed” staff are permitted to come in contact with the sterile-field. Sterile staff include the surgeons and scrub nurse.</p>
Surgical Procedure	<p>The surgical procedure commences with the application of disinfectant wash over the area where the patient will be operated (e.g., hand, chest). The lead surgeon will take leadership during this stage and will work closely with the assisting surgeon and scrub nurse. Sometimes the surgeons will speak directly to the circulating nurse(s) or anaesthetic team but more often than not, the scrub nurse will liaise between the surgical team and the other roles. The circulating nurse plays a key role in coordinating with the scrub nurse and the anaesthetic team. The surgical procedure terminates when the wound is closed and the sterile-field is terminated.</p>
Reversal	<p>The patient’s anaesthetised state is reversed. The anaesthetic team is leading this phase of the procedure. The nurses and surgeons are minimally involved.</p>
Patient Transferred to Recovery	<p>The patient is transferred back to a hospital bed. One anaesthetist and one nurse transfer the patient to the recovery unit with the help of a porter.</p>
Theatre Turn-Around	<p>The theatre is cleaned and setup for the next patient.</p>

Note. A theatre list is a collection of procedures where each of the above stages would occur in this order. For the purpose of the present study, the objective measure of theatre efficiency only contains the surgical procedure phase as this is the phase of the procedure where efficiency is a key outcome.

Professional Roles	Brief Description of Tasks
Lead Surgeon	<p>The lead surgeon is primarily responsible for the surgical component of the procedure. The lead surgeon is generally the more senior of the surgeons (consultant or fellow). The lead surgeon will decide on the surgical approach to be used and is generally the primary operator (e.g., majority of the cutting/dissection). The lead surgeon occupies the leader during the surgical stage of the procedure.</p> <p>The lead surgeon is part of the sterile-field.</p>
Assisting Surgeon(s)	<p>Assisting surgeons provide support to the lead surgeon. Support is most frequently provided by holding instruments and assisting with dissection.</p> <p>The assisting surgeon is part of the sterile-field.</p>
Lead Anaesthetist	<p>The lead anaesthetist is primarily responsible for the well-being and health of the patient. This is achieved through the active monitoring and recording of vital indices. The lead anaesthetist occupies the core leadership role during induction (local or general anaesthetic) and reversal (in the case of general anaesthetic the patient is brought back to consciousness).</p> <p>Unlike the lead surgeon, the lead anaesthetist is often a more junior anaesthetist as the more senior anaesthetists are assigned to multiple theatres at any given time.</p> <p>The lead anaesthetist is not part of the sterile-field.</p>
Assisting Anaesthetist	<p>The assisting anaesthetist is generally only present during the induction, reversal, or when the lead anaesthetist is on break. Their role is to provide support to the lead anaesthetist through the management of drugs and equipment.</p> <p>The assisting anaesthetist is not part of the sterile-field.</p>
Scrub Nurse	<p>The scrub nurse provides support to the surgeons through the management of equipment and consumables (e.g., needles, blades, bandages). The scrub nurse is the primary link between the surgeons and the circulating nurse. Scrub nurses play a critical role in procedures by requesting equipment and consumables in anticipation of them being needed by the surgeons. The scrub nurse plays a key role in coordinating between various professional groups.</p> <p>The scrub nurse is part of the sterile-field.</p>
Circulating Nurse(s)	<p>Circulating nurse(s) provide support to the scrub nurse and vicariously to the surgeons through the management of equipment and consumables before they enter the sterile-field. The circulating nurse plays a critical coordinating role between the surgeons (and scrub nurse) and the anaesthetic team (anaesthetists and technician).</p> <p>The circulating nurse is not part of the sterile-field.</p>
Anaesthetic Technician	<p>The anaesthetic technician provides ongoing support to the anaesthetist(s) in theatre through the preparation of equipment and consumables. The anaesthetic technician is not part of the sterile-field.</p>

Table A. Comparison of Team Compositional Models – Means, Standard Deviations, and Correlations

Variable	<i>M</i>	<i>SD</i>	<i>N</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
1. N. Voice Min	.38	.30	32													
2. N. Voice Mean	3.52	.57	54	-.45***												
3. N. Voice Max	3.87	.51	54	.55***	.61***											
4. N. Voice SD	3.74	.50	54	-.07	.10	-.10										
5. T. Adapt Min	3.48	.59	65	-.05	.26*	.22	.11									
6. T. Adapt Mean	3.92	.32	65	.10	.16	.26	.05	.06								
7. T. Adapt Max	4.36	.46	65	.05	.06	.08	-.06	.03	.57***							
8. T. Adapt SD	.44	.28	59	.10	-.03	-.08	-.00	-.74***	-.28*	.55***						
9. T. Role Clear Min	3.85	.55	65	.08	.27*	.18	.10	.27*	.33**	.17	.03					
10. T. Role Clear Mean	4.26	.35	65	.26	.23	.30*	.04	.10	.35**	.41***	.25	.78***				
11. T. Role Clear Max	4.72	.41	65	.15	-.00	.13	-.06	-.11	.21	.45***	.28*	.31**	.71***			
12. T. Role Clear SD	.46	.24	59	.02	-.01	.07	.02	-.09	-.08	.02	.11	-.62***	-.19	.36**		
13. Surgical Efficiency	.07	.40	50	.20	.37	.31*	.08	.11	.19	.12	.04	-.06	-.09	-.31*	-.09	
14. Team Size	3.89	1.85	65	-.02	-.52***	-.24	-.32*	-.47***	-.14	.33**	.28*	-.32**	-.04	.37**	.11	-.14

Notes. “N.” = responses from nurses only. “T.” = response aggregated at the team level and includes nurses, surgeons, anaesthetists, and technicians. “Adapt” = adaptive performance.

General Discussion: Bringing the Pieces Together

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General Discussion: Bringing the Pieces Together

Overall, this thesis contributed to our understanding of the dimensionality and consequences of individual work performance. In this concluding chapter, I provide an overview of the contributions of the articles to our understanding of individual work performance and articulate a series of future directions. Specifically, I begin by briefly summarising each article and their respective contributions. For articles 2 and 3, I explain how each article actioned recommendations from Carpinì et al. (2017). Following on, I turn my attention to the future. In the future directions section, I articulate a series of potentially fruitful research questions that continue many of the themes found within this thesis. Finally, I discuss the practical implications of this research and provide my concluding remarks.

Summary of Findings and Theoretical Implications

In article 1 (chapter 2), I presented a comprehensive review and synthesis of the individual work performance literature (Carpini, Parker, & Griffin, 2017). This review and synthesis spanned multiple approaches to the study of individual work performance (e.g., “in-role” and “extra-role”, organisational citizenship behaviours, proactive and adaptive performance) and leveraged a combination of quantitative (science mapping) and qualitative techniques. Two overarching conclusions resulted from this review and synthesis forming the basis for the following two articles.

First, the field of individual work performance is highly fragmented. This is evident in the results of the science maps that, for example, demonstrated the literatures on OCBs and proactivity have largely developed in isolation from the literature on task performance. A consequence of this theoretical isolationism is a lack of understanding how various individual work performance constructs relate to one another in so far as their similarities and differences. In leveraging the review and synthesis of constructs to clarify the nomological network, I provided much needed clarity related to common and distinct antecedents. For

example, it is clear that job satisfaction and transformational leadership are positively related to all forms of performance. There is equally evidence of some unique antecedents of each form such as meta-cognition for adaptive performance.

Second, the vast majority of research including individual work performance has positioned individual work performance as the dependent variable (Bashshur & Oc, 2015; Campbell & Wiernik, 2015) and thus has attenuated our understanding of the consequences of performance. The lack of knowledge regarding the outcomes of performance is particularly notable for adaptive and proactive performance where few studies exist. Because so little research positions individual performance as the independent variable, the field also lacks both theory and empirical work explaining how individual work performance translates to higher-level performance and outcomes.

Article 2 (chapter 3) builds on the two gaps identified in article 1 by examining multiple forms of performance simultaneously (study 1) and by building theory related to the nature of adaptive performance (studies 2a and 2b). Study 1 examined the unique contribution of proficiency, adaptivity, and proactivity in informing the assessment of employee overall work performance as judged by managers. Results suggested that each of the three forms of performance contributed uniquely to account for 52% of the variance in manager's ratings. Of particular note was the finding that proactive performance had the smallest beta relative to both proficiency and adaptive performance. This is somewhat consistent with recent research suggesting proactive performance is not always (positively) related to judgements of overall work performance (Morrison, 2014) and that adaptive performance does in fact contribute over and above the other two forms (Nguyen, Johnson, Collins, & Parker, 2016). As such, this study contributed to bridging the field together through the inclusion of multiple forms of performance concurrently.

Building on these findings, I then built theory related to adaptive performance. Specifically, I integrated role congruity theory (Eagly & Karau, 2002; Eagly & Wood, 2011) to posit that adaptive performance, like both helping (Heilman & Chen, 2005) and proactive performance (Luksyte, Unsworth, & Avery, 2017), may be subject to ascribed gender stereotypes. It was argued that women's ascribed characteristics of being patient, cooperative, and communal (Lyness & Heilman, 2006; Proudfoot, Kay, & Koval, 2015) would mean that adaptive performance - which is about adjusting oneself to fit external changes – will be associated more with women than men. A down-stream consequence of ascribing women with being adaptive relative to men is that women should be rewarded more for being adaptive compared to their male counterparts. The results of a field study including 96 employees and their managers provided preliminary support for my hypothesis such that women who were rated as highly adaptive also received higher performance ratings. With this said, men who were rated as low on adaptive performance did not significantly differ from those rated high suggesting men are not rewarded for this form of behaviour. The results of two vignette studies replicated and expanded on the findings of the field study by observing effects on overall performance ratings, promotion potential, and salary increases.

Taken together, the results of article 2 suggest that each form of performance contributes uniquely to the assessment of overall work performance and that adaptive performance is also a gendered form of performance such that it is ascribed to women more than it is to men. In measuring multiple forms of performance concurrently within the same study, I demonstrated the distinctiveness of each form of performance (Griffin, Neal, & Parker, 2007; Griffin, Parker, & Mason, 2010; Nguyen et al., 2016) and contributed to our understanding of the outcomes associated with these forms – in this case, manager's judgements of the overall work performance of subordinates (Carpini et al., 2017).

Article 3 (chapter 4) positioned voice as a catalyst for team-level adaptive performance with the potential to generate team efficiency gains as bounded by team role clarity. Lending on a sample of 65 public hospital surgical teams, I demonstrated support for the hypothesised model such that team adaptive performance mediated the relationship between the voice of the nurse and team surgical efficiency; however, team adaptive performance only resulted in team efficiency when team members were very clear on their roles within the team.

This study addressed several of the gaps in the literature identified by Carpini and colleagues (2017). First, the study positioned individual proactive behaviour (voice) as the independent variable. As such, the study answered repeated calls for scholars to theorise and test the outcomes of performance (Bashshur & Oc, 2015; Campbell & Wiernik, 2015; Morrison, 2011). Second, the study presented a mechanism (team adaptive performance) through which voice can shape team-level outcomes (Organ, 1997; N. P. Podsakoff, Whiting, Podsakoff, & Blume, 2009). Third, the inclusion of team efficiency further expanded the team-level outcomes associated with proactive performance which have been dominated by team innovation (De Dreu, 2002; De Dreu & West, 2001) and effectiveness (Nemeth, 1986).

Limitations

There are several notable limitations of the present thesis. First, two of the studies included in this thesis are cross sectional which limit claims of causality (Scandura & Williams, 2000). In the first case (article two), the issue of causality is somewhat addressed by the follow-up experiments (Grant & Rothbard, 2013), and in the second case (article three) through the use of an objective dependent variable (Vashdi, Bamberger, & Erez, 2013).

Second, both articles two and three have somewhat small sample sizes. In article two, the follow-up experiments were conducted with 33 and 24 participants per experimental cell. However, it has been noted that the number of participants per cell is a function of the

expected effect size and that as few as 20 participants per cell is sufficient (Simmons, Nelson, & Simonsohn, 2011). The same is true for the field study of 65 surgical teams. Although previous research has published with similar sample sizes (Chen, Thomas, & Wallace, 2005; Edmondson, 1999; Randall, Resick, & Dechurch, 2011) it would be desirable to increase the sample size or complement it through triangulation (Gibson, 2016).

Third, both articles two and three do not include constructs at multiple levels of contribution (individual, team-, and organisation-member). One of the recommendations of Carpini et al. was to include not only multiple forms of performance but also performance at multiple levels of contribution (Griffin et al., 2007). In article two, the measure of adaptive performance used in the survey instrument and included in the experimental conditions as stimuli does not distinguish between the levels of contribution. It is possible that team- and organisation-member adaptive performance will be more strongly stereotyped relative to the individual task adaptive performance because it more heavily emphasises the communal and cooperation elements (Heilman, 2012) argued to be central to why adaptive performance is ascribed to women more than men. Additionally, article three only considers voice and fails to include other forms of proactive performance that may also instigate team-level adaptation. The decision to only include voice is appropriate to the research question as voice has been conceptualised as a team-member contribution (Carpini & Parker, 2017) which is arguably why this form of performance may be a strong catalyst for team-wide adaptation.

Recommendations for Future Research

In addition to addressing several important gaps in the literature, the present thesis also offers several recommendations for future research which I elaborate below. These recommendations are in addition to those already discussed in Carpini et al. (2017).

How do we address the *assumption of applicability*? Research in applied psychology has long relied on the use of questionnaires (or surveys) in measuring constructs

of interest (Hinkin, 1998). Indeed, in my review and synthesis of the individual work performance literature, I identified over 97 performance constructs and their respective scales. One pertinent issue that arose from this review was the identification of “chameleon items” which refers to cases where “the same or highly similar items that shift between different constructs, even though the constructs are intended to be discrete from one another” (Carpini & Parker, 2017, p. 36). Although chameleon items are an important issue, I contend the measurement of work performance is also threatened by the *assumption of applicability*. The assumption of applicability occurs when scale items are worded in such a way that they are dependent on external events or situations creating an assumption that they apply to the respondent.

The assumption of applicability can be seen in several commonly used scales. For example, the items “helps others who have been absent” and “goes out of his/her way to help new employees” from the widely used measure of organisational citizenship behaviour directed at individuals (Williams & Anderson, 1991, p. 606) assumes that a colleague has been absent or that a new employee has been hired within the referred period of time. Similarly, the following items from the commonly used measure of employee voice (Van Dyne & LePine, 1998, p. 112) also assumes the existence and/or awareness of issues or problems that require attention, “This particular co-worker speaks up and encourages others in this group to get involved in issues that affect the group”; this is also evident in the recent measure of promotive voice (Liang, Farh, & Farh, 2012, p. 79), “Proactively develop and make suggestions for issues that may influence the unit.” Finally, items such as “Adapted well to changes in core tasks” and “Learned new skills to help you adapt to changes in your core tasks” (Griffin et al., 2007, p. 337) also assume the existence of changes to which employees must respond.

Although largely ignored, awareness of this issue is apparent in studies measuring the antecedents of proactivity. For example, Frese, Teng, and Wijnen (1999) presented a model in which having ideas was an antecedent voice (writing suggestions for improvement) and demonstrated multiple correlates of having ideas such as self-efficacy, motives, and job content. These findings are consistent with a process-perspective of proactive performance (Grant & Ashford, 2008) which begins with the awareness of a problem or issue and the generation of actionable alternatives.

Although modelling the antecedents of proactive performance is useful, it does not necessarily manage the assumption of applicability. This is true even if theoretical antecedents (e.g., having ideas) are included as control variables as it is still unclear how the participant will respond to items which are not applicable to them. For example, if no “issue” was observed during a surgery (article 3) will respondents report high, low, or medium voice? Similarly, if no change to one’s core tasks has occurred during the referred period, does that mean that the participant is not adaptive or simply did not have the opportunity to engage in adaptive performance? When items are not directly applicable, it is possible that respondents report general patterns of behaviour which are more closely related to personality (McCrae & Costa, 1987) or may be subject to greater personal evaluation such as item social desirability (P.M. Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Although statistical solutions to this issue may be feasible (e.g., controlling for having ideas, other indicators of opportunity) they are often not the most desirable solutions to study design issues (P. M. Podsakoff et al., 2003). Alternative methods may include the use of filtering questions (e.g., “To what extent did you experience a change in how you perform your core tasks”) that would funnel participants to applicable questions. Such filter questions, if measured using a continuous variable, may also prove useful moderators in existing models, for example capturing the magnitude of the change to which an employee is

responding. The inclusion of such items also partially addresses repeated calls for scholars to systematically consider context within their research (Cappelli & Sherer, 1991; Carpini et al., 2017; Johns, 2006). Alternatively, such items may use an additional “not applicable” scale point to avoid missing data.

How can scholars address the curious case of isomorphism? Isomorphic models “posit that the relationship between two or more variables at one level of analysis is replicated at one or more other levels of analysis” (Klein, Tosi, Cannella, 1999; pg. 246). In terms of individual performance, isomorphism relates to the extent to which performance models can be used at various levels of analysis for example in terms of managerial and supervisor behavior. In terms of the former, there remains relatively little research examining the extent to which performance models and constructs are isomorphic. With this said, Campbell et al. (1993) argues their eight dimensional model can be used for employee and supervisor behavior by simply removing the supervision/leadership and management/administration dimensions when they are not applicable. Additionally, Bartram (2005) provided meta-analytic evidence of the validity and reliability of the Great Eight Competencies using data where approximately 75% of the data was from managers and executives and 25% from non-managers. However, he author did not provide empirical evidence of isomorphism. Hence the models presented by Campbell et al. (1993) and Bartram (2005) offer limited evidence for the transferability of individual performance models from subordinate to managerial levels.

To date we have found few performance models designed for managerial performance with the exception of Conway (1999). The Conway model includes five performance categories: (1) job dedication, (2) interpersonal facilitation, (3) technical-administrative task performance, (4) leadership task performance, (5) unclassified – samples. In reviewing the model within the broader Griffin et al. framework, it becomes apparent that the categories are

compatible. For example, the job dedication category is extremely similar to job dedication as found in the OCB and contextual performance literatures (Van Scooter & Motowidlo, 1996) and as such would constitute a form of individual task proficiency. With this said, the initiative aspect is more closely related to individual proactivity. Technical-administrative task performance would also fall within the task proficiency category while both interpersonal facilitation (e.g., cooperation) and leadership task performance (e.g., people management, supervising) would be examples of team member proficiency. Finally, the unclassified-samples category includes adaptive performance, in addition to work-life balance, control, strategy, and security. Work-life balance would be excluded from the Griffin et al. model, whereas control and strategy, and security would constitute forms of organizational member proficiency.

The issue of isomorphism has received extremely little empirical and theoretical attention in the existing literature. This is an issue as it is unclear how existing performance models may or may not be applicable at different levels of organisational hierarchies.

How can the distinction between in-role/extra-role performance be re-applied?

The work of Organ and colleagues (Bateman & Organ, 1983; Smith, Organ, & Near, 1983) popularised the distinction between in-role and extra-role behaviour (Katz & Kahn, 1966). While in-role behaviour has been conceptualised as those behaviours that can be formally prescribed to employees, supra-role behaviour (extra-role) has been defined as “behavior that cannot be prescribed or required in advance for a given job” (Bateman & Organ, 1983, p. 588). The distinction between in-role and extra-role performance has had a profound impact on the field of individual work performance (article 1) and continues to be used in the literature (Chiaburu & Baker, 2006; Luksyte et al., 2017; Van Dyne & LePine, 1998).

Although distinguishing between the two forms of performance resulted in much needed attention being paid to forms of performance besides task performance, the

application of this distinction has been criticised for being too stringent and failing to take into consideration the perspective of the employee and job requirements (Carpini & Parker, 2017; Morrison, 1994). For example, Morrison (1994) found employees differ significantly in how they define their work roles. Whereas helping has been generally considered an extra-role behaviour (Organ, Podsakoff, & Podsakoff, 2006; Smith et al., 1983), results suggest that some forms of helping (e.g., covering for coworkers who are absent or on break) are considered to be more in-role than others (e.g., helping others who have heavy workloads). Additionally, Morrison demonstrated the extent to which some forms of performance are considered to be in-role or extra-role differs as a function of job title. These results are consistent with those of N. P. Podsakoff, Whiting, and Podsakoff (2011) who found OCBs had an asymmetrical impact on selection decision such that they were weighed more heavily when judging higher-level employees as opposed to lower-level ones. The authors explain these findings by suggesting that managerial roles generally emphasise coordination and interpersonal relationships elements as opposed to task-specific duties (W. C. Borman & Brush, 1993; W. C. Borman & Motowidlo, 1993; N. P. Podsakoff et al., 2011).

In surveying the current literature, it does appear as though scholars have generally moved away from distinguishing performance so dichotomously. However, abandoning role perceptions may mean some important questions remain unanswered. For example, it may be interesting to understand how role perceptions moderate the ratings managers assign to different forms of performance. It is possible that some managers have more fluid beliefs about what is and is not part of their employees' jobs as opposed to others who may have more clearly defined views. These perceptions of whether behaviour is or is not part of subordinates' jobs may systematically alter their assessments of overall work performance. A further extension may be from the employee's perspective. As Morrison (1994) demonstrated, employees differ in the extent to which they perceive different behaviours to

be part of their job. The individual role perceptions of employees may help explain differential outcomes of individual work performance for workers. For example, workers who believe they are required to be proactive (e.g., voice, take charge, innovate) may perceive this requirement either positively or negatively. The extent to which these perceptions are functional or maladaptive may depend on perceived capacity of employees to engage in broader and more proactive forms of work (Parker, 1998). If an employee perceives being proactive is part of their role and feels able to meet that role requirement, then they may experience more positive outcomes, as opposed to an employee who believes being proactive is part of her role but this belief is not coupled with the perceived capacity to meet the role requirements.

I believe it is somewhat premature to reject the distinction between in-role and extra-role performance. While I do not believe it is appropriate for scholars to determine whether behaviour is in-role or extra-role, I do believe this distinction speaks to a fundamental psychological experience of employees and managers. As such, I advocate for future research considering role perceptions as a psychological experience that differs between individuals.

How can we build better theory about the consequences of individual work performance? As noted throughout this thesis, there is a dearth of scholarship examining the consequences of individual work performance. The lack of research considering the outcomes of performance also means there is no organising framework for the consequences. Without an organising framework to bridge various consequences together, it is difficult to build a cohesive body of research. The lack of an overarching framework for the organisation of performance consequences is evident in the recent review and synthesis by Carpinì et al. (2017) which found various outcomes and indicators of performance were scattered across five perspectives on the study of performance, and which failed to organise the outcomes in a similar fashion to the antecedents.

With this said, some scholars have attempted to organise outcomes in various ways. For example, the most common way of distinguishing outcomes is classifying them as either subjective or objective measures (Bommer, Johnson, Rich, Podsakoff, & MacKenzie, 1995). An objective measure is defined as a quantifiable outcome or behaviour (e.g., sales value) whereas a subjective measure implies an intervening cognitive process in determining the outcome (e.g., manager ratings of performance). Campbell and Wiernik (2015, p. 49) distinguished between the “outcomes” of performance (e.g., sales, stock price, salary) which are a result of both the individual work performance of an employee and additional factors, and the “indicators” of performance (e.g., efficiency and productivity) which are output ratios. Other frameworks have distinguished between behavioural, attitudinal, role perception, and well-being outcomes (Humphrey, Nahrgang, & Morgeson, 2007). Finally, in a review of outcomes of OCBs, the authors leveraged the balanced scorecard framework to distinguish between unit/team/organisational measures (e.g., subjective overall performance/effectiveness, and turnover), improving business process measures (e.g., product quality and speed), customer measures (e.g., perceived customer service and satisfaction), and financial measures (e.g., profitability, sales, and revenue; N. P. Podsakoff, Podsakoff, MacKenzie, Maynes, & Spoelma, 2014).

Although useful frameworks none of the aforementioned capture the full breadth of consequences associated with individual work performance. Additionally, these frameworks lack a theoretical rationale which means they fail to contribute to the development of theory. Finally, some of the frameworks are overly generic (e.g., subjective/objective) which means they are not particularly useful in directing future research. For example, reviews leveraging the simple distinction between subjective and objective outcomes of performance conclude there is a lack of research using objective measures (Bommer et al., 1995; N. P. Podsakoff et

al., 2014), but offer little guidance as to what objective measures may help fill knowledge gaps or how the various measures are related to one another.

One way in which scholars may organise the consequences of individual work performance is by integrating both the level of contribution (Griffin et al. 2007) as well as whether the outcome is objective or subjective. The level of contribution distinguishes between contributions at the individual, team, and organisational levels. When performance contributes at the individual level, the relationship between the performance and effectiveness is argued to be more direct, whereas the relationship between performance and effectiveness becomes increasingly complex as the intended level of contribution increases to higher-levels (Griffin et al. 2007). Distinguishing between the levels of contribution has direct implications for theory. When the level of contribution is at the individual-level, the relationship between individual work performance and the outcome should operate at the same level of analysis – the individual level. However, when the level of contribution increases, the relationship between individual work performance and the outcome becomes more complex implying bottom-up and cross-level effects (Griffin, 1997). As such, studies examining higher-level outcomes should also include mediators and moderators at the appropriate level of analysis. For example in article 3, the dependent variable of interest was team efficiency and this directed my attention to team-level mediators (team adaptive performance) and moderators (team role clarity). Although relatively straight forward, several scholars have noted the lack of theory and empirical studies examining the intermediary mechanisms between levels (Carpini et al., 2017; Organ, 1997; N. P. Podsakoff et al., 2009).

The second dimension included in the proposed framework is whether the measure is objective or subjective. The distinction between objective and subjective outcomes of performance is the most commonly applied in the field (Bommer et al., 1995). Distinguishing between the two forms of consequences has been considered to be particularly important

because objective measures are believed to be less susceptible to construct validity issues than subjective measures. For example, manager ratings are subject to a variety of potential contaminating factors such as rating biases (Arvey & Murphy, 1998) as well as item characteristic and context effects (P. M. Podsakoff et al., 2003). Indeed, as demonstrated in article 2, manager's ratings of performance are shaped by underlying role expectations.

Objective measures are not subject to the same intermediating cognitive processes; however, they are not inherently better. This is because objective measures can be very narrow (Bommer et al., 1995) and may be difficult to generalise to other contexts. One way of overcoming the lack of generalisability in objective outcomes is to consider efficiency over effectiveness measures. This is because efficiency measures (or productivity) are ratios that consider the outputs relative to the number of inputs (Beal, Cohen, Burke, & Mcclendon, 2003; Campbell & Wiernik, 2015). For example, article 3 considered surgical team efficiency which may suggest that the results of this study may also extend to other contexts where efficiency is considered a critical outcome. To a great extent, the context in which the research is undertaken should inform the type of consequence examined and it is up to the researcher to provide guidance on whether and how the results may generalise to similar and different contexts.

Are there distinguishable profiles of individual work performance? Henderschott (1917) challenged the field of applied psychology to assist in establishing the “comparative value” of employees. In response to this initial call, a burgeoning field has evolved. Indeed, in the last 40 years alone, over 9,000 articles including individual work performance have been published in top-tier management and psychology journals (Carpini et al., 2017). With this said, the existing research has largely taken a variable-centered approach to understanding the value of performance in organisations. A variable-centred approach examines only the unique and independent relationships between variables and individual

work performance (Muthén & Muthén, 2000). For example, in article 2, the first research question concerned whether each form of performance (proficiency, adaptivity, and proactivity) would account for unique variance in manager's ratings of overall work performance. My results suggest that each form does contribute uniquely to informing managers' judgements, such that the comparative value of employees can be determined by comparing employees on the three forms separately.

With this said an alternative, yet equally valid, strategy to the study of individual work performance would adopt a person-centered approach (Muthén & Muthén, 2000; M. Wang & Hanges, 2011). A person-centered approach "considers the possibility that the sample might in fact reflect multiple subpopulations characterized by different sets of parameters" (Meyer & Morin, 2016, p. 584). The subpopulations are known as "latent profiles" and are argued to vary in their psychological processes and behaviours (M. Wang & Hanges, 2011). Latent profile analysis has been applied to a variety of research areas including organisational commitment (Kabins, Xu, Bergman, Berry, & Willson, 2016; Morin & Meyer, 2016) and emotional labour (Gabriel, Daniels, Diefendorff, & Greguras, 2015). By adopting a person-centered approach, these studies have been able to shed new light into the nature of the focal phenomena. For example, by adopting a person-centered approach, Morin and Meyer (2016) identified five latent profiles characterised by distinct constellations of the three commitment mindsets: affective, normative, and continuance (Allen & Meyer, 1990). In adopting this approach, the authors were able to reconcile previous conflicting results regarding the importance of normative commitment. Whereas previous variable-centered research has found mixed results of normative commitment, the person-centered approach identified a profile characterised by high normative commitment and high affective commitment which yielded the most organisationally-functional outcomes. From the person-

centered approach, the comparative value of employees would be determined by comparing the profile of each employee's individual work performance.

The question then becomes: what would individual work performance profiles look like? The first step theorising the latent profiles is determining the number of dimensions to be included in the profile (M. Wang & Hanges, 2011). Based on the Griffin et al. (2007) model, it would be logical to argue for profiles made up of nine dimensions. However, this far exceeds the number of dimensions currently used in the field which is generally between two and four (Meyer & Morin, 2016; Morin & Meyer, 2016). Additionally, the synthesis by Carpini et al. (2017) demonstrated the forms of performance (proficiency, adaptivity, and proactivity) could be distinguished, but the level of contribution was less clearly delineated, particularly within the adaptivity and proactivity literatures. Given the current research distinguishes clearly between individual task proficiency (26% of performance constructs), team-member proficiency (28%), adaptive performance (20%), and proactive performance (28%; Carpini et al., 2017¹¹), it would seem logical to begin with these four dimensions. Because this analytical technique has never been applied to the field of individual work performance, it is difficult to hypothesise the number and structure of potential profiles (Gabriel et al., 2015). Figure 1 below provides some simple exemplar profiles.

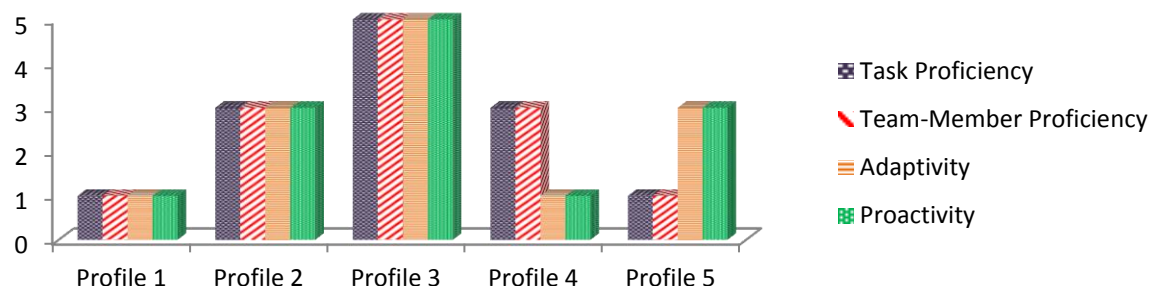


Figure 1. Theorised performance profiles

The first hypothetical profile represents employees classified as “low performers” who are poor across all performance dimensions. Profile 2 is characterised by moderate

¹¹ Sum = 102% due to rounding.

performance across all dimensions and may be considered the “reliable performer”. Profile 3, characterised by high levels across all forms of performance could be considered as “star performers” (Aguinis & O’Boyle, 2014) who contribute disproportionate to the organisation. Profile 4, is characterised by moderate levels of proficiency and low levels of both adaptive and proactive performance (both emergent forms of performance; Griffin et al. 2007) suggesting this type of profile may represent the “prescribed performer” who completes easily anticipated duties but does not engage in the more emergent forms of performance. Finally, profile 5 would be the “emergent performer” profile where an employee is highly proactive and adaptive, but performs poorly on prescribed tasks.

The identification of distinct performance profiles would offer the opportunity to radicalise the way in which scholars conceptualise individual work performance and may contribute to clarifying mixed results. For example, Griffin et al. (2007) found openness to change (Schwartz, 1994) to be positively correlated with adaptive performance; however, a follow-up study by Neal, Yeo, Koy, and Xiao (2011) found openness to experience (McCrae & Costa, 1987) to be unrelated to adaptive performance. With this said, openness to experience/change may only be significantly related to profiles where emergent roles are heavily emphasised (profiles 3 and 5). Profiles could also expand the results of article 2 by examining how different configurations of performance are evaluated by managers in terms of overall work performance. It is also possible that gender stereotypes will influence the assessment of performance profiles such that a profile high on proactivity and task performance will be perceived favourably for a man but not necessarily for a woman with the reverse being true for a profile characterised by high levels of adaptive and task performance (e.g., article 2, Heilman & Chen, 2005; Luksyte et al., 2017; Proudfoot et al., 2015).

Additional applications could include the examination of profile trajectories over time which would extend the recommendation of Carpini et al. (2017, p. 44) to consider how

multiple performance dimensions interact with each other longitudinally. For example, it was argued that as newcomers gain mastery of their core tasks, they may endeavour to engage in more emergent forms of performance. Examining the change in profiles over time may yield important insights. For example, one would theorise that most newcomers will be considered low to moderate performers (profiles 1 and 2) when they first begin a job. However, as training is undertaken and experience in the role gained, one would expect task performance to increase. With this said, one might also hope to see the employee being more adaptive in changes in their task as they know have a knowledge base on which to lend (Jundt, Shoss, & Huang, 2015). Additionally, it is also likely that with the mastery of core tasks, employees may engage in more proactive forms of performance. These propositions are consistent with longitudinal research examining job crafting in which employees, over time, craft their jobs in such a way as to increase their individual task performance as well as team-member contributions (Tims, Bakker, & Derks, 2015).

As such, newcomers will disperse across the various profiles (Figure 1) and an important question to answer would be: what profiles do people transition to and why? The answer to such questions would be possible through latent transition analysis (Kam, Morin, Meyer, & Topolnytsky, 2016). It may be, for example, that people who become “star performers” are those who have a high-quality relationship with a transformational leader. This is because transformational leaders provide much needed clarity for the completion of core tasks (Piccolo & Colquitt, 2006; H. Wang, Law, & Hackett, 2005), support when employees need to adapt, and vision which directs employee proactive performance toward constructive ends (Griffin et al., 2010).

Whereas the previous examples all included multiple forms of performance, it is also possible latent profile analysis could be applied within each form to advance theory. For example, Parker and Collins (2010) identified three higher-order factors of proactive

behaviours at work: proactive work behaviour (e.g., voice and taking charge), proactive person-environment fit behaviour (e.g., feedback inquiry and career initiative), and proactive strategic behaviour (e.g., issue selling and willingness). Applying latent profile analysis to proactive performance may yield insights into subpopulations. For example, one would expect some employees to be proactive across all three types of proactive behaviours, whereas others may only be proactive in one dimension, and perhaps others who are not proactive at all (low on all three).

Finally, lending on the previous call for scholars to consider isomorphism in individual work performance, it would be fruitful for scholars to consider whether emergent performance profiles generalise across organisational hierarchies. For example, research may seek to understand which profiles are associated with the most positive ratings. At the subordinate level, one might expect high task and team-member performance to be important (Motowidlo & Scotter, 1994), whereas high team-member and proactive performance may be more important for managers (W. C. Borman & Motowidlo, 1993; Conway, 1999; Grant, Parker, & Collins, 2009) due to the nature of their work.

Practical Implications

Above and beyond the specific implications of each study, the present thesis as a whole offers important practical implications. First and foremost, the present thesis highlights the multidimensionality of individual work performance both theoretically (article one; Carpini et al. 2017) and empirically (articles two and three). Recognising that employees contribute to organisations through more than just completing their core tasks has important down-stream implications for a variety of human resource practices including the recruitment, training, and performance management of employees. From a recruitment perspective, general mental ability has been found to be an important antecedent of all three forms of performance (Gonzalez-Mulé, Mount, & Oh, 2014; Jundt et al., 2015). Because

those higher in general mental ability tend to be more proficiency, adaptive, and proactive, it is not surprising to also find that they also enjoy extrinsic career success (Judge, Higgins, Thoresen, & Barrick, 1999). From a training perspective, providing employees opportunities to enhance their knowledge basis is likely to foster all three forms of performance (Jundt et al., 2015; Morrison & Phelps, 1999; Parker & Liao, 2016; Schmitt, Cortina, Ingerick, & Wiechmann, 2003). This is because employees who have greater knowledge stores will be better equipped to complete prescribed tasks as well as apply their expertise to emergent requirements. Finally, from a performance management perspective it is important to remember organisations will reap what they measure (Hauser & Katz, 1998). Performance management systems are powerful organisational tools that direct the attention and effort of employees (Anderson & Oliver, 1987; Arthur, 2016) and as such will inform employees as to whether the organisation will value different forms of performance (Bergeron, 2007). Organisations that acknowledge and reward both prescribed and emergent roles will most likely also encourage these behaviours whereas organisations that myopically focus on prescribed role performance may quell the propensity for other forms of performance.

Second, and related to the above, it is important for organisations to recognise that the extent to which they will need to emphasise different forms of performance is a function of their own context. As Griffin and colleagues (2007) note, context can be characterised by the level of uncertainty and the level of interdependence. When the environment is uncertain, more emergent forms of performance (adaptive and proactive) will be essential. When the context is characterised by greater levels of interdependence, then team- and organisation-member performance will be more important. The third article of this thesis is an excellent example of how, when the context is characterised by both uncertainty and interdependence, as is the case in operating theatres, then more emergent and interpersonally relevant forms of performance are necessary for team success. By diagnosing the organisational context,

organisations may be better positioned to leverage their human resource management practices to align employee performance with the contextual requirements of the organisation.

Overall, the present thesis encourages practitioners to consider the full breadth of behaviours that employees enact that positively contribute to individual, team, and organisational success. At the heart of the matter is the need to differentiate between employees' behaviours and their work outcomes (e.g., sales, quantity/quality of work; Campbell & Wiernik, 2015) so that human resource systems can align with the behavioural requirements of the organisation.

Conclusion

Katz (1964, p. 131) noted "If an organization is to survive and function effectively, it must require not one, but several different types of behavior from most of its members". The present thesis contributes to the articulation of the different types of behaviour organisational members' exhibit, and importantly, demonstrates these behaviours have differential outcomes for individuals and teams. The first article provides a review and synthesis of the individual work performance literature. Key insights gained from this review include the fact that the existing literature can be meaningfully organised using the Griffin et al. (2007) framework of positive work behaviours which distinguishes between proficient, adaptive, and proactive performance. Lending on this framework, it was then possible to illuminate the underlying nomological network as distinguished by form and level of interdependence. This article also calls for greater attention to be paid to the consequences of performance. Articles two and three take up this call in two different ways. First, article two narrows in on adaptive performance and first demonstrates its incremental validity in predicting manager's ratings of overall work performance, and second, by demonstrating it is a gendered form of performance subject to both ascribed and prescribed norms (Eagly & Wood, 2011; Heilman

& Chen, 2005) such that women who engage in adaptive performance are rewarded with higher assessments of overall work performance relative to men who do not reap benefit from this form of performance. Second, article three considers voice within a highly interdependent and dynamic work environment and demonstrates the voice of just one team member can instigate important team changes which can profoundly impact the objective outcome of the team. In this study, I demonstrate the voice of nurses can act as a catalyst for team-level adaptive performance which can increase the overall efficiency of a surgical procedure if the team is characterised by high role clarity.

Together, this research demonstrates a need for both scholars and practitioners to consider the full breadth of ways in which employees contribute to their organisations. I identify several key avenues for future research including the potential to reframe the in-role/extra-role distinction, address the issue of isomorphism, and promote the use of latent profile analysis in future research.

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