

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

Project uncertainty, project risk and project leadership: A policy capturing study of New Zealand project managers.

A thesis presented in partial fulfillment of the requirements for the degree
of Master of Arts in Psychology
at Massey University, Wellington,
New Zealand.

Brendon Mercer

2016

Abstract:

Cooperation between project practice and project research could help reduce failure rates for projects in New Zealand and globally. The current research used a “policy capturing” method - systematically varying sources of project uncertainty (policy cues) to explore project leadership responses. A contingency model proposed that project uncertainty (low path-goal clarity, low team cohesion, and high technical complexity) would lead to greater perceptions of project risk (scope/quality, budget, schedule, and project team satisfaction) that would negatively predict the (rated) effectiveness of transactional leadership style and positively predict ratings for transformational style. In total, $n=131$ experienced project managers rated the effectiveness of leadership styles from ‘not effective’ to ‘extremely effective’. Greater uncertainty produced higher perceived risks that reduced the rated effectiveness of transactional leadership. Path-goal clarity was of particular importance as a policy cue, directly predicting transactional leadership ratings ($R=-0.189$). These results are consistent with the task-orientation of traditional project management. However, the results for transformational style were unexpected - only team cohesion predicted transformational leadership ratings (negatively) ($R= -0.119$) and no link between risk and transformational leadership was found. Possible reasons for the ‘disconnect between transformational leadership, uncertainty and risk are discussed and further research suggested.

Acknowledgements:

My profound gratitude and respect goes to Professor Stuart C. Carr - a true humanitarian, a true scholar and a fine transformational leader. And of course kudos to Scott Ballantyne for achieving what we couldn't... ;)

My thanks to Garry Miller, Director of Research, PMINZ, and all PMINZ members who took the time to complete the questionnaire.

My appreciation to Massey University, and Harvey Jones, in particular, for Qualtrix-ing and advice.

Thanks Amanda for your support.

Eternal love and hugs to Amelia and Juliette – my everything. Thanks to you (and Barry the fox terrier) for your patience. One day you will explore your very own piece of the puzzle!

Love and songs,

B.

Table of contents

Abstract:	iii
Acknowledgements:	iv
Table of contents	v
List of tables:	ix
List of figures:	xii
Chapter 1: The research model and literature review.	13
1.1 The need for project research.	14
1.2 Systems theory	19
1.3 Success, risk and uncertainty	21
1.31 What is project success?.....	21
1.32 What is (perceived) project risk?	23
1.33 What is un/certainty?	24
1.34 Complexity?	25
1.4 Sources of un/certainty	26
1.41 Path-goal clarity (output).	27
1.42 Technological complexity (tasks)	27
1.43 Project team cohesion (inputs)	28
1.45 Research Propositions 1 (A-B).....	29
1.5 Project leadership	30
1.51 Contingency theories of leadership.....	31
1.52 Transactional and transformational leadership	32
1.53 Transactional and transformational project leadership	34

1.54 Research Propositions 2 (A-C, B-C and A-B-C)	35
1.6 Leadership style and the project team	36
1.61 Commitment	37
1.62 Cooperation.....	38
1.63 Capability	39
1.64 Research Propositions 3	41
1.7 Personality and leadership	42
1.71 Political skill	43
1.8 Project leadership experience.....	44
1.81 Projects are unique	45
1.82 Projects are temporary	45
1.83 Projects are goal-directed	46
1.84 Research Propositions 4	47
Chapter 2: Method.....	48
2.1 Participants.....	48
2.2 Measures	49
2.21 Demographic information.....	50
2.22 Policy-capturing measure	50
2.23 Additional questions.....	53
2.24 Political Skills Inventory	53
2.3 Procedure	54
Chapter 3: Results.....	57
3.1 Data analysis.....	57
3.2 Data Reduction	58

3.2.1 Principal Components Analysis protocol.....	58
3.2.2 Exploratory factor analysis 1 – Perceived risk factors	59
3.2.3 Exploratory factor analysis 2 - Political skill inventory.....	61
3.3 Multivariate analysis.....	65
3.3.1 Multiple regression model.....	65
3.3.2 Regression analysis protocol	66
3.3.3 ANCOVA model	67
3.3.4 ANCOVA protocol.....	68
3.4 Hypotheses concerning A-B linkages	68
3.4.1 Regression of perceived risk (B) on project uncertainty (A)	69
3.4.2 ANOVA: project uncertainty (A) and perceived risk (B).....	70
3.5 Hypotheses concerning A-C links.....	75
3.5.1 Project uncertainty and <i>transactional</i> leadership (TX)	75
3.5.2 Project uncertainty and <i>transformational</i> leadership (TF)	80
3.6 Hypotheses concerning B-C linkages	85
3.6.1 Perceived risk and <i>transactional</i> leadership (TX).....	86
3.6.2 Perceived risk and <i>transformational</i> leadership (TF)	89
3.7 Mini-summary of meta-analyses and ANCOVA	91
3.8 Perceived risk as a Mediator.....	92
3.8.1 Baron and Kenny model.....	92
3.8.2 Mediating <i>transactional</i> leadership ratings.....	94
3.8.3 Mediating <i>transformational</i> leadership ratings	96
3.9 Exploring team attributes (Figure 1).....	97
Discussion.....	99

Transactional leadership, risk and uncertainty.....	99
Transformational leadership, risk and uncertainty.	100
The mediation of uncertainty and leadership by risk.	100
Links to theory	104
Strengths and limitations of This research:.....	105
Policy capturing.....	105
Research and practice.....	107
Political skills.....	108
Suggestions for further research:.....	109
Conclusions	109
References.....	113
Appendix A: Mapping Project and Project Management Research Perspectives.....	134
Appendix B: The research questionnaire.....	135
Appendix C: SME correspondence (1).....	155
Appendix D: The research invitation	156

List of tables:

Table 1:	Principal Components factor analysis of Perceived Risk variables showing factor loadings, communalities, eigenvalues, % variance explained, Cronbach's alpha, and descriptive statistics (n=1048)	61
Table 2:	Principal components analysis of Political Skills Inventory items (with Direct Oblimin rotation) showing factor loadings, communalities, eigenvalues, % variance explained, Cronbach's alpha, and descriptive statistics (n=131).	64
Table 3:	Meta-analysis results for the regressions of perceived risk to project success (DV) on project uncertainty (three IVs) (n=130).	70
Table 4:	Means and standard deviations of perceived risk to project success (DV)* in high and low (binary) conditions for path-goal clarity, team cohesion and technical complexity (three IVs) (n=1048).	72
Table 5:	Three-way univariate Analysis of Variance results and effect sizes of sources of project uncertainty (IVs) on perceived of risk to project success (DV)(n=1048).	74
Table 6:	Meta-analysis results for the regression of SME ratings of transactional leadership effectiveness (DV) on sources of project uncertainty (three IVs) (n=127).	76
Table 7:	Means and standard deviation of SME ratings of transactional leadership effectiveness (DV)* in high and low (binary) conditions for path-goal clarity, team cohesion and technical complexity (three IVs) (n=1048).	77
Table 8:	Three-way univariate Analysis of Variance results and effect size of project uncertainty (three IVs) on SME ratings of transactional leadership effectiveness (DV) (controlled for covariates) (n=1048).	79

Table 9:	Meta-analysis results for the regression of SME ratings of transformational leadership effectiveness (DV) on sources of project uncertainty (three IVs)(n=126)	81
Table 10:	Means and standard deviations of SME ratings of transformational leadership effectiveness (DV)* in high and low (binary) conditions for path-goal clarity and team cohesion and technical complexity (three IVs) (n=1048).	82
Table 11:	Three-way univariate Analysis of Covariance results and effect size of team cohesion (IV) and covariates (CVs) on SME ratings of transformational leadership effectiveness (DV)(n=1048).	84
Table 12:	Estimated marginal means and standard error of SME ratings of transformational leadership effectiveness (DV)* in high and low (binary) conditions for team cohesion (IV) (controlled for covariates)(n=1048).	84
Table 13:	Meta-analysis results for the regression of SME ratings of transactional leadership effectiveness (DV) on perceived risk to project success (IV)(n=127).	87
Table 14:	Means and standard deviations of SME ratings of transactional leadership effectiveness (DV) as a function of level of perceived risk to project success (binary variable) (IV)(n=992).	88
Table 15:	One-way univariate Analysis of Variance results and effect size for level of perceived risk to project success (binary IV) for SME ratings of transactional leadership effectiveness (DV) (n=992).	88
Table 16:	Meta-analysis results for the regression of SME ratings of transformational leadership effectiveness (DV) on perceived risk to project success (IV) (controlled for covariates) (n=126).	89

Table 17:	Mean and standard deviation of SME ratings of transformational leadership effectiveness (DV) as a function of level of perceived risk to project success (binary IV) (n=992).	90
Table 18:	One-way univariate Analysis of Co-variance results and effect size of apparent sincerity (CV) for SME ratings of transformational leadership effectiveness (DV) (n=992).	91
Table 19:	Regression coefficients for SME ratings of transactional leadership effectiveness (DV) on sources of project uncertainty (IV) (and with levels of perceived risk entered as an additional independent variable) (n=1016)	95
Table 20:	Observed frequencies (percentages) and test statistics for chi-squared goodness of fit for project team attributes least affected by path-goal clarity, team cohesion and technical complexity (n=131)*.	97

List of figures:

Figure 1.0:	The research model: project uncertainty (A), project risk (B) and project leadership (C).	13
Figure 1.1:	The project system	19
Figure 1.2:	Project management success	21
Figure 1.3:	Sources of project uncertainty	26
Figure 1.4:	Project leadership	30
Figure 1.5:	Transformational leadership	37
Figure 3.1:	The two-way interaction effect of path-goal clarity and team cohesion on mean SME ratings for perceived risk (SPSS).	73
Figure 4.1:	Significant linkages for the research model (brackets indicate a partial (mediated) effect).	99
Figure 4.2:	Mean effectiveness ratings for transactional (TX) and transformational (TF) leadership in policy capturing scenarios of increasing uncertainty (Scenarios B to F).	101