

Stream #11: Organisational Behaviour

Microfoundations of Team Agility

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ABSTRACT:

We use path analysis to develop an indirect effects model of how a manager's cognitions foster resource deployment, change and team agility. We use the Hybrid Model of Learning in Personality to show how a manager's Mastery and Rationality predict Resource Fluidity or Resource Inflexibility. We propose that Resource Fluidity provides the opportunity for different change interventions, whereas Resource Inflexibility leads to change focused on developing short-term economic return. Both types of change method can be positively related to team agility. Using three empirical studies (self-report, third party rating, and a two wave study), we test and find general support for this microfoundations view of team agility in which a manager's cognitions are a distal driver of team agility.

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Microfoundations of Team Agility

Increasing pace of change, complexity and relentless competition provides an environment in which organizations, and the teams within them, need to be agile (e.g. Lin, Chiu, & Chu, 2006; Sharifi & Zhang, 1999; D'Aveni, 1994; D'Aveni, Dagnino, & Smith, 2010; Doz & Kosonen, 2008, 2010; Sull, 2009). While the literature has developed our understanding of what agility is, when it is beneficial, and why it is important (e.g. Doz & Kosonen, 2010), little theoretically and empirically is known about the antecedents of organizational and team agility. In this investigation, we begin to address this gap by employing a microfoundations perspective.

Team agility concerns a team's ability to adapt continuously to a turbulent, complex and unpredictable environment (Goldman, Nagel, & Preiss, 1995; Jorroff, Porter, Feinberg, & Kukla, 2003). Since agility results from change, we examine team-level change methodologies, namely use of Theory E and Theory O (Beer & Nohria, 2000). We then argue that the precursor of these change methodologies is how team level resources are deployed, and examine Resource Fluidity and Resource Inflexibility following the theoretical logic of Doz and Kosonen (2010). As a final and most distal step in our model, we build on a significant literature that indicates that managers are crucial in change (e.g. Kanter, 1981; Marginson, 2002; Wooldridge & Floyd, 1990). We contend that they are the critical link to gaining an understanding of team agility. Specifically, we use path analysis to posit multiple indirect effects of team manager cognitions influencing team agility through resource deployment and change methodologies. We test our model with three empirical studies (self-report, third party rating, and a two wave study).

In sum, we contribute to knowledge by addressing critical gaps in the team agility literature by proposing that manager cognitions are a significant antecedent of team agility through their influence on resource deployment and leading the use of different change methodologies. Adopting a cognitive perspective is consistent with a growing literature on the "microfoundations" of organizational outcomes (e.g. Eisenhardt et al., 2010; Foss, 2009) which focuses on how individual-level managerial characteristics are likely to predict team-level outcomes such as change and innovation (e.g. Crossan & Apaydin, 2010).

THEORY AND HYPOTHESES

Our cognitive perspective places managers as being central to team agility. We integrate manager cognition into team agility research by understanding the manager as the agent who deploys resources and leads change. Our proposed model is shown in Figure 1.

--insert Figure 1 here --

Cognitions of the manager

The Hybrid Model of Learning in Personality (Jackson, 2008) provides a framework for understanding the cognitions of managers and employees related to high and poor performance (Gardiner & Jackson, 2014; Jackson, 2011, Jackson, Hobman, Jimmieson & Martin, 2009; O'Connor & Jackson, 2008). Two cognitions of Jackson's (2008) model are Mastery and Rationality. Mastery is the extent to which people allocate cognitive resources, put in effort and achieve self-efficacy (e.g. Vandewalle & Cummings, 1997). Rationality concerns setting appropriate direction to effort and concerns logic, rationality and emotional independence (Ellis, 1987). According to Jackson (2008) and Jackson, Izadiquah and Oei (2012), Rationality provides direction to Mastery. Both cognitions predict work and other outcomes (Gardiner & Jackson, 2014; Jackson, 2011; O'Connor & Jackson, 2008; Jackson, Baguma & Furnham, 2008; Jackson, Izadiquah, & Oei, 2012). We include Mastery and Rationality as the most distal components of our model of team agility.

Resource fluidity and Resource Inflexibility

Managers often deploy resources in ways that can be broadly divided into Resource Fluidity or Resource Inflexibility (Doz & Kosonen, 2010). Resource Fluidity uses resources informally with imprecise division of labor, wide span of control, decentralized authority, few rules and procedures, and individual means of coordination (Burns & Stalker, 1961; Donaldson, 2001; Doz & Kosonen, 2010). This leads to low resistance to change (Rafferty, Jimmieson & Armenakis, 2012). As such, Resource Fluidity provides flexible internal capabilities to redeploy resources rapidly and to reconfigure business systems. It is most appropriate for unstable and continuously changing environments (Hage & Dewar, 1973).

Mastery concerns effort put into tasks. A leader must exert cognitive effort to deploy resources fluidly given how hard it is to maintain, for example, the loose and informal relationships, to understand informal systems, to provide guidance to staff who are unsure of their roles, and to assist in multiple social interactions. This leads to:

H1: Managers' mastery is positively related to resource fluidity

Resource Inflexibility results in mechanistic, hierarchical, formal management with centralized authority, large number of formal rules and procedures, precise division of labor, narrow span of control, and a formal means of coordination. It may be the optimal way of deploying resources in stable, consistent and predictable environments (Burns & Stalker, 1961; Donaldson, 2001).

Rationality concerns being emotionally independent (Ellis & Harper, 1975) and is therefore free of systems, rules and procedures. With this independence comes trust in oneself, confidence, objectivity and the capacity to manage fluid resources that are inherently messy and complex. In contrast, managers who are low in Rationality are dependent upon systems, processes, rules, and regulations. As such, low Rationality is likely to be associated with inflexible deployment of resources. As a result, and also taking into account the point that our turbulent world tends to suggest Resource Fluidity has general advantage over Resource Inflexibility, we hypothesize:

H2A: Manager's Rationality is positively related to Resource Fluidity

H2B: Managers' Rationality is negatively related to Resource Inflexibility.

Cracking the code of change

Beer and Nohria (2000) argue that change works optimally when leaders “crack the code of change”. They advocate that managers often lead change based on two implicit models or methodologies. Theory E is a change methodology based on developing economic value. Theory O is a change methodology based on developing organizational and people capabilities (Beer & Nohria, 2000).

Managers using Theory E change methodologies focus on directly maximizing profit (such as shareholder return). This is achieved through restructuring and focusing change on creating economic

value. Managers using Theory O indirectly focus on shareholder value. They focus on organic growth, developing corporate culture, and human capability. Few managers subscribe to just one theory and most use a mix. Many change initiatives report high level of success when the two methodologies are combined by seeking short term use of the Theory E, and then using a longer term emergent approach based on Theory O to reinforce the change, embed it in the culture and increase organizational capability (Beer & Nohria, 2000). We contend that managers with high Mastery have the cognitive capacity and will to conduct a Theory O change. This is because Theory O is long term, requires effort, is cognitively demanding, and is intangible:

H3: Managers' Mastery is positively related to use of Theory O change methodologies

Resource fluidity is associated with well-developed flexible use of resources. As such, it provides the opportunity to engage in using either Theory E or Theory O given that, for example, followers will be less likely to be resistant to change (Rafferty, Jimmieson & Armenakis, 2012). Where resources are deployed inflexibly then people and systems will not be easy to develop with Theory O methodologies as internal reshaping capabilities will be poor. As a result, Resource Inflexibility is likely associated with just use of Theory E as this change methodology does not require reshaping capabilities. As a result we hypothesize:

H4A: Resource fluidity is positively related to use of Theory O change methodologies

H4B: Resource fluidity is positively related to use of Theory E change methodologies

H4C: Resource inflexibility is positively related to use of Theory E change methodologies

As noted above, Beer and Nohria (2000) advocate use of Theory E often precedes use of Theory O in successful change. Although sometimes conducted jointly, they advocate that Theory E gains such as downsizing operations are best conducted prior to developing people capabilities (use of Theory O). Rarely would there be reason for a leader to conduct Theory O change entirely prior to Theory E change. As a result we hypothesize:

H5: Use of Theory E is positively related to use of Theory O

From change methodologies to agility

Change is central to achieving agility. Use of Theory O is likely to be an antecedent of agility as it develops people capabilities:

H6A: Use of Theory O change methodologies is positively related to team agility

Whilst use of Theory E does not build people capabilities it creates efficient structure, efficiency and economic growth which is therefore related to agility:

H6B: Use of Theory E change methodologies is positively related to team agility

Even though most agility scholars would argue that change is central to agility, we predict Mastery of a manager may still directly predict team agility because a manager's effort could exert many influences on agility (for example, mastery of a manager could influence agility by motivating and enthusing followers). This effect is likely to be stronger when a supervisor of a manager assesses agility, because supervisors would tend to hold managers accountable for the functioning of their team:

H7: Manager's Mastery is positively related to team agility.

Finally, when a manager deploys resources fluidly it infers capability to adapt. Therefore Resource Fluidity is also likely to be directly associated with Team Agility Performance:

H8: Resource fluidity is positively related to team agility.

EMPRICAL STUDIES

We test our hypotheses across three robust quantitative studies which focus on full-time managers from multiple organizations in the United States (US). Study 1 is self-report and cross-sectional. Study 2 is cross-sectional using third-party ratings. Study 3 is a two wave study. Our research is unique in several ways: (1) we provide an overall model of how managers influence team agility; (2) we test the general predictiveness of the Hybrid Model of Learning in Personality (Jackson, 2008); (3) we provide scales of Beer and Nohria's (2000) Theory E and Theory O, Doz and Kosonen's (2010) Resource Fluidity and Inflexibility scales, and a scale of Team Agility Performance.

Study 1

Participants, Procedure and Questionnaires

A total of 127 fulltime managers working in the US took part in this study. More details about participants are available upon request to the first author. Participants completed the measures and

tasks using the YWeDo (www.ywedo.com/lab.asp) online cognitive laboratory (Jackson, 2010). The following questionnaires were used:

Hybrid Model of Learning in Personality - Jackson (2008)

Resource Fluidity and Inflexibility - designed by the first author and modelled on the work of Doz and Kosonen (2010).

Theory E and Theory O - designed by the first author modelled on Beer and Nohria (2000).

Team Agility Performance – designed by the first author.

Alpha reliabilities are all at least satisfactory (see Table 1).

Results

Means, standard deviations and correlations are shown in Table 1. In line with the proposed model, Mastery is correlated with Rationality and Resource Fluidity whereas Rationality is negatively correlated with Resource Inflexibility. Resource Fluidity is correlated with use of Theory O and Theory E whereas Resource Inflexibility is correlated with just use of Theory E. Team Agility Performance is correlated with Mastery, Resource Fluidity, Theory E and Theory O.

--insert Table 1 here --

Results of path analysis are shown in Figure 2. All significant paths are shown except for a covariance which was fitted between Resource Fluidity and Resource Inflexibility. For this study, we present substantial evidence in favor of the proposed model such that Mastery predicts Resource Fluidity (H1) as well as Theory O (H3). Moreover, Rationality negatively predicted Resource Inflexibility (H2B). Resource Flexibility predicted use of Theory O (H4A), use of Theory E (H4B) and Team Agility Performance (H8) whilst Resource Inflexibility predicted use of Theory E (H4C). As hypothesized, use of Theory E predicted use of Theory O (H5) which in turn predicted Team Agility Performance (H6A).

In this study the indirect paths from Mastery to Team Agility Performance were overall significant ($p = .010$) and the indirect paths from Rationality to Team Agility Performance were overall significant ($p = .030$).

--insert Figure 2 here --

Contrary to hypotheses, Rationality failed to predict Resource Fluidity (H2A). Theory E did not directly predict Team Agility Performance (H6B). Resource Fluidity did predict Team Agility Performance (H8) in the correlation matrix but not in the path analysis which indicates how use of change methodology redirects Resource Fluidity to achieve Team Agility Performance. Associated goodness of fit indices are shown in Table 2. For Study 1, reasonable goodness of fit is reported across the indices.

--insert Table 2 here--

Discussion

Results provided initial support for many of the hypotheses associated with the proposed models such that we found support for many proposed indirect paths from a manager's Mastery and Rationality to Team Agility Performance. This study provides useful initial evidence of the microfoundations view but is limited in that all the data are self-report and potentially therefore more vulnerable to common method bias than if the data were multi-party (as collected in Study 2) or across time (Study 3).

Study 2

Participants, Procedure and Questionnaires

We use self-reports of Mastery and Rationality as these are best assessed from the first-person perspective, and use ratings of managers' colleagues to assess Resource Fluidity, Resource Inflexibility, Theory O and Theory E. We use supervisor ratings of managers to assess Team Agility Performance. This study includes a total of 189 participants who were fulltime managers based in the US. The method is as described in Study 1, except that colleagues and supervisors of managers completed the team level questionnaires. The questionnaires used are as in Study 1 but adjusted for third party assessments as needed. Alpha reliabilities are all at least satisfactory (see Table 3).

Results

Means, standard deviations and correlations are shown in Table 3. In line with the proposed model, Mastery is correlated with Rationality and Resource Fluidity whereas Rationality is negatively correlated with Resource Inflexibility. Resource Fluidity is correlated with use of Theory O and Theory E, whereas Resource Inflexibility is correlated with just use of Theory E. Mastery, Resource

Fluidity, Theory E and Theory O are correlated with Team Agility Performance. Results are generally very similar to Study 1.

--insert Table 3 --

Results of path analysis for Study 2 are shown in Figure 2. We obtain results that are broadly similar to Study 1 providing general extra evidence in favor of the model. Two results are different to Study 1. First, in line with H8, we found a direct relationship between Mastery of a manager and Team Agility Performance. This suggests that supervisors of managers will tend to perceive Team Agility Performance to be more closely related to Mastery than managers – potentially because supervisors will tend to associate the personal efforts of a manager directly with team performance as a result of their accountability.

Second, we did not find a significant link between Mastery and colleague ratings of use of Theory O. We think that this may only be a weak relationship because use of Theory O change is most easily conducted when resources are deployed fluidly.

In this study the indirect paths from Mastery to Team Agility Performance were significant ($p = .010$) and the indirect paths from Rationality to Team Agility Performance were not quite significant ($p = .094$). Associated goodness of fit indices are shown in Table 2. For Study 2, reasonable goodness of fit is reported across the indices.

Discussion

Results of Study 2 have broadly supported the proposed model as well as identified that the supervisor of the manager will often identify the manager's Mastery Goal as being a direct driver of Team Agility Performance. Moreover, we have used data likely to reduce common method variance.

Study 3

Participants, Procedure and Questionnaires

Study 2 provided an important attempt to test the proposed model using third party assessments. This Study aims to provide further evidence in favor of the model by collecting data across two points in time as a way of reducing effects of common method variance. This study includes a total of 102 fulltime managers working in the US. The method is as Study 1 except that

self-ratings of manager cognition were collected on average 133.12 days before the other scales (SD = 11.72). The questionnaires are as Study 1.

Results

Means, standard deviations and correlations are shown in Table 4. Mastery, Rationality and Resource Fluidity are correlated and Rationality is significantly negatively correlated with Resource Inflexibility. Resource Fluidity is correlated with use of Theory O and Theory E whereas Resource Inflexibility is correlated with use of Theory E. Mastery, Rationality, Resource Fluidity, Theory E and Theory O are correlated with Team Agility Performance.

--insert Table 4 here--

Path analysis of Study 3 is also included in Figure 2. Results generally support the previous studies except this study is the only one to support a link between Rationality and Resource Fluidity (H2A) and between Theory E and Team Agility Performance (H6B); it is similar to Study 1 and different to Study 2 in not showing a link between Mastery and Team Agility Performance (H7); yet is similar to Study 2 and different to Study 1 in showing a link between Resource Fluidity and Team Agility Performance (H8).

In this study, indirect paths from Mastery to Team Agility Performance were significant ($p = .010$) and the indirect paths from Rationality to Team Agility Performance were significant ($p = .045$).

Associated goodness of fit indices are shown in Table 2. For Study 3, reasonable goodness of fit is reported across the indices.

Discussion

Once again, we found substantial support for the model even though the self-ratings of individual differences were collected prior to the self-ratings of the work unit.

OVERALL DISCUSSION

This research is notable for its originality in several different ways. First, we use the Hybrid Model of Learning (Jackson, 2008) to predict team agility. Second, we introduce Rationality and Mastery as important variables in the microfoundations literature. Third, we introduce three new measurement models to the literature: (a) Doz and Kosonen's (2010) model of Resource Fluidity and inflexibility, (b) Beer and Nohria's (2000) Theory O and Theory E, and (c) Team Agility

Performance. Fourth, and more importantly we put this together to focus on the microfoundations of team agility. Since little theoretically and empirically is known about the antecedents of organizational and team agility we address a critical gap in the literature.

We found support for the model presented in Figure 1 by presenting evidence that Mastery and Rationality of a manager influences Team Agility through Resource Deployment and use of Theory E and Theory O change methodologies. We focus on Mastery and Rationality since previous research has evidenced their relevance to the prediction of individual level performance (e.g. Gardiner & Jackson, 2014; Jackson, Izadiquah, & Oei, 2012).

As predicted from previous research, Mastery was associated with Rationality (e.g. Gardiner & Jackson, 2014; Jackson, 2011; O'Connor & Jackson, 2008; Jackson, Baguma & Furnham, 2008; Jackson, Izadiquah, & Oei, 2012). In this research we then show that Mastery predicts resource deployment in support of H1. This demonstrates that higher Mastery of a manager drives increasing fluid deployment of resources. This is not surprising given that resource fluidity is informal and decentralized and therefore likely to require high allocation of cognitive resources for successful management.

In Study 3, we found support for H2A which is that Rationality would predict Resource Fluidity. This is likely because rational managers are not dependent on systems and procedures. We did not find support for this hypothesis in Study 1 and 2. This indicates a manager may not always regard self-governing and informal teams as rational (i.e. aligned to the modern ever changing world) given the paradox that the team is less strategically reliant on the manager for direction, although the manager may be best positioned to provide that input.

We found strong support for H2B which was that low Rationality of the manager would predict inflexible resource deployment. There are two likely reasons for this. First, low Rationality leads to dependence upon systems and procedures and therefore Resource Inflexibility. Second, we argue that Resource Inflexibility lack rationality and logic in a generally turbulent world where agility is more easily achieved through Resource Fluidity.

Support for H3 (a direct link from Mastery to use of Theory O) was found in Study 1 and is therefore limited. In contrast, all studies supported H1 and H4A which is that Mastery predicts use of

Theory O change through Resource Fluidity. As such, the personal effort of the manager is most effective in the use of Theory O change when resources are deployed to be fluid and likely to benefit from development of people and team capabilities. We argue that this is because effort in developing people and team capabilities requires a receptive and empowered team to be effective.

Interestingly, Resource Fluidity is not just associated with use of Theory O but also with use of Theory E (H4B). Resource Fluidity provides options to the manager of either engaging in use of Theory O change or use of Theory E change. This is an important finding as it suggests that Resource Fluidity has significant advantages over Resource Inflexibility in terms of adaption. In contrast, Resource Inflexibility only predicted the use of Theory E (H4C). This supports the idea that the only change which can be effective with Resource Inflexibility is short term direct economic gain; for example, through restructuring.

Our research provided support for the use of Theory E in predicting Theory O (H5) in the prediction of Team Agility Performance (H6A). The correlation analysis showed a direct link between use of Theory E and Team Agility Performance in support of H6B; however, there was no support for H6B in the path models. This suggests that use of Theory E is best re-expressed through use of Theory O to achieve agility, although otherwise it can directly affect change without Theory O, much as Nohria and Beer (2000) advocate.

Our research also showed how supervisors of managers tend to have a simplified perspective of team agility. Using supervisor ratings of Team Agility Performance, Study 2 showed that there was a direct link between Mastery and Team Agility Performance (H7). We predicted this on the basis that a supervisor expects a manager to be accountable for team agility.

Finally, we hypothesized a link between Resource Fluidity and Team Agility Performance (H8). We found partial evidence in favor of this hypothesis from Study 2 and 3 but not from Study 1. Since change is a major component of agility, this direct effect is likely tenuous, whilst recognizing that Resource Fluidity is also a key predictor of agility (Doz & Kosonen, 2008).

Overall, we found substantial evidence from three studies (self-report, third-party rating, and a two wave study) in favor of our model concerning the microfoundations of team agility. We find multiple paths from Mastery and Rationality leading to the prediction of team agility. One of the paths

is quite intuitive in that Mastery of a manager can lead to Resource Fluidity, use of Theory O change methodologies, and then Team Agility Performance. However other paths are much less intuitive and thus contribute to knowledge. For example, low Rationality can lead to resource inflexibility, use of Theory E, then Theory O, and then Team Agility Performance.

It is important to note that we have not been able to determine causality of the proposed model and our microfoundations approach is only one of many ways of understanding team agility.

In summary, our work provides the basis for construction of a Team Agility Performance Index which would enable straightforward comparison by sector, market or other important factor. The Team Agility Performance Index, and our underlying model of its antecedents, will assist in understanding and predicting what makes a team thrive in an ever changing market. Our research provides practical insight into the manager's cognitive skills as a driver of a team's agility so that we can develop a better understanding of an agile team. More speculatively, our model which has been applied at the level of manager and the team might equally apply at the level of CEO and the organization.

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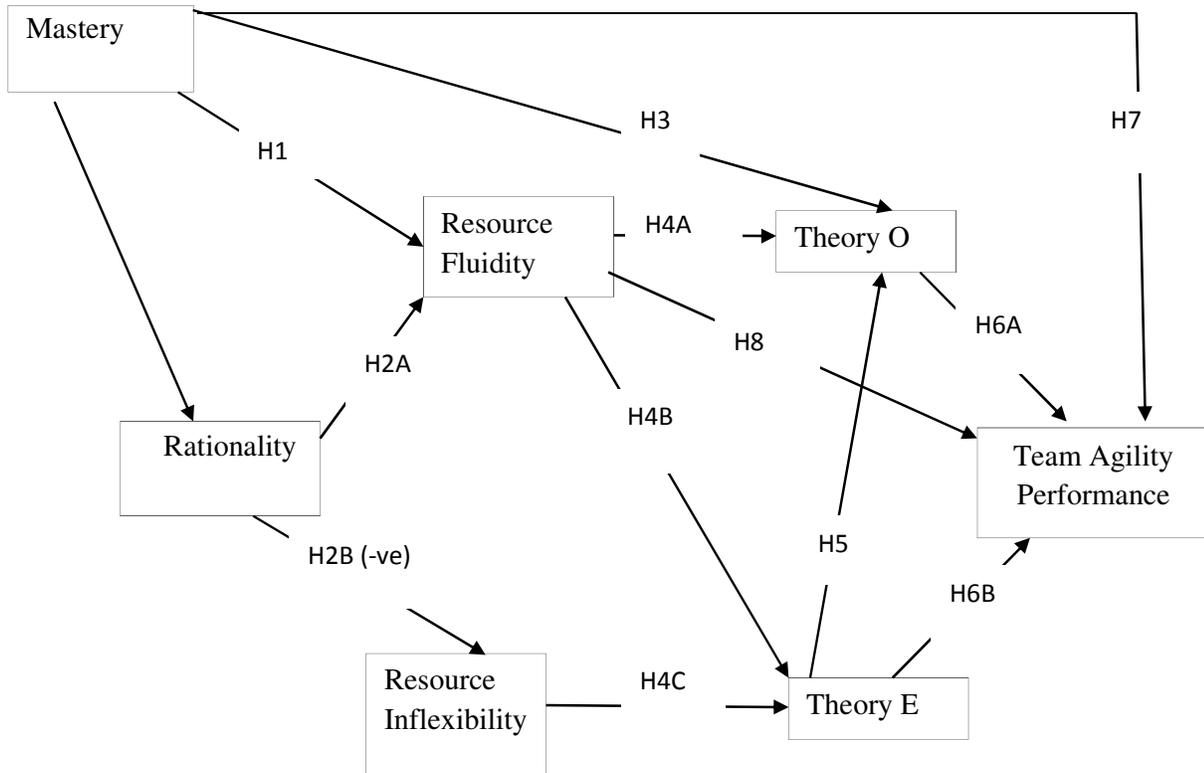
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Figure 1: How a manager’s cognitions drives change and team agility

(All relationships are positive except for H3B which is negative as denoted by -ve)



Manager cognitions as described by the hybrid model of learning in personality (Jackson, 2008)

Team level Resource Deployment

Team level change methodology

Team level agility performance

Figure 2: Path models from manager cognitions to Team Agility Performance

Upper parameters = Study 1 (all self-report); Middle parameters in italics and underlined = Study 2 (self, colleague and boss ratings); **Lower parameters in bold** = Study 3 (longitudinal self-report)

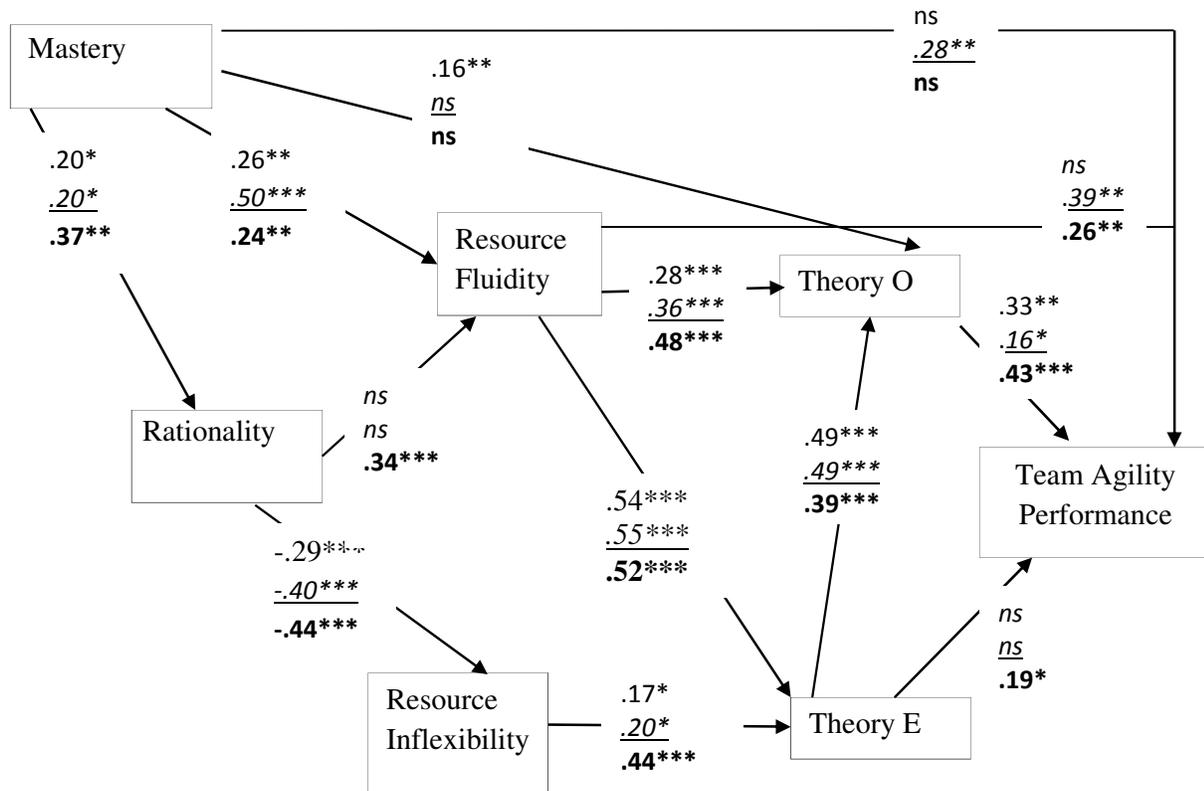


Table 1: Means, standard deviations, alphas and correlations from Study 1

	Mean	SD	Alpha	M	R	RF	RI	TE	TO
Mastery (M)	1.48	.44	.82						
Rationality (R)	1.16	.47	.85	.20*					
Resource Fluidity (RF)	3.67	.65	.94	.26**	-.08				
Resource Inflexibility (RI)	3.38	.66	.79	-.07	-.31**	.16			
Theory E (TE)	3.62	.65	.68	.16	-.25**	.56**	.25**		
Theory O (TO)	3.79	.731	.85	.31**	-.07	.60**	.04	.68**	
Team Agility Performance	3.87	.65	.92	.31**	.05	.65**	.09	.56**	.64**

Table 2: Goodness of fit parameters from all of the studies

Study		Chi-Sq	<i>df</i>	<i>p</i>	GFI	CFI	RMSEA	AIC	BCC
1	Self-report	18.87	9	.03	.96	.96	.09	56.87	59.44
2	Self-report and third party	26.76	10	.00	.96	.96	.09	62.76	64.36
3	Longitudinal	16.29	9	.06	.96	.98	.09	54.29	57.56

Table 3: Means, standard deviations, alphas and correlations from Study 2

	Mean	SD	Alpha	M	R	RF	RI	TE	TO
Mastery (M)	1.58	.40	.81						
Rationality (R)	1.29	.49	.85	.20**					
Resource Fluidity (RF)	3.94	.58	.90	.49**	.08				
Resource Inflexibility (RI)	3.03	.74	.89	-.17*	-.40**	.05			
Theory E (TE)	3.65	.68	.73	.31**	-.01	.56**	.23**		
Theory O (TO)	3.97	.65	.80	.36**	.18*	.63**	-.06	.69**	
Team Agility Performance	4.18	.63	.93	.53**	.08	.63**	-.07	.43**	.51**

Note: In this study, colleagues provide the ratings of Resource Fluidity / Inflexibility and Theory E / Theory O. Supervisors of the managers provide the ratings of Team Agility Performance.

Table 4: Means, standard deviations, alphas and correlations from Study 3

	Mean	SD	Alpha	M	R	RF	RI	TE	TO
Mastery (M)	1.68	.31	.75						
Rationality (R)	1.33	.46	.79	.37**					
Resource Fluidity (RF)	4.12	.65	.93	.38**	.42**				
Resource Inflexibility (RI)	3.12	.78	.79	-.09	-.44**	-.01			
Theory E (TE)	3.89	.66	.65	.21*	-.07	.51**	.43**		
Theory O (TO)	4.22	.60	.83	.37**	.31**	.68**	.04	.64**	
Team Agility Performance	4.26	.59	.92	.34**	.30**	.70**	.01	.60**	.75**