

Table 2. Hierarchical regression analysis results

	Model				
	1	2	3	4	5
<i>Control Variables</i>					
Gender	.063	.061	.060	.053	.054
Age	-.122***	-.122***	-.122***	-.126***	-.126***
Tenure	.032	.032	.032	.037	.037
<i>(Education)</i>					
Junior General Secondary Education	-.008	-.006	-.005	.002	.012
Senior General Secondary Education	.011	.015	.009	.010	.012
Senior Secondary Vocational Education	.107	.110	.109	.110	.113
Higher Education	.038	.043	.038	.046	.053
Supervisor	-.003	-.004	.001	-.004	-.003
<i>Main effects</i>					
TR Efficacious belief	.241***	.242***	.246***	.262***	.265***
TR Adaptive capacity	.242***	.239***	.242***	.235***	.233***
ELMX	-.041	-.038	-.044	-.031	-.029
SLMX	.028	.031	.032	.025	.022
ALC	.306***	.305***	.305***	.302***	.303***
<i>Interaction effects</i>					
TR Efficacious belief x ELMX		-.028			.001
TR Adaptive capacity x ELMX		-.007			-.033
TR Efficacious belief x SLMX			.031		.042
TR Adaptive capacity x SLMX			.002		-.062
TR Efficacious belief x ALC				-.017	-.038
TR Adaptive capacity x ALC				.100*	.134**
R ²	.417	.418	.418	.425	.428
R ² change	.417	.001	.001	.008	.011

***p<.01; **p<.05; *p<.10

Dependent Variable: TIWB

4.1 Primary Results

In table 1, the bivariate correlation of all the important variables of this study are presented, along with the mean and standard deviations. As it is shown in the table, education is positively correlated (0.154, $p < 0.01$) with team resilience efficacious belief meanwhile other control variables are not correlated with any other main predictor variables or the dependent variable. The two dimensions of team resilience, efficacious belief, and adaptive capacity are however significantly correlated (0.484, $p < 0.01$) with each other. Both of these variables are also strongly correlated with team innovative work behavior which supports the earlier findings from the systematic literature review.

ELMX, which is one dimension of LMX is negatively correlated with team resilience adaptive capacity, but not with team resilience efficacious belief. Surprisingly, it is also not significantly correlated with the team innovative work behavior. However, SLMX which is another dimension of LMX, positively and significantly correlated with both team resilience efficacious belief (.548, $p < 0.01$) and team resilience adaptive capacity (.277, $p < 0.01$). It is also positively correlated with team innovative work behavior (.379, $p < 0.01$) as expected. Moreover, the correlation between both dimensions of team resilience and appreciation learning climate are found to be positive ($p < 0.01$). Comparing to LMX, only SLMX is positively correlated with appreciation learning climate (.462, $p < 0.01$) meanwhile ELMX is not. Finally, it can be seen from the correlation matrix that appreciation learning climate has a significant positive correlation with team innovative work behavior which again agrees with the earlier findings.

Following the correlation analysis, the hypotheses were tested by conducting a multiple regression analysis. The corresponding results of five models are presented in table 2. In model 1, the effect that only the control variables and main predictor variables have on the dependent variable were tested. The model yielded significant result due to the fact that age, team resilience, and appreciation learning climate have a significant effect on the team innovative work behavior. Age ($\beta = -.122$, $p < 0.01$) has negative impact on team innovative work behavior and it is also consistent throughout the other models. The two dimensions of team resilience, namely efficacious belief ($\beta = .241$, $p < 0.01$) and adaptive capacity ($\beta = .242$, $p < 0.01$) are found to positively influence the team innovative work behavior and they are also consistent in the rest of the models. This result is in line with earlier findings from the literatures and also supports the first hypothesis (H1) which is 'Team resilience has a positive impact on the team innovative work behavior'. Besides, this model also shows that appreciation learning climate ($\beta = .306$, $p < 0.01$) has a positive effect on team innovative work behavior and its significance level is also stable in the other models.

In the next model, model 2, the moderation effect of ELMX was tested by creating an interaction between ELMX and the two dimensions of team resilience. Although the result of the model ($F(15,285) = 13.67$, $p < 0.001$) was significant and this accounted for 0.1% more variance than model 1, there was no moderation effect of ELMX found. ELMX and team resilience efficacious belief ($\beta = -.028$, n.s) and ELMX and team resilience adaptive capacity ($\beta = -.007$, n.s) were found to be negatively but insignificantly related and therefore, this model contradicts earlier findings and the hypotheses (H2a) that were built upon them cannot be supported.

Model 3 tested the moderation effect of SLMX on the relationship between the two dimensions of team resilience and team innovative work behavior. It yielded similar results as the second model where the model result was $F(15,285) = 13.67$,

$p < 0.001$ and the variance explained by the model increased by 0.1% compared to the initial model. SLMX and team resilience efficacious belief ($\beta = .031$, n.s) and SLMX and team resilience adaptive capacity ($\beta = .002$, n.s) were positively, but insignificantly related to team innovative work behavior and therefore, the null hypothesis cannot be rejected. In other words, it cannot be said with confidence whether SLMX does or does not make the positive relationship between team resilience and team innovative work behavior more positive.

The following model, model 4, separately tested hypothesis 3, the interaction effect of appreciation learning climate on the relationship between team resilience and team innovative work behavior. This model presented some hopeful results where the model result is $F(15,285) = 14.06$, $p < 0.001$, and the change in variance which can be explained by the independent variable is equal to 0.8%. Testing the appreciation learning climate along with team resilience efficacious belief ($\beta = -.017$, n.s) and team resilience adaptive capacity ($\beta = .100$, $p < 0.1$) yielded positive and significant results for only the adaptive capacity dimension while the efficacious belief is negative but insignificant.

At last, in model 5, all the above-mentioned interactions were tested altogether to find their effect on team innovative work behavior and to assess the robustness of the findings. This model's result is $F(19,281) = 11.08$, $p < 0.001$ with R-squared change of 1.1% compared to the first model. Although compared to model 4, this model did not provide any new significant results, the coefficients were slightly altered. Besides, the positive effect of interaction between appreciation learning climate and team resilience adaptive capacity ($\beta = .134$, $p < 0.05$) on team innovative work behavior is further strengthened in this model and gives more evidence to partially accept the hypothesis 3.

4.2 Results from further research

Since the data gave the possibility to investigate the research topic from different perspectives, two more hierarchical regression analyses were carried out. The first regression analysis divides the results by the gender types, male and female, and this can be found in table 3 in Appendix B. The second regression analysis divides the results by supervisory role of the respondents which can be found in table 4 in Appendix C.

4.2.1 Results Gender

This regression analysis examined the same research question, but the data set was divided by gender and thus aimed at finding the different perceptions of male ($n = 153$) and female ($n = 148$) team members regarding team innovative work behavior.

Although the correlation matrix in table 1 does not suggest any correlation between gender and TIWB or gender and team resilience, there are several literatures such as Ayala & Manzano (2014) and Truss et al., (2012) that proves results regarding resilience and innovative work behavior can differ among men and women. Respectively, these studies found that women are more resilient than men, yet, their engagement in innovative work behavior is less than that of men. These literatures which focused on individual level are still applicable to this study since the questionnaire revealed data from individuals who are members of teams. However, the difference could be because of testing in different contexts. Furthermore, everything else being equal, this regression analysis tested team resilience as one construct rather than the two dimensions.

From the two sets of 5 models in table 3, it can be seen that age has a negative impact on team innovative work behavior for both men and women, but it is only significant for women. Team resilience of both men and women also positively impact team

innovative work behavior as predicted earlier, but the strength of this relationship is somewhat higher for men than women.

Furthermore, all the models of both groups present a positive impact of appreciation learning climate on team innovative work behavior, meanwhile, the two dimensions of LMX, which are ELMX and SLMX, do not reveal any significant results. From analyzing the interaction effects, it becomes clear that for female team members there is a positive and significant moderation effect of SLMX and an appreciation learning climate on the relationship between team resilience and team innovative work behavior. However, this is not the case for male team members. Their result surprisingly reveals that when all the interaction effects are present, then the moderating effect of SLMX on the relationship between team resilience and team innovative work behavior is negative instead of positive. This indicates that for a resilient male team member, having a supportive supervisor does not increase the team innovative work behavior, alternatively, it prevents him from being innovative as a team.

4.2.2 Results supervisory role

Table 4 from the appendix shows the results of a similar investigation of the research question, but this time the data is divided by the supervisory role of the respondents. In this context, it is assumed that non-supervisor respondents are team members who filled the questionnaire about the team they are part of. Supervisors, on the other hand, are assumed to have filled the questionnaire regarding team resilience and team innovative work behavior about the teams they are supervising, and the questionnaire regarding LMX and appreciation learning climate about their own leaders and their organizations. Since this would create conflict in examining the research question, only the data set of 246 non-supervisor team members are fully utilized and from now on, the non-supervisor respondents are mentioned as team members and supervisor respondents are mentioned as team leaders. Both of these groups are independent of each other, which means they are referring to different groups.

In the regression analysis of the perception of team members, age as well as the ELMX dimension of LMX is negatively related to team innovative work behavior. From the perception of both team members and team leaders, team resilience as well as the appreciation learning climate positively impacts team innovative work behavior.

In terms of interaction effects, model 4 and model 5 of team members convey a moderation effect of appreciation learning climate on the relationship between team resilience and team innovative work behavior. This means that when resilient team members are appreciated for engaging in team learning, they would engage in more innovative work behavior.

5. DISCUSSION

The main goal of this study is to investigate the impact that team resilience has on the team innovative work behavior and the effect of LMX and appreciation learning climate on the aforementioned relationship. These two contexts were chosen since they are closely related in an organizational environment when looking at them from a team-environment fit lens. The findings from this fill the gap in existing literature regarding resilience and innovative work behavior at the team level. It also shed light on the importance of context in enhancing team innovative work behavior.

Firstly, the most important finding from this study is that both dimensions of team resilience, namely, team resilience efficacious belief, and team resilience adaptive capacity have a positive impact on the team innovative work behavior. This means when a team is capable of adapting to setbacks and holds

the belief that they can overcome any challenges, they are actually also able to engage in innovative behavior which includes initiating and implementing new ideas, processes, products, or services (De Dreu, 2007).

Secondly, from analyzing the control variables against the dependent variable, it was found that age has a negative effect on team innovative work behavior, which indicates that the older a team member is, the less he or she is going to be active in activities that promote team innovation work behavior. Although the other control variables such as gender and supervisory role do not reveal any significant findings in the initial results, testing them separately revealed some interesting results which will be discussed later in this chapter.

Looking at the effect of appreciation learning climate on team innovative work behavior, it has been statistically proven that when learning behavior of teams are appreciated, it leads to more innovative work behavior within the team. As such, the team adaptive capacity along with appreciation learning climate strengthens the positive effect on team innovative work behavior. It implies the importance of rewarding resilient teams, especially the ones who has the potential to adapt from adversities, in order to build innovative behavior among the team.

Results regarding the moderation effect of LMX were insignificant and therefore it raises the question of whether the relationship between leader and subordinates really matters in a context of team characteristic and organizational environmental characteristic. When transformational leadership was tested similarly at individual level, Weerd-Nederhof et al., (2019) also found that this leadership style could only matter at a context-free setting.

However, when team resilience is measured as one construct rather than two dimensions, and comparing this result between gender types, some other statistical conclusions were revealed. From the perspective of female team members, the team innovative work behavior of a resilient team can be further strengthened by building a social leader-member exchange relationship. That means that they can be more innovative when their relationship with their supervisors are long term oriented and is based on mutual trust. These resilient female team members also value appreciation learning climate, and therefore when they recognize that their learning behavior is appreciated, they seem to be more innovative than when it is ignored.

From the perspective of male team members, it was found that their results regarding the moderation effect of SLMX are counterproductive when these resilient team members are induced with both LMX and appreciation learning climate factors. This indicates that they would engage in less team innovative work behavior when the relationship with their supervisors exceeds far more than contractual agreements.

When the data is divided by the supervisory role of the respondents and only the non-supervisors are taken into account as team members, more solid conclusions can be made. Similar to the primary results, these team members perceive that team resilience has a positive impact on team innovative work behavior. From their perspective, ELMX negatively influences team innovative work behavior and appreciation learning climate positively influences this behavior. This implies that having a short-term relationship with their supervisors that only focuses on economic benefits does not improve their engagement in innovative work behavior as a team, instead, it prevents them from being innovative. On the other hand, when they realize that their process of learning behavior is recognized and rewarded, they can be engaged in more team innovative work behavior.

The main finding, however, is that when they perceive their team to be resilient, the team innovative work behavior can be more enhanced with the interaction of appreciation learning climate.

Altogether, no matter what role a team member has, he or she proves that from their perspective, when their teams are resilient, they would engage in team innovative work behavior as a whole. In these teams, the innovative work behavior could be enhanced through organizations or managers who reward the team members for their continuous learning behavior.

6. LIMITATIONS AND FURTHER RESEARCH

Before providing some suggestions and practical implications, it is important to report some limitations of this study. Disregarding the strengths of this study where highly validated scales and the large sample was used, there are also some serious limitations. The foremost limitation is that although the research question attempts to find an answer at the team level, data could only be found from 301 individuals who represent different teams. Therefore, the results are perceptions of that one individual only, instead of multiple team members. Bias could be detected at this point from the fact that they answered questions regarding LMX and appreciation learning climate from their own perspective rather than seeing them as part of a team which is important for this study. Therefore, it is questionable whether the sample is representative of this study in a team context. Besides, when studying the research topic from a different perspective such as dividing it at a supervisory role, it should have been clearly explained for whom they should fill the questionnaire. Hence, unnecessary confusions regarding which role they represent could have been mitigated.

Furthermore, this study does not reveal any causal relationship as the data is collected from the first wave only. In research where variables such as resilience, innovative work behavior, LMX, and learning climate are subject to change, it is beneficial to test them in several periods to determine their causal relationships. Therefore, this test is missing the longitudinal approach.

In the future, nested research could be conducted to further strengthen this study. This means the data should be collected from different members of a team, the team as a whole, and the leaders who supervise these teams in order to build strong conclusions. This way the variables, especially the dependent variable, team innovative work behavior, could be objectively measured rather than subjectively. Such research also allows to eliminate the number of biases in the findings. Another recommendation is to conduct a longitudinal research which helps to find causal relationships. In fact, to be more precise, an in-depth interview among several teams can be conducted rather than handing out surveys where both the researchers and the participants have to deal with ambiguity.

6.1 Practical and managerial implications

Although there are several limitations and biases in this study, one matter is certain from all the results. Having a resilient team in an organization increases their team innovative work behavior which consequently increases the innovativeness of the organization (Widman et al., 2016). Therefore, managers should identify ways to make their working teams resilient and when a team is already resilient, they should not stop encouraging this characteristic of the team. In order to benefit from team innovative work behavior, managers can reward those teams that have the adaptive capacity and are engaged in team learning. Hence, the teams will feel more appreciated and work toward becoming more innovative (Saleh & Wang, 1993).

As the other results suggest, it is important to have women in a team since, from their perspective, there is more possibility to enhance their team innovative work behavior through exchanging a social-leader member relationship when their team is resilient. They also believe appreciating their learning behavior in a resilient team would increase their team innovative work behavior. However, when dealing with men in resilient teams, managers should be careful not to build a long-term relationship with them, since men perceive SLMX along with team resilience to negatively influence team innovative work behavior.

Based on the results of the supervisory role, it can be advised for managers of non-supervisor team members to create a learning climate where these team members could recognize that their learning behavior is being appreciated. When they are resilient, it is more important, as such appreciation learning climate can enhance their team innovative work behavior.

7. CONCLUSION

This study which focused on finding (1) the impact of team resilience on team innovative work behavior as well as (2) the moderating effect of LMX and appreciation learning climate on this relationship revealed some implications for both existing literature and for the practical world. The results suggest that team resilience which consists of the efficacious belief and adaptive capacity indeed positively influences the innovative work behavior of teams. Besides, when the teams have the capacity to adapt to challenges, supporting them with rewards for their team learning behavior at the same time would increase their team innovative work behavior which is beneficial for the innovation and performance of the organization (Bergström et al., 2015).

Since this study holds some biases, further researches can be conducted at the team level with data representing all members of a team, with self-rated and supervisor-rated values for better understanding. Further research can be also conducted at the organizational level rather than the team level to research in a wider context.

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10. APPENDICES

10.1 Appendix A: Questionnaire items

Available upon request

10.2 Appendix B: Results- Gender

Table 3. Hierarchical regression analysis results (Gender)

	Gender									
	Female					Male				
	Models					Models				
	1	2	3	4	5	1	2	3	4	5
Age	-.207***	-.206***	-.217***	-.211***	-.215***	-.018	-.018	-.024	-.019	-.028
Tenure	.058	.064	.043	.049	.047	-.024	-.025	-.028	-.023	-.028
Junior General Secondary Education	.014	.013	.010	.029	.021	-.079	-.076	-.084	-.079	-.081
Senior General Secondary Education	.117	.129	.112	.091	.106	-.075	-.073	-.077	-.075	-.072
Senior Secondary Vocational Education	.169	.183	.195	.190*	.212**	.052	.052	.048	.051	.036
Higher Education	.142	.150	.156	.178	.182	-.066	-.061	-.068	-.066	-.065
Supervisor	-.006	-.012	-.001	.000	-.004	.028	.028	.015	.029	.018
Team resilience	.368***	.360***	.397***	.423***	.419***	.473***	.472***	.484***	.474***	.490***
ELMX	-.004	.005	.002	.008	.014	-.083	-.083	-.069	-.083	-.057
SLMX	.028	.028	.035	.030	.034	.026	.031	-.004	.028	.004
ALC	.330***	.330***	.330***	.310***	.316***	.266***	.264***	.269***	.263***	.246***
TR_ELMX		-.048			-.038		-.020			-.045
TR_SLMX			.151**		.102			-.089		-.138*
TR_ALC				.157**	.108				.008	.071

p<.01***, p<.05**, p<.1*

Dependent Variable: TIWB

10.3 Appendix C: Results- Supervisory role

Table 4. Hierarchical regression analysis results (Supervisory role)

	Supervisory role									
	Non-supervisors					Supervisors				
	Models					Models				
	1	2	3	4	5	1	2	3	4	5
Gender	.071	.070	.063	.060	.057	-.038	-.037	-.052	-.042	-.051
Age	-.139***	-.138***	-.140***	-.146***	-.144***	-.052	-.090	-.068	-.071	-.109
Tenure	-.009	-.012	-.009	-.003	-.006	.157	.217*	.144	.131	.196
Junior General Secondary Education	-.017	-.016	-.016	-.014	-.013	.184	.278*	.111	.129	.193
Senior General Secondary Education	.004	.008	.002	-.002	.002	.237	.363*	.108	.161	.220
Senior Secondary Vocational Education	.113	.114	.114	.103	.105	.435*	.666**	.169	.269	.368
Higher Education	.041	.045	.040	.040	.043	.441*	.680**	.208	.256	.406
TR	.390***	.384***	.396***	.418***	.411***	.438***	.415***	.463***	.462***	.446**
ELMX	-.100*	-.098*	-.104**	-.089*	-.087*	.336***	.380***	.327***	.320***	.366**
SLMX	.048	.055	.058	.058	.067	-.243*	-.269**	-.318**	-.244*	-.336**
ALC	.301***	.298***	.301***	.277***	.274***	.439***	.439***	.505***	.482***	.511***
TR_ELMX		-.042			-.041		-.168			-.164
TR_SLMX			.070		.013		-.274**			-.242*
TR_ALC				.110**	.104*				-.136	-.045

p<.01***, p<.05**, p<.1*

Dependent Variable: TIWB

10.4 Appendix D: Systematic Literature Review Summary

Topics	Author & Year	Title	Method	Sample	Theory	Main findings	Source
TIWB	Dreu (2002)	Team innovation and team effectiveness: The importance of minority dissent and reflexivity	Quantitative analysis	32 teams	N.A	When the team reflexivity level and minor dissent level are high, then the team effectiveness and team innovation are also high. Team innovation is needed for a team to be effective	European Journal of Work and Organizational Psychology
	Widmann et al., (2016)	The Impact of Team Learning Behaviors on Team Innovative Work Behavior: A Systematic Review	Systematical literature review	31 articles	N.A	Developing team learning behavior positively influence TIWB	Human Resource Development Review
	Somech & Drach-Zahavy (2013)	Translating Team Creativity to Innovation Implementation: The Role of Team Composition and Climate for Innovation	Quantitative analysis	96 primary care teams	Interactional approach	Aggregated individual creative personality and functional heterogeneity promotes team creativity. When the climate for innovation is high, then team creativity increase innovation implementation.	Journal of Management
Team Resilience	Carmeli et al., (2013)	Cultivating a resilient top management team: The importance of relational connections and strategic decision comprehensiveness	Quantitative analysis	500 firms	Upper Echelon Theory Broaden-and-build theory	“(1) connectivity is positively related to strategic decision comprehensiveness, (2) strategic decision comprehensiveness is positively associated with both forms of TMT resilience, and (3) connectivity is indirectly, through strategic decision comprehensiveness, related to both TMT resilience–efficacious beliefs and TMT resilience–adaptive capacity.”	Safety sciences
	Vera et al., (2017)	May the force be with you: Looking for resources that build team resilience	Quantitative analysis	1,167 employees nested in 194 work teams (team level) from 38 organizations (organizational level)	Conservations of resources theory	Team level resources (collective efficacy, transformational leadership and teamwork) and organizational healthy practices are positively related to team resilience.	Journal of Workplace Behavioral Health

Hartwig et al., (2020)	Workplace team resilience: A systematic review and conceptual development	Systematic literature review	35 articles	Conservations of resources theory Multilevel Theory	Conceptualization of team resilience	Organizational Psychology Review
Dimas et al., (2018)	Bouncing Back from Setbacks: On the Mediating Role of Team Resilience in the Relationship Between Transformational Leadership and Team Effectiveness	Quantitative	Ninety teams (445 employees from 40 companies)	Transformational leadership theory	Team resilience mediate the positive relationship between transformational leadership and team effectiveness. Supervisors should adopt transformational leadership.	The Journal of Psychology
Alliger et al., (2015)	Team resilience: How teams flourish under pressure	Study	N.A	N.A	Teams can increase their resilience by developing behavioral strategies which minimize (before), manage (during) and mend (after) difficult pressures, stressors and difficult circumstances.	Organizational Dynamics
Chapman et al., (2018)	Team resilience: A scoping review of conceptual and empirical work	Review	27 papers	Multilevel theory	Definitions of team resilience	An International Journal of Work, Health & Organisations
Meneghel et al., (2016)	Job-related antecedents of team resilience and improved team performance	Quantitative analysis	1,633 employees, nested in 275 teams from 52 Spanish small and medium enterprises	Conservations of resources theory Multilevel Theory	Team resilience partially mediates job social resources and team performance. But job demands negatively moderate job social resources and team resilience	Personnel Review.
Meneghel et al., (2016)	From social context and resilience to performance through job satisfaction: A multilevel study over time	Quantitative analysis	305 white-collar employees, clustered in 67 work-units	Conservations of resources theory Multilevel Theory	“Individual job satisfaction fully mediates the relationship between collective perceptions of social context and individual job performance and the relationship between individual work resilience and individual job performance”	Human Relations

								Journal of Happiness Studies
Meneghel et al., (2014)	Feeling Good Makes Us Stronger: How Team Resilience Mediates the Effect of Positive Emotions on Team Performance			1,076 employees nested in 216 teams from 40 companies	Broaden and Build theory of Fredrickson	Team resilience mediates the relationship between collective positive emotions and team performance	Journal of Happiness Studies	
Bergström et al., (2015)	On the rationale of resilience in the domain of safety: A literature review	Review	61 papers		High reliability theory Resilience theory	Importance of adaptive capacity	Reliability Engineering & System Safety	
Edson (2012)	A complex Adaptive Systems View of Resilience in a Project Team	Quantitative analysis	200 students		Grounded theory Complex adaptative systems theory	Adaptive capacity is important for building resilient organizational culture.	Systems Research and Behavioral Science	
Kuvaas et al., 2012	Economic and social leader-member exchange relationships and follower performance	Quantitative analysis	552 followers and 78 leaders		Social-exchange theory	Economic leader-member exchange relationship negatively influence work performance and organizational citizenship behavior. Social leader-member exchange relationship positively influence work performance and organizational citizenship behavior.	The Leadership Quarterly	
Agarwal et al., 2012	Linking LMX, innovative work behaviour and turnover intentions The mediating role of work engagement	Survey	979 Indian managerial employees		LMX theory Social Exchange theory	The finding was that work engagement is positively correlated with IWB and negatively correlated with intention to quit. Besides, it mediates the relationship between LMX and IWB and partly mediates intention to quit.	Career Development International	
Janssen (2000)	Job demands, perceptions of effort-reward fairness and innovative work behaviour	Survey	170 non-management employees		Person-environment fit theory Social exchange theory LMX theory	Job demand is positively related to IWB when employees think that their efforts are fairly rewarded rather than unfairly rewarded.	Journal of Occupational and Organizational Psychology	
Walumba et al., (2011)	How Leader-Member exchange influences effective work behaviors:	Quantitative analysis	Nurses		LMX theory	LMX helps to increase job performance and organizational citizenship behaviors	Personnel Psychology	
								LMX

		Social exchange and internal-external efficacy perspectives	Quantitative analysis	1013 Dutch employees	Social Exchange theory	The results showed that work restructuring moderated the hypothesized relationships. Under conditions of high restructuring, facilitation learning climate was an important predictor of learning outcomes; yet, under conditions of low work restructuring, appreciation learning climate was more effective.	Journal of Vocational Behavior
Appreciation learning climate	Nikolova et al. (2016)	Learning Climate and Workplace Learning Does Work Restructuring Make a Difference?	Quantitative analysis	967 pairs (self-rated and supervisor-rated)	N.A	Age negatively impact the perception of learning climate, however learning climate has a positive influence in employability. Older employees in managerial positions benefit less from psychological learning climate than older employees in non-managerial positions.	Frontiers in psychology
	Van der Heijde et al., (2018)	Learning Climate perceptions as a determinant of employability: An empirical study among European ICT professionals	Quantitative analysis	32 graduate business students	N.A	This study constructed the general training climate scale 1. Management support 2. Organizational support 3. Job support	Organizational Research Methods
	Tracey & Tews (2005)	Construct Validity of a General Training Climate Scale	Quantitative and qualitative	349 questionnaire & 11 interviews	Gap approach & appreciative approach	Individual differences affect employee retention. Leadership, skills, seniority and appreciation and stimulation of learning and work climate have a positive impact on employee retention. However, those who are not ready to learn or take initiative to learn have negative impact on retention.	Journal of Advances in Management Research
Combined topics	Kyndt, Dochy, Michiels et al. (2009)	Employee Retention: Organisational and Personal Perspectives	Systematical literature review	81 articles	Social Exchange theory	Innovative work behaviour, Leader-member exchange, Organizational citizenship behaviour, Individual learning and Team learning enhance Employee performance,	
	Atatsi et al., (2019)	Factors affecting employee performance: a systematic literature review	Review	10 years old studies	N.A	Different contexts	
	Mathieu et al., (2008)	Team Effectiveness 1997-2007: A Review of Recent Advancements and a Glimpse Into the Future					

Topics	Author & Year	Title	Method	Sample	Theory	Main findings	Source
Team Resilience & TIWB	Weerd-Nederhof et al., 2019	Individual Resilience for Innovation: Does Context Matter?	Quantitative analysis	62 employees	Person-Environment fit	Individual resilience positively impacts innovative work behavior. Neither transformational leadership nor innovation strategy (exploitation/exploration) moderate this relationship.	Conference paper
	Oeij (2017)	The resilient innovation team. A study of teams coping with critical incidents during innovation projects "Chapter 2: Can teams benefit from using a mindful infrastructure when defensive behaviour threatens complex innovation projects?"	Interview Case study & Survey	Survey (150)	N.A	"The elements of mindful infrastructure - team psychological safety, team learning behaviour, team voice and the leadership style control - were associated with Team IRB. Similar to study 1, this study found perceived project complexity did not influence Team IRB. Further, mindful infrastructure was positively associated with project outcomes (perceived project success and perceived project progress), but this relation was significantly stronger when Team IRB was present at the same time. Team IRB mediated the relation between mindful infrastructure and project outcomes."	E-book with collections of papers Chapter 2- International Journal of Project Organisation and Management
LMX & TIWB	Lee & Seo (2019)	Are There Differences in the Effects of PO and PT Cultural Fits on Work Attitudes and Task Performance? The Moderating Effect of Supportive Leadership.	Longitudinal study	1539 members of 181 teams	N.A	P-O cultural fit and P-T cultural fit are positively related to organizational commitment. P-T cultural fit is also positively related to team commitment and task performance. Supportive leadership moderates the relationship between P-T cultural fit and organizational and team commitment.	Sustainability
	Tung (2019)	The Impact of Burnout on Innovative Behavior Under the Influence of Individual Resilience and Environment Effects	Quantitative analysis and Systematic literature review	302 employees	Person-Environment fit	Individual resilience makes the connection between burnout and innovative work behaviour more negative and SLMX makes this connection less negative. Individual resilience is positively correlated with innovative work behavior.	UT Thesis repository

Agarwal et al., (2012)	Linking LMX, innovative work behaviour and turnover intentions The mediating role of work engagement	Survey	979 Indian managerial employees	LMX theory Social Exchange theory	The finding was that work engagement is positively correlated with IWB and negatively correlated with intention to quit. Besides, it mediates the relationship between LMX and IWB and partly mediates intention to quit.	Career Development International
Kuvaas et al., (2012)	Economic and social leader-member exchange relationships and follower performance	Quantitative analysis	552 followers and 78 leaders	Social-exchange theory	Economic leader-member exchange relationship negatively influence work performance and organizational citizenship behavior. Social leader-member exchange relationship positively influence work performance and organizational citizenship behavior.	The Leadership Quarterly
Monica Hu, Meng-Lei, et al. (2012)	Effects of social exchange and trust on knowledge sharing and service innovation	Quantitative analysis	466 employees	Social-exchange theory	“LMX quality and TMX quality mediated the relationship between KS and service innovation, and that trust moderated the relationship between KS and both LMX quality and TMX quality. These findings can be applied to improve communication among employees, enhance knowledge sharing, and promote service innovation.”	Social Behavior and Personality: an international journal
Saeed et al. (2019)	Leader-member exchange and innovative work behavior	Quantitative analysis	323 employees and their immediate supervisors (121) from automotive industry.	N.A	“The results showed that leader-member exchange, CSE and domain knowledge interacted to affect employee innovative work behavior in such a way that when CSE and domain knowledge were both high, leader-member exchange had the strongest positive relationship with innovative work behavior and creative process engagement mediated this relationship.”	European Journal of Innovation Management.
Agarwal et al (2014).	The role of social exchange on work outcomes: a study of Indian managers	Quantitative analysis	1302 managers	N.A	“leader-member exchanges and perceived organization support relate to psychological contract breach, which, in turn, relates to affective commitment, intention to quit and innovative work behaviours. Trust in employer mediated psychological contract breach and work outcomes.”	The International Journal of Human Resource Management
Denti et al. (2016)	Modeling the link between leader-member exchange and individual innovation in R&D	Quantitative analysis	166 R&D team members, 43 team leaders,	N.A	“Individuals’ inclination to take personal initiative predicted individual innovation, while intrinsic motivation and leadership (conceptualised by	International Journal of

			and 10 department managers		leader-member exchange (LMX) theory) did not. A mediating effect was found whereby LMX was associated with individual innovation through the personal initiative of team members. Organisational support moderated the relationship between LMX and individual initiative. High organisational support strengthened the relationship.”	Innovation Management
Appreciation learning climate & TIWB	Nikolova et al., (2016)	Learning Climate and Workplace Learning Does Work Restructuring Make a Difference?	1013 Dutch employees	Quantitative analysis	The results showed that work restructuring moderated the hypothesized relationships. Under conditions of high restructuring, facilitation learning climate was an important predictor of learning outcomes; yet, under conditions of low work restructuring, appreciation learning climate was more effective	Journal of Vocational Behavior
	Saleh & Wang (1993)	The Management of Innovation: Strategy, Structure, and Organizational Climate	20 innovative companies 23 less innovative companies	Quantitative analysis	The results shows that the innovative companies use or have more of the following than the less innovative ones: “calculated risk taking; management commitment to entrepreneurial activities and innovation; integration and intermingling of talents in teams and task forces; group and collective orientation; and a reward system that reinforces entrepreneurial behaviour”.	IEEE Transactions on Engineering Management
	Jiménez-Jiménez & Sanz-Valle, R. (2011).	Innovation, organizational learning, and performance	data from 451 Spanish firms	Quantitative analysis	Organizational learning affects innovation and they both affect business performance. These relations are moderated by the size and age of the company and the industry and environmental turbulence.	Journal of business research
	Edmondson, A. (1999).	Psychological safety and learning behavior in work teams	51 work teams	Multimethod field study	Team psychological safety and learning behavior are related, but team efficacy is not. Learning behavior mediates the relationship between team psychological safety and team performance. Team structures (context support and team leader coaching) and shared beliefs affect team outcomes.	Administrative science quarterly