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Impact of Self-Efficacy on Radical and Incremental Creativity: Mediating Role of Work Engagement

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Abstract
This paper investigates the impact of self-efficacy (SE) on the two distinct dimensions of creativity; radical creativity (RC) and incremental creativity (IC), with work engagement (WE) as mediator. Drawing on the recent re-conceptualization of creativity as a multi-dimensional phenomenon; the current study attempts at better explaining the relationships of self-efficacy and work engagement with creativity dimensions among employees of advertising agencies working in creative departments. A three wave time lagged survey of 277 creative employees of advertising agencies in Rawalpindi/Islamabad was conducted. SPSS Process Macro and AMOS were used for analyzing the collected data. Self-efficacy was found to have an impact of greater magnitude on radical creativity than on incremental creativity, while work engagement mediated the relationship between self-efficacy and radical creativity only. The findings may assist the managers to better plan, hire and manage their creative workforce according to the jobs requiring different forms of creativity.

Keywords: employee creativity; radical creativity; incremental creativity; self-efficacy; work engagement

Introduction

Creativity is the production of unique, novel and useful ideas, products and processes (Amabile, 1988) and is required in every field to gain and sustain competitive advantage and for successful achievement of profitability (Nair & Gopal, 2010). But the needs, nature and forms of creativity may vary for different jobs, in other words, some jobs may require the employees to bring about radical changes or explore totally new avenues which were not tapped before and on the other hand some creative jobs may only need the employees to extend the creative work already being done in the form of some extension through exploitation on an incremental level (Garcia & Calantone, 2002; Madjar, Greenberg & Chen, 2011) which points to the recent recognition of creativity as a multi-dimensional construct having two distinct forms; radical (exploration) and incremental creativity (exploitation) rather than a uni-dimensional construct (Gilson et al., 2012; Xu, Jiang & Walsh, 2016).

The current study, utilizes the Conservation of Resources Theory (COR) (Hobfoll, 1989) to study the impact of self-efficacy on both the dimensions of creativity i.e. incremental and radical creativity through a mediating mechanism of work engagement as proposed by the JDR Model of engagement (Bakkar & Demerouti, 2016) whereby engagement plays a mediating role between personal and/or job resources and positive work outcomes such as creativity. Also, COR suggests that individuals keep looking for gaining, keeping and securing more and more resources for better completion of their jobs. The job of a creative employee in any advertising organization is very complex, competitive and demanding (Mallia & Windels, 2011; McLeod et al., 2011), which makes it pertinent for the employee to not only possess the requisite personal resources but also requires a high level of engagement in the work that the employee is assigned in his organization (Waheed & Dastgeer, 2019). The resulting creativity can take the form of incremental creativity and radical creativity which are critically important for jobs of varying nature (Xu et al., 2016).

Literature Review

Self- Efficacy (SE), Incremental Creativity (IC) and Radical Creativity (RC)

Self-efficacy is an indicator that a person has confidence over his task knowledge (Gist & Mitchell, 1992) which is acquired through formal education and work-related experience. Employees while carrying out their work, make an assessment of the personal and situational resources and form a judgment about how much capable they are to accomplish their task with the available resources, those high in self-efficacy know how they should use the resources available to their advantage and utilize their capabilities (Carmeli & Schaubroeck, 2007). Researchers have highlighted that self-efficacy is an important predictor of creativity considered uni-dimensionally (Amabile et al., 2005; Bandura, 1997; Choi, 2004; James et al., 2004; Rich et al., 2010), however there are very few studies examining creativity as having multi-dimensions i.e. radical and incremental creativity (Jaussi & Randel, 2014).

Self-efficacy provides the will to continue striving for creativity despite challenges and complexity (Park, 2014) and also gives motivation to stay committed towards the creative pursuits (Amabile, 1988) as creativity particularly radical creativity requires a stronger will to continue with the hard work which is required for the breakthroughs and inventions (Gilson et al., 2012). Although self-efficacy is required in carrying out both the forms of creativity but it can be hypothesized that since radical creativity requires much more hard work and meeting of risky situations and challenges for coming up with something revolutionary, high self-efficacy would be required for radical creativity than incremental creativity which only demands new extensions to already established products, methods and processes (Jaussi & Randel, 2014; Xu et al., 2016) hence not requiring meeting of challenges and complexities of that high an extent. The confidence that comes with high self-efficacy enables the employee to set higher goals for themselves while also keeping their motivational level high (Michale, Hsu & Fan, 2011), self-efficacy also enables the individual to remain steadfast in the face of obstacles and greater challenges (Chan, 2004; Fabio & Palazzeschi, 2008; Tierney & Farmer, 2002) which are part and parcel of radical creativity. All these attributes are of critical importance in the case of radical creativity because employees working towards making breakthrough changes and departures from usual, require extra amounts of confidence in the face of challenges, risks of failure which are significantly greater in case of radical creativity than in incremental creativity (Jaussi & Randel, 2014; Xu et al., 2016).

Also, according to Howell and Higgins (1990), innovative individuals as opposed to adaptive individuals possess high level of confidence in their abilities which points towards having higher self efficacy. This is because individuals having high self-efficacy have confidence on their

capabilities which make them choose path breaking ways of doing things (Tierney & Farmer, 2002). Moreover, the intrinsic motivational state, which is derived out of self-efficacy, was found to have a link with radical creativity by Madjar, Greenberg and Chen (2011); in one of the few empirical studies involving radical and incremental creativity. Thus, it can be hypothesized:

H1: The relationship between SE and RC will be significantly greater than the relationship between SE and IC.

Work Engagement and Creativity

Shaufeli et al. (2002) defined work engagement as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption". According to Kahn (1990) engagement is the utilization of employees to their work role; whereby employees exhibit themselves physically, cognitively, and emotionally in connection with the performance of the roles they have been assigned in the organization. Recently, engagement has gained a lot of attention of researchers and practitioners owing to its positive associations with performance related work outcomes (Leiter & Bakker, 2010; Shuck & Wollard, 2010). Creativity being a complex phenomenon requires complete cognitive as well as physical involvement and intrinsic motivation on the part of the employee, hence engagement is considered as an important antecedent to creativity (Amabile, 1990; Wu, 2015). Gichohi (2014) argued that creativity or creative employee behavior is neither a result of forceful imposition nor can be expected out of disengaged employees, it can only be achieved when employees immerse themselves fully in their work and the role they have been assigned (Rich, Lepine & Crawford, 2010).

The relationship of WE and creativity has been found to be of significance in past studies (Bakker, 2009; Bakker & Demerouti, 2008; Gichohi, 2014; McEwen, 2011) but the re-conceptualization of creativity on multi-dimensions has necessitated to study its impact on radical and incremental creativity and a call has been made by researchers to examine engagement in relation to these two forms of creativity (Gilson et al., 2012).

H2a: Work engagement has a significant positive impact on incremental creativity.

H2b: Work engagement has a significant positive impact on radical creativity.

Self-Efficacy (SE) and Work Engagement (WE)

Self-efficacy is one of the psychological resources on the individual level which determines how much confidence that individual has in himself and his abilities to work on particular tasks (Bandura, 1986) which implies that self-efficacy strengthens the will to continue working on a highly complex and challenging task (Park, 2014), and this way it links it to work engagement, which is the total absorption of the person in the assigned work and hence utilization of that person in the task (Kahn, 1990). Work engagement is also an affective-motivational state which makes an engaged employee to work for the success of his organization (Abraham, 2012; Leiter & Bakker, 2010) and self-efficacy also provides motivation to the employee to stay steadfast in achieving the task and exhibit the behaviors which enhance his ability towards success (Bandura, 1986).

Self-efficacy is one of the few personal resources which has been studied in connection with work engagement and was found to have a positive relation (Albrecht, 2010; Bakker et al., 2006; Kim, Han & Park, 2019; Rothmann & Storm, 2003; Xanthopoulou et al., 2009). Hence it can be hypothesized that:

H3: SE has a significant positive impact on WE.

Work Engagement as Mediator

According to the expanded JDR Model of work engagement by Xanthopoulou et al. (2009) and JDR Model of Bakker and Demerouti (2007, 2008, 2016) the personal and job resources together or separately act as antecedents to work engagement while the performance variables such as in-role and extra role performances, financial turnover and creativity etc are its consequences. In a very recent study by Kim, Han and Park (2019) the mediating role of work engagement was tested through two models (one direct and other indirect) between job/ personal resources and employee performance among Korean organizations and found that the indirect mediating relationship provided a better model fit. This study was also an attempt to test the expanded JDR Model. It was further elaborated through review of previous literature that engagement has been considered as a mediator in majority of studies between resource variables and positive outcome variables (e.g. Airilia et al., 2014; Alessandri et al., 2018; Lorente et al., 2014; Salanova & Schaufeli, 2008).

Thus, WE acts as a mediator between resource variables and performance/outcome variables (Bakker & Demerouti, 2016) and this mediating role of engagement has been cited as of critical importance (Kim et al., 2019). There are evidences of links between the variables work engagement and creativity such that higher levels of engagement results in higher creativity by employees (Prusak & Matson, 2006) and work engagement works as a mediator for performance and creativity (Bae et al., 2013; Bakker & Xanthopoulou, 2013; Kim et al., 2019). Researchers have reported that WE generally acts as a mediator between resources (personal and job related) and positive work outcomes, and one of the important outcomes is creativity (Bakker & Demerouti, 2016; Xanthopoulou et al, 2009). In a recent study (Bouckenooghe & Menguç, 2016) the mediating role of WE between relational resources and creativity was suggested. Similar stance was put force by Bjornberg (2017) while testing the mediating effect of burnout and engagement between personal resources (self-efficacy and resiliency) and creativity and innovation. The current study furthers this attempt by examining the mediating link of engagement between self-efficacy and the two forms/dimensions of creativity.

H4a: WE mediates the relationship between SE & IC.

H4b: WE mediates the relationship between SE & RC.

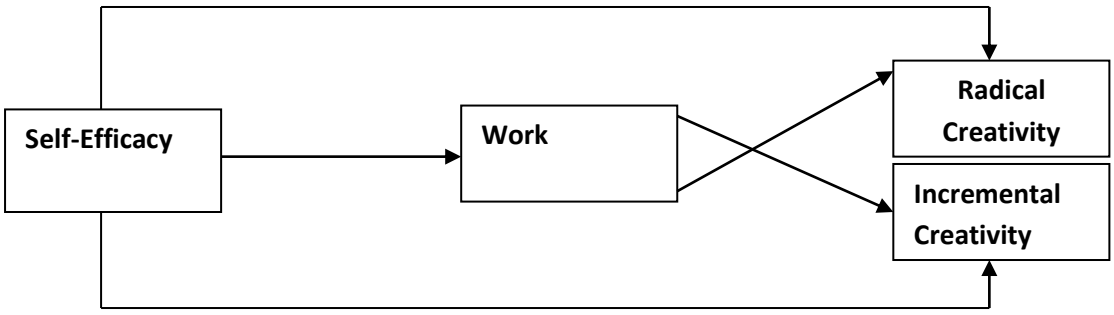

Figure 1: Theoretical Framework

Method

Sample and Procedures

A sample of employees working in the creative departments of advertising agencies sector was drawn from the twin cities Rawalpindi-Islamabad, which are two of four cities where 41 out of 140 advertising agencies and their head offices in Pakistan are located. 450 structured questionnaires were distributed to creative employees in three waves time-lagged design with a gap of two months in each lag, on the basis of purposive sampling, out of which 277 fully filled and usable questionnaires were received back. The three time-lagged responses were regarded as time 1, time 2 and time 3. Self-efficacy was tabbed at time 1, work engagement was tabbed at time 2 and incremental and radical creativity were tabbed at time 3.

The required sample size for this study was 119, calculated though G Power software and therefore the collected sample size of 277 is considered satisfactory for analysis. Out of the 277 respondents of the study, 188 were male (67.9%) and 89 were female (32.1%). Majority of them were married (n=172), were lying in the age bracket of 31-40 years (n=114) closely followed by those who were in the age range of 20-30 years (n=112), having masters degrees (n=127) and having an average experience range of 3-5 years in their current organization.

Measures

All the scales of the variables in this study have been adopted from existing literature and are self-report measures. All the scales were measured on 5-point Likert scales with responses ranging from 'strongly agree (1)' to 'strongly disagree (5)'. The self-report measures are preferred in the study of incremental and radical creativity because it has been argued that employees themselves are better judges of their own level of creativity and hence more reliable informants of their creativity in comparison to their supervisors or colleagues (Gilson et al., 2012; Ng & Feldman, 2012; Xu, et al., 2016), they are also in a better position to assess whether their creativity is more of a breakthrough or of adaptive nature (Ng & Feldman, 2012). This argument also been supported in empirical studies (Gilson et al., 2012; Shalley, Gilson, & Blum, 2009; Xu, Jiang & Walsh, 2016). Moreover, a significant correlation has also been found between self-reported creativity and supervisor-rated creativity (Axtell et al., 2000; Janssen, 2000; Ng & Feldman, 2012). The scales used included the measure of self-efficacy by Luthans, Youssef, and Avolio (2007) consisting of 6 items, a shortened version of the UWES (Schaufeli, Bakker & Salanova, 2006) consisting of 9 items to measure work engagement and a 7 items scale by Gilson et al. (2012) to tap the extent to which the employees are creative either incrementally or radically. The first 4 items are to measure the radical creativity while the remaining 3 measured the incremental dimension of creativity.

Results

Confirmatory Factor Analysis

To ascertain the credibility of the constructs, confirmatory factor analysis was carried out through AMOS 22, the results of the CFA are given in the Table I below, which depict that the data fits the model and the relative fit indices are within or near to the benchmark values. In addition, employee creativity was also loaded as a one-factor and two-factor models. This was done to confirm the credibility of the premise that creativity could be considered as having two distinct dimensions. The results suggested that the two factor model is indeed the better fitting model and the items of the two dimensions; incremental and radical creativity are designed for two separate factors.

Table 1: Confirmatory Factor Analysis Model Fit Results

	CMIN/DF	CFI	NFI	GFI	AGFI	RMSEA
Full Model	3.13	.82	.76	.78	.74	.08
Creativity						
(Two-Factor Model)	1.51	.98	.96	.98	.96	.04
Creativity						
(One-Factor Model)	6.34	.82	.80	.90	.80	.14

Descriptives, Correlations and Reliability Coefficients

The descriptive statistics, means, standard deviations, correlation coefficients and Cronbach's alpha reliability coefficients for the variables are given in the table below:

Table 2: Mean Standard Deviation, Correlation and Reliabilities

	Mean	St. Dev	1	2	3	4
1. SE	4.07	.56	(.83)			
2. WE	3.89	.64	.50**	(.89)		
3. RC	4.06	.50	.49**	.55**	(.72)	
4. IC	3.07	.64	.23**	.17**	.43**	(.71)

The Cronbach's Alpha reliabilities range from .71 to .89 which all lies in the acceptable range. The correlations between all the variables are significant.

Regression Analysis

The proposed model includes direct, mediation and moderation effects. SPSS (20) and its PROCESS Macro by Hayes (2013) were used to conduct regression analyses for testing the hypotheses of the study. Hypotheses H1 can be initially confirmed seeing the direct relationships of self-efficacy with incremental and radical creativity (c path) in the Table 4, as the relationship between self-efficacy and incremental creativity has lower beta value (B=0.26, p<0.001) and with radical creativity the value is higher (B=0.41, p<0.001). But for a more rigorous test for the difference in magnitude of relationships between self-efficacy and the two forms of creativity, three sets of regression analyses were conducted. Two of the regression analyses were conducted with each form of creativity and the third was a test of the difference between betas for different dependent variables from the same sample (Cohen, Cohen, West, & Aiken, 2003). The results of this third test indeed indicate that the magnitude of the relationship of self-efficacy is stronger for radical creativity. Hypotheses 2a and 2b are also supported which proposed significant positive relationships of work engagement with incremental (B=.17, p<0.01) and radical creativity (B=0.59, p<0.001) respectively for which separate regression analyses were conducted (Table III).

Table 3: Results of Regression Analysis

Variable Comparison	Radical Creativity	Incremental Creativity	Incremental Vs. Radical Comparison
1. Work			
Engagement	.59**	-.17**	
*R*2 total	0.35	-.03	
F	47.53	-8.10	
2. Self-Efficacy	.58**	.23**	-.52**
*R*2 total	0.34	0.05	0.27
F	143.73	15.65	103.63

Note: Entries are standardized beta coefficients.

Mediation Analysis

Hypothesis 3 proposed a significant positive relationship of self-efficacy (SE) with work engagement (WE) which is supported (B=.68, p<0.001) as can be seen in Table IV. Hypothesis 4a proposed an indirect relationship between self-efficacy (SE) and incremental creativity (IC) through work engagement (WE). The bootstrap indirect effect of SE on IC through WE was not significant as the bootstrap confidence interval included a zero between lower limit and upper limit, .03, CI (-0.06, 0.13). Sobel test results also confirmed that this indirect relationship was insignificant (Sobel z = 0.63, p =.52). Therefore Hypothesis 4a is rejected.

Hypothesis 4b proposed an indirect relationship between self-efficacy (SE) and radical creativity (RC) through work engagement (WE). The bootstrap indirect effect of SE on RC through WE was proved significant as the bootstrap confidence interval does not include a zero between lower limit and upper limit .19, CI (.13, .27). Sobel test results also confirmed that this indirect relationship was significant (Sobel z = 5.79, p <.001). Therefore Hypothesis 4b is accepted.

Table 4: Mediation Results

Mediation Path via	**X-M**	**M(X)-Y**	**X-Y**	**The Mediation Bootstrapping (95%) CI**			
Work Engagement	**a path**	**b path**	**c path**	**Effect**	**S.E.**	**LL**	**UL**
SE → IC	0.68***	0.04	0.26**	0.03	0.05	-0.06	0.13
SE→ RC	0.68***	0.29***	0.41***	0.19	0.03	0.13	0.27

Unstandardized regression coefficients are reported.
N = 277
* **p < .05,** ** **p < .01,** *** ***p* < .001**

Discussion

The findings revealed that self-efficacy had a significant and positive association with both the forms of creativity and the magnitude of relationship with radical creativity was stronger (H5). Previous studies have also reported similar results, showing a positive association of self-efficacy with employee creativity because self-efficacy promotes ability to cope with challenges, failures and obstacles, exhibiting higher motivation levels to indulge in difficult tasks and being goal achievers (Gong, Huang, & Farh, 2009; Heaven, 2006; Tierney & Farmer, 2010; Lewis, 2011), all these qualities lead an employee to show higher levels of creativity. In one of the rare studies investigating the effect of self-efficacy on creativity's dimensions; radical and incremental creativity it was revealed that self-efficacy was more strongly related with radical creativity than with incremental creativity (Jaussi & Randel, 2014) which confirms the findings of the current study.

Significant positive association of work engagement was found with both incremental and radical creativity (H2a and H2b are supported). The relationship of work engagement and creativity has been found to be of significance in past studies (Bakker, 2009; Bakker & Demerouti, 2008; Gichohi, 2014; McEwen, 2011) and call for further research to determine the role of engagement in the mechanism of creativity as a multi-dimensional construct (Gilson et al., 2012) was responded by this study .

H3 had proposed a significant positive relationship of self-efficacy with work engagement, which was supported. The findings were consistent with previous studies (Albrecht, 2010; Bakker et al., 2006; Kim, Han & Park, 2019; Rothmann & Storm, 2003; Xanthopoulou et al., 2009). It has also been proved in the past studies that personal resources are important antecedents to work engagement (Bakker, Albrecht, & Leiter, 2011).

The current study exhibited work engagement as a significant mediator between self-efficacy and radical creativity (H4a) but the mediation was not significant in case of incremental creativity (H4b). This point to the fact that the role of work engagement as mediator is vital in the relationship of radical creativity only whereas, in case of incremental creativity, work engagement does not seem to intervene in its relationship with self-efficacy. This can be due to the fact that radical creativity is about making breakthroughs and coming up with things and solutions which are totally novel, revolutionary, unique and never done before, and hence require higher levels of engagement to supplement the personal resources such as self-efficacy, but in case of incremental creativity, possessing self-efficacy alone can also equip the employee in carrying out the creative tasks requiring modifications and adaptation which are of minor nature and do not require high levels of vigor, vitality and absorption. The findings are supported by studies carried out for engagement as significant mediator between resource variables such as self-efficacy and creativity on uni-dimensional level (Bjornberg, 2017; Kim et al., 2019) but this is the first time this relation for creativity on multi-dimensional level has been probed.

Implications and Conclusion

This study has important practical implications for managers and human resource managers of the organizations particularly advertising agencies, who at the time of hiring employees should keep in view that the right candidates for creative jobs should possess self-efficacy in addition to other personal resources. This is important because individuals with self-efficacy have high levels of confidence on their abilities to work on particular tasks which also makes them highly motivated to remain steadfast in achieving their targets. High self-efficacy also enables them to meet the obstacles as they have a will to continue working on a highly complex and challenging task which is required in organizations within the creative industry such as advertising agencies. All these abilities lead to higher level of engagement; which in turn results in enhanced creativity particularly radical creativity demanding higher levels of vigor, absorption and dedication on the part of the employee so that a breakthrough can be achieved. The managers should also demarcate the jobs requiring incremental or radical creativity within the organization because the requirements for the creative jobs are distinct and having self-efficacy is more crucial in case of jobs based around radical creativity. Managers can devise and organize training programs to increase the relevant skill sets of employees so that they can be more confident of their abilities to accomplish the creative jobs, as a result of enhanced self-efficacy. Measures should also be taken by managers to actively engage the employees because work engagement leads to higher creativity; both radical and incremental.

We found support in the Pakistani context for the first time, that employee creativity is a multi-dimensional construct rather than a uni-dimensional construct. Very few studies have probed these relationships (e.g. Xu, Jiang & Walsh, 2016) investigated in this study and no studies in the context of developing countries exist till the time this research was undertaken. Moreover this study examined for the first time the direct relationship of work engagement with creativity's two dimensions and how it mediated between self-efficacy and incremental and radical creativity rather than considering creativity as a uni-dimensional construct.

Limitations and Future Research

This paper uses self-report measures for creativity; future studies may utilize the triangulation method and also use supervisor ratings. Secondly, the current study uses data collected from advertising agencies of Pakistan only which may question the generalizability of the results to other sectors. Also, more personal resource factors such as emotional intelligence, individual personality traits etc can be studied to determine their relationship with both the forms of creativity.

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