Antecedents of Team Creativity: An Examination of Team Emotional Intelligence, Team Trust and Collaborative Culture

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Teams represent a dominant approach to getting work done in a business environment. Creativity enables teams to solve problems and leverage opportunities through the integration of divergent thoughts and perspectives. Prior research indicates that a collaborative culture, which affects how team members interact and work together, is a critical antecedent of team creativity. This study explores other antecedents of team creativity, namely, team emotional intelligence and team trust, and investigates the relationships among these precursors to creative effort. Using a survey of 82 student teams at a large university in the northeast United States, our findings suggest that team emotional intelligence promotes team trust. Trust, in turn, fosters a collaborative culture which enhances the creativity of the team. Cognitive trust also moderates the relationship between collaborative culture and team creativity. Implications of these results for managers and academics are discussed.

Introduction

In today's business environment, much work is interdependent and so teams are a dominant means to getting work done. Research shows that firms value the ability of individuals to work together (Kichuk & Wiesner, 1997). As well, in many organizations, creative capital is considered its greatest asset (Florida & Goodnight, 2005). In fact, some argue that the future success of many businesses relies on their ability to tap into the creative potential of their teams (Florida & Goodnight, 2005; Rego et al., 2007). For this article, we use Chen's (2007) definition of teams as a group of individuals where 'talent, energy and skills are integrated into a team, and this collective capacity to innovate becomes greater than the sum of individual contributions' (p. 239).

So, how does an organization enhance the creativity of its teams? Prior research indicates that the quality of collaboration has a positive impact on creativity and team performance (Hoegl & Gemuenden, 2001; DeCusatis, 2008). Similarly, emotional intelligence has been touted as essential to the performance of a team (Druskat & Wolff, 2001a; Goleman,

Boyatzis & McKee, 2002; Rego et al., 2007). Both individual and team emotional intelligence enhances a team's ability to communicate with one another, to be receptive to diverging opinions and to utilize emotion to improve team decision making. Additionally, interpersonal (team) trust is one of the important elements for teamwork and is based both on emotional bonds and perceived competencies of individual members. In fact, Rigby, Gruver and Allen (2009) studied teamwork in the most innovative firms in the United States and identified trust as one of the seven important characteristics that fosters successful partnership among diverse members of a team. When members trust each other it makes them feel less vulnerable, thus facilitating channelling energy on creating and discovering rather than defending (Gibb, 1978). Researchers state that in the current organizational environment of declining power of reciprocal obligations and hierarchical controls, trust is key to holding employees together as a cohesive unit (Kasper-Fuehrer & Ashkanasy, 2001; Bijlsma & Koopman, 2003).

The purpose of this study is to explore the relationship between team emotional
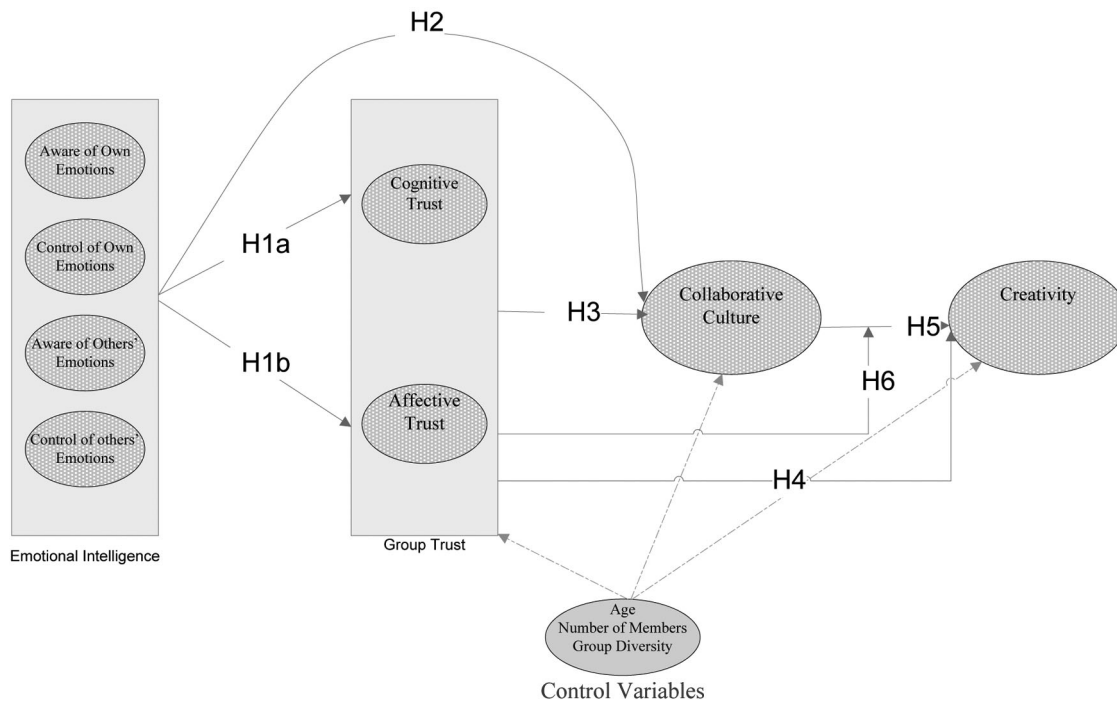
Figure 1. Proposed Model

intelligence, team trust and their impact on the team's collaborative culture and creativity (see Figure 1). From a practical perspective, we focus on understanding the effect, if any, of team emotional intelligence on team trust and the impact of team trust on the team's collaborative culture and creativity. In addition, we study the impact of trust in enhancing the relationship between collaborative culture and the creativity of teams. Collaborative culture is a team's shared values and beliefs about the organizations' support for adaptability, open communication, and encouragement of respect, teamwork, risk taking and diversity (Lopez, Peon & Ordas, 2004). Team creativity refers to teams producing novel ideas and solutions to maintain the firm's competitive edge (Amabile, 1997).

The contributions of this research are threefold. First, this study includes team emotional intelligence as a critical team characteristic. Although recent literature suggests that emotional intelligence is essential to team effectiveness (Druskat & Wolff, 2001a; Goleman, Boyatzis & McKee, 2002), empirical research on team emotional intelligence is scant (for exceptions, see Druskat & Wolff, 2001a; Goleman, Boyatzis & McKee, 2002; Jordan & Troth, 2004). Second, this research represents the first empirical study of the relationship between emotional intelligence and trust in a team context. Finally, this study goes beyond existing research by investigating the relation-

ships among team emotional intelligence, team trust and a collaborative culture as precursors to creativity. Because team trust and a collaborative culture can be influenced by managers, the findings of this study should provide useful recommendations for enhancing trust among team members, creating a collaborative culture, and ultimately, team creativity.

Theoretical Framework and Hypotheses

Team Emotional Intelligence

Ashforth and Humphrey (1995) argue that emotion is inseparable from an organization's internal work environment, thereby making the application of emotional intelligence to the work setting particularly compelling (Goleman, 1995). Many emotions grow out of social interactions (Kemper, 1978); thus, emotion is a pervasive influence in teams and is fundamental to how team members interact and work together (Druskat & Wolff, 2001b). Team emotional intelligence is the 'ability of a group to develop a set of norms that manage emotional processes' (Druskat & Wolff, 2001b, p. 133). These norms facilitate team member collaboration and cohesiveness, behaviours essential to team effectiveness (Druskat & Wolff, 2001b). Jordan and Lawrence (2009)

describe team emotional intelligence as composed of four dimensions: 'awareness of own emotions, awareness of other's emotions, management of own emotions and management of other's emotions' (p. 454). Team emotional intelligence has been shown to lead to stronger relationships with co-workers (Jordan & Troth, 2004), better information exchange and decision making (Pelled, Eisenhardt & Xin, 1999), and decreased team conflict (Jehn & Mannix, 2001; Jordan & Troth, 2004).

Team Trust

Consistent with other researchers, Rousseau et al. (1998) propose that trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviour of another. In other words, trust is an expectation that others will behave as expected and not be opportunistic (Jarvenpaa, Knoll & Leidner, 1998).

McAllister (1995) states that ' "available knowledge" and "good reasons" serve as foundations for trust decisions, the platform from which people make leaps of faith' (p. 26). Thus, the decision to trust reflects two dimensions, affect-based and cognitive, prevalent in the literature and supported by ample empirical evidence in organizational research (Jeffries & Reed, 2000). Researchers generally have adopted McAllister's (1995) definition of interpersonal trust to define trust among team members. For example, in their study of trust in virtual teams, Kanawattanachai and Yoo (2002) define trust among team members as 'the extent to which a person is confident in, and willing to act on the basis of, the words, actions, and decisions of another' (p. 43).

In line with this, our study explores two kinds of interpersonal trust important in team dynamics: affective and cognitive trust. Affective trust is the confidence one places in a team member based on one's feelings of caring and concern illustrated by that co-worker (McAllister, 1995). Cognitive trust is based on one's willingness to rely on a team member's expertise and reliability (McAllister, 1995; Johnson & Grayson, 2005).

In social units, such as work teams, both affective and cognitive trust increase the ability of team members to work together. Working together implies greater co-operation and information sharing which are expected in turn, to lead to higher team performance (Larson & LaFasto, 1989). According to Whitener et al. (1998) teams require more trust (than individuals) because of the high degree of interdependence required to complete their tasks.

In a team that is made up of members with different goals and perspectives, the potential for misunderstanding, conflict and miscommunication is great. Emotionally intelligent teams are more likely to overcome these potential problems due to their strong norms and ability to be aware of and manage emotions (Druskat & Wolff, 2001b; Jordan & Lawrence, 2009). For example, a team that supports the norm of interpersonal understanding knows when a team member is having a problem. While members continue to respect and appreciate that individual's expertise, by trusting one another, s/he can rely on colleagues to help and understand when needed. In sum, trust is created in emotionally intelligent teams as stated in the following hypothesis (Druskat & Wolff, 2001b; Williams, 2007).

H1: Team emotional intelligence is positively related to (a) affective and (b) cognitive team trust.

Collaborative Culture

Schein (2004) defines an organizational culture as employees' shared assumptions and beliefs about the organization and its environment. Lopez, Peon and Ordas (2004) define a collaborative culture as one that values teamwork, communication, respect and empowerment, and leverages the knowledge of individuals resulting in organizational learning. In a collaborative culture, team members are encouraged to embrace change, offer differing viewpoints, and discuss problems openly leading to constructive collaboration and consensus. Team members are guided by a common objective and work together effectively by sharing knowledge and learning from one another. A collaborative culture encourages total involvement of team members because of the mutual respect, care and support of each other (Bstieler & Hemmert, 2010).

It would seem that emotionally intelligent teams are better able to create a collaborative culture. This is because teamwork depends on employees' abilities to understand each other's emotions, as well as the ability to regulate their own emotions to fit the task and situation. Research shows that team members' emotions shape their attitudes and behaviours which in turn impact unit and organizational performance (Avey, Wernsing & Luthans, 2008). Team members' ability to identify and choose the best course of action is stronger when they are aware of their own and others' emotions and have the ability to control and channel the emotions appropriately (Rozell, Pettijohn & Parker, 2004).

Teams with higher levels of emotional intelligence are better able to inspire support and confidence in fellow team members. This, in turn, helps to create a collaborative work environment free of negative criticism, ridicule or fear, leading to better communication and reduced conflict (Rego et al., 2007). Those teams with higher levels of emotional intelligence have the ability to monitor and regulate their emotions, and their sensitivity to others' emotions helps not only in motivating themselves but also in building rapport with others (Dulewicz & Higgs, 2000). In addition, managing emotions enables teams to handle conflicts without compromising common team objectives and focus. They are more likely to be tolerant of divergent viewpoints thereby preventing discord from becoming a potential road block in their progress towards a common goal leading to a more collaborative environment (Suliman & Al-Shaikh, 2007). Thus, we propose the following hypothesis.

H2: Team emotional intelligence is positively associated with a team's collaborative culture.

Team Trust and Collaborative Culture

High levels of trust allow teams to function smoothly and achieve objectives (Wicks, Berman & Jones, 1999); it holds interdependent relationships together; and it helps to facilitate collaboration (Calton & Lad, 1995; Hosmer, 1995). Mutual trust increases the motivation to devote resources to shared goals (Dirks & Ferrin, 2001).

It has been proposed that to generate and share knowledge team members must trust the other team members with whom they are working (Adler, 2001). For example, members need to be able to trust that other team members will do their work effectively and efficiently. If this trust does not exist, it can impede the work of individual members as well as the work of the project itself. Without trust, political behaviour can emerge in the team, pitting individuals with different perspectives against each other which can lead to attempts to sabotage or undermine the efforts of other team members. In sum, trust is a critical ingredient in collaborative relations (Adler, 2001).

With a trusting environment, there is an acknowledgement of connectedness with co-workers, team spirit and work team co-operation (Strutton, Pelton & Lumpkin, 1993). Teams that illustrate team trust are likely to be more tolerant and accepting of divergent ideas and viewpoints. A team member who feels that his/her viewpoint is being heard is more likely to trust team members (Ashforth & Mael, 1989; McAllister, 1995). Thus, teams who trust one another are more likely to have members who work closely with each other and engage in meaningful give-and-take around problems and issues, elements that are critical to creating effective outcomes. Trust acts as a facilitator and promotes interpersonal relationships prompting people to seek and give help leading to a more collaborative culture (Russ et al., 1998; Abrams et al., 2003; Middel, Boer & Fisscher, 2006). Thus, trust is a critical ingredient in developing collaborative relationships between members of teams (Hattori & Lapidus, 2004). Supporting the third hypothesis, Evans and Wolf (2005) state that when employees trust each other, they create a collaborative culture and thus are more likely to collaborate together in a productive manner.

H3: Team trust (affective and cognitive) is positively associated with a team's collaborative culture.

Team Trust, Collaborative Culture and Team Creativity

Creative teams are valued in organizations as they produce novel ideas and solutions to maintain the firm's competitive edge. However, team ideas are not considered creative just because they are new or novel; they need to have potential use for the firm (Rego et al., 2007). Researchers recognize that people are the primary source of creative ideas in firms. Amabile (1998) stated that creativity is dependent upon organizational conditions such as freedom of ideas, features of the team, supervisory support and encouragement. Research indicates that when team members have high levels of interpersonal communication, support, and clarity of purpose, team members tend to be very creative and innovative (Jaskyte, 2008).

Creative teams are known for their ability to identify and exploit unique opportunities by using imaginative strategies to procure and orchestrate resources across functional groups (Chen, 2007). Both team trust and a collaborative culture enable better communication, information sharing, focus and greater co-operation (Larson & LaFasto, 1989; Strutton, Pelton & Lumpkin, 1993; Calton & Lad, 1995; Littler, Leverick & Bruce, 1995; Whitener et al., 1998), thereby leading to greater creative efforts. In addition, collaboration itself has been found to lead to creative outcomes (DeCusatis, 2008). However, recent research has found that repeated collaboration may negatively affect a team's creativity (Skilton &

Dooley, 2010). Despite this recent finding, we argue that team members with higher levels of trust are better able to focus, communicate and support each other leading to increased team creativity. Likewise, a collaborative culture fosters employee and team motivation to be more creative. The following hypotheses explore these two antecedents of team creativity.

> H4: Team trust (affective and cognitive) is positively associated with team creativity.
> H5: A collaborative culture is positively associated with team creativity.

The proposed model presents a direct relationship between a collaborative culture and team creativity (H5). Given that team trust is a critical antecedent of both of these constructs (Hattori & Lapidus, 2004; Evans & Wolf, 2005; DeCusatis, 2008), we expect that the direct relationship between collaborative culture and creativity will be stronger when team members are more trusting of each other. That is, when team members trust each other they are more likely to work closely together, share knowledge and allocate resources to shared goals (Wicks, Berman & Jones, 1999; Dirks & Ferrin, 2001), thus increasing the extent to which the team has a collaborative culture. Likewise, trusting team members have better communication, are supportive of each other and motivate each other to pursue shared objectives leading to more creative outcomes (Jaskyte, 2008). Therefore, team trust is hypothesized as a moderator of collaborative culture and team creativity.

> H6: Team trust (affective and cognitive) moderates the relationship between collaborative culture and team creativity.

Methodology

Sample

A sample of undergraduate students of a major university in the northeastern United States was used for this study. Students formed teams and worked closely to complete a class project that represented a major portion of their course grade. The student teams had members of both genders and consisted of a mix of sophomore, junior and senior year students. Questionnaires were distributed to the students during the class period in 12 different sections during autumn 2009. All student teams were involved in semester-long projects that developed marketing plans, real-world marketing research projects or an in-depth analysis of some

aspect of marketing depending on which course they were enrolled in. Members work together researching and discussing information such as customer profiles, marketing environment and competition that are required for the project. All team members take part in developing the final report and presenting it to the class and the instructor. Students were informed about the study purpose and were asked to provide their responses about his/her team as it related to their class project. Participation was voluntary. A total of 467 responses were collected. After deleting incomplete surveys, 422 responses representing 82 teams were analysed. The number of team members ranged from four to seven. Females accounted for 53 per cent of the respondents and 47 per cent were males. The age of the respondents ranged from 17 to 24 years with a mean of 20.33 years (SD = 1.16). About half of the students were sophomores (47.2 per cent), seniors accounted for 23 per cent and juniors formed 29.8 per cent.

Measures

All constructs included in this study were operationalized with published scales that have demonstrated good psychometric properties in earlier studies. The items were Likert-type 7- point scales with 1 indicating total disagreement and 7 indicating complete agreement with the statements. The measures were aggregated by team. Interpersonal trust was measured with McAllister's (1995) scale used in research of interpersonal trust in organizations. This 11-item scale measures affective as well as cognitive dimensions of trust. Creativity was measured with an 8-item scale from Rego et al. (2007) that measured the creativity of teams. Collaborative culture was measured with an 8-item scale used by Lopez, Peon and Ordas (2004), who define their collaborative culture scale as a measure of a culture whose members foresee changes, support dialogue and encourage respect, teamwork, risk and diversity. Team emotional intelligence was measured using the scale developed by Jordan and Lawrence (2009). This is a four-dimensional scale (awareness of own emotion, management of own emotion, awareness of others' emotions, and management of others' emotions) with four items for each dimension. The survey respondents were also asked to provide their team name/number (as an identifier to aggregate team members), number of members in the team, class and section in addition to age and gender.

Control Variables

Three control variables that have the potential to influence team effectiveness were included in the analysis. Research has shown that age and functional diversity have a link to collaboration and creativity (Weingart, Todorova & Cronin, 2008; Verworn, 2009). Age of the team was measured by asking each respondent to provide their age. Means were calculated for each team and then aggregated. Functional diversity was measured by asking students to indicate the number of business concentrations (e.g., marketing, finance, accounting, etc.) represented on their team. Team size has been found to be positively related to innovation (West et al., 2003), which incorporates creativity, but negatively related to communication and decision making (Smith et al., 1994). Team size was measured by asking the respondents to report the number of members on their project team.

Analysis

Exploratory factor analysis (EFA) was performed on all scales to assess their dimensionality (Anderson & Gerbing, 1987). Results of the EFA analysis on interpersonal trust showed that scale-items loaded on two factors: affective and cognitive trust. Cross-loading items and items with factor loadings less than 0.50 were removed. Retention of scale items with the highest factor loadings during the scale purification process is used by researchers to increase the amount of common variance among the items (Peterson, 2000; Bhuian, Menguc & Borsboom, 2005). This process resulted in three items each for affective and cognitive dimensions that explained 83.2 per cent of the variance of the trust construct. Exploratory factor analysis of team emotional intelligence clearly showed the four distinct dimensions (76 per cent of emotional intelligence explained). Both collaborative culture and creativity scales were one-dimensional. Scale items used in the analysis and the factor loadings are shown in Appendix 1.

All independent variables were standardized to reduce the potential for multicollinearity. This was particularly critical since the four dimensions of the emotional intelligence scale were highly correlated to one another. Table 1 shows the correlation matrix and descriptive statistics for all the measures used in the model along with reliability statistics for the constructs. Correlations among the constructs were significant and in the right direction providing support for the hypotheses.

Table 1. Correlations and Descriptive Statistics

		AWR	MGT	AWRO	MGTO	AFF	COG	COLL	CREAT	AGE	MEM	DIV
AWR	EI- Awareness of own emotions	*0.93*										
MGT	EI-Management of own emotions	**0.40**	*0.78*									
AWRO	EI- Awareness of others' emotions	**0.51**	**0.36**	*0.89*								
MGTO	EI-Management of others' emotions	**0.66**	**0.37**	**0.63**	*0.89*							
AFF	Trust- Affective	**0.69**	**0.36**	**0.37**	**0.64**	*0.84*						
COG	Trust- Cognitive	**0.47**	**0.47**	**0.29**	**0.61**	**0.52**	*0.94*					
COLL	Collaborative Culture	**0.32**	**0.30**	0.14	**0.31**	**0.43**	**0.46**	*0.89*				
CREAT	Team Creativity	0.26*	0.18	0.19	**0.34**	**0.40**	**0.54**	**0.85**	*0.95*			
AGE	Age	0.15	0.18	0.13	0.09	0.08	0.01	0.06	0.01	*1.00*		
MEM	Number of Members in Team	−0.13	0.10	0.07	0.01	0.06	−0.14	−0.14	−0.05	0.22	*1.00*	
DIV	Team Diversity	0.07	−0.05	−0.06	−0.02	−0.02	−0.11	0.06	0.02	**0.79**	−0.01	*1.00*
Mean		4.55	5.77	4.83	4.85	5.30	5.45	5.40	5.29	20.33	4.69	
Standard Deviation		0.93	0.47	0.67	0.64	0.76	0.93	0.83	0.89	1.16	0.84	

Cronbach's α on the diagonal. Bold correlations are significant at 0.01 level (two-tailed).
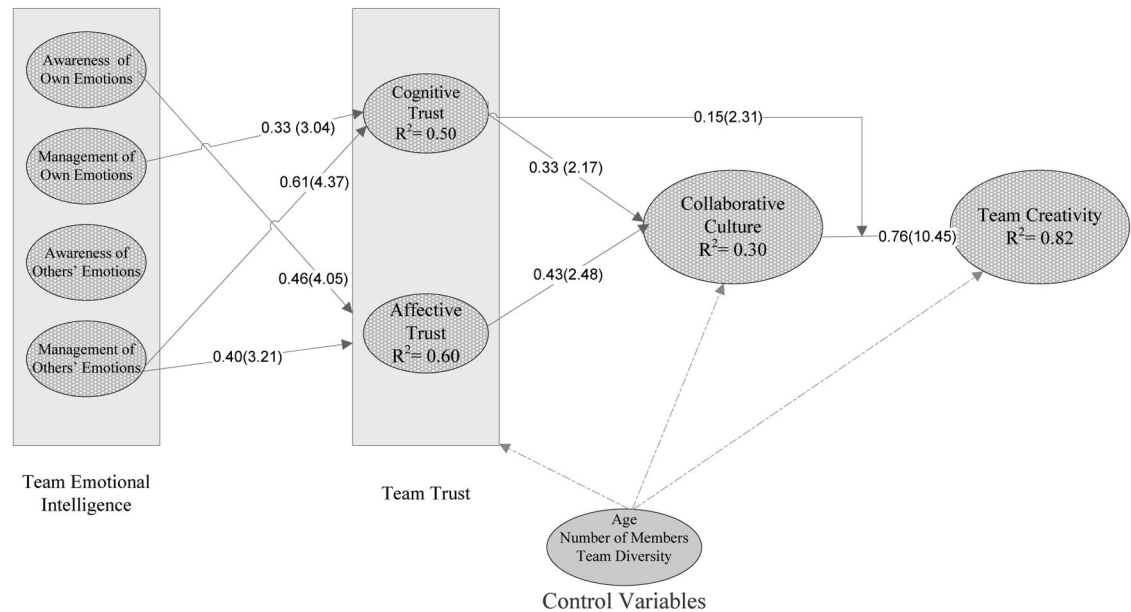
Figure 2. Final Model

Results

The hypotheses were tested using hierarchal moderated regression analysis using SPSS 17 (Bell, Menguc & Stefani, 2004). As stated before, average age of the team, number of members in the team and team diversity were used as control variables. Following the procedure established by previous research, we systematically tested three models (Bell, Auh & Smalley, 2005). First, the dependent variables (DV) were regressed on the control variables (CV). Second, DV was regressed on CV plus the predictor (IV) variables to test for main effects. Finally, a test for moderation was conducted by regressing the dependent variable on CV, IV and the interaction variables. All the models were tested for multi-collinearity by calculating the variance inflation factor (VIF) for each of the regression coefficients. Results show that multi-collinearity is not impacting the results as VIF values ranged from 1.19 to 3.45 and were well below the threshold value of 10 (Bell, Menguc & Stefani, 2004). The model resulting from our analyses is shown in Figure 2.

Team Emotional Intelligence and Team Trust

Affective trust and cognitive trust were regressed on the control variables and the four dimensions of emotional intelligence as predictor variables. Model 1 (see Table 2) shows the results of the regression of affective trust on the control variables and predictor

variables – the four dimensions of team emotional intelligence, namely, awareness of own emotions, management of own emotions, awareness of others' emotions and management of others' emotions. Hypotheses H1a was partially supported as the beta coefficients for awareness of own emotions and management of others' emotions were positive and statistically significant while the coefficients for management of own emotions and awareness of others' emotions were not significant.

Similar regression analysis for cognitive trust shows that management of own emotions and management of others' emotions were significant in explaining cognitive trust among members thus providing partial support for H1b (see Table 2, Model 2). Regression coefficients for awareness of own emotions and awareness of others' emotions were not significant.

Collaborative Culture

Collaborative culture as a dependent variable was first regressed on the control variables. In the second step, collaborative culture was regressed on the control variables, the four dimensions of emotional intelligence and the two dimensions of trust (see Table 2, Model 3). Results show that only the two dimensions of trust had positive and significant regression coefficients, thus providing support for H3. None of the team emotional intelligence dimensions were significantly related to collaborative culture, thereby providing no support for H2.

Table 2. *Regression Results*

Dependent Variables	Model 1 Affective Trust			Model 2 Cognitive Trust			Model 3 Collaborative Culture		
Team Diversity	β	t	p	β	t	p	β	t	p
Control Variables									
(Constant)		1.98	0.05		2.69	0.01		2.73	0.08
Age	0.13	0.86	0.39	0.13	0.02	0.99	-0.12	-0.59	0.56
Number of Members in Team	0.08	0.83	0.41	0.08	-1.22	0.23	-0.11	-0.88	0.38
Team Diversity	-0.15	-1.03	0.31	-0.15	-0.66	0.52	0.21	1.08	0.29
Independent Variables									
EI- Awareness of Own Emotions	0.46	4.05	0.00	0.05	0.42	0.68	-0.07	-0.41	-0.68
EI- Management of Own Emotions	0.13	1.36	0.18	0.33	3.00	0.00	0.07	0.49	0.63
EI- Awareness of Others' Emotions	-0.16	-1.41	0.16	-0.23	-1.78	0.08	0.05	0.32	0.75
EI- Management of Others' Emotions	0.40	3.24	0.00	0.61	4.37	0.00	-0.21	-1.05	0.30
Affective Trust							0.43	2.48	0.02
Cognitive Trust							0.33	2.17	0.03

Table 3. Regression Results

Dependent Variable	Team Creativity		
	β	t	p
Control Variables			
(Constant)		3.46	0.00
Age	−0.01	−0.12	0.90
Number of Members in Team	0.09	1.44	0.15
Team Diversity	0.00	0.04	0.97
Independent Variables			
Affective Trust	−0.13	−1.85	0.07
Cognitive Trust	0.24	3.39	0.00
Collaborative Culture	0.84	12.74	0.00
Control Variables			
(Constant)		3.67	0.00
Age	−0.04	−0.37	0.72
Number of Members in Team	0.11	1.78	0.08
Team Diversity	0.03	0.29	0.78
Independent Variables			
Affective Trust	−0.11	−1.59	0.12
Cognitive Trust	0.31	4.16	0.00
Collaborative Culture	0.76	10.46	0.00
Collaborative Culture x Cognitive Trust	0.15	2.31	0.03

Team Creativity

Moderated hierarchical regression was used to test the hypotheses linking creativity to the two dimensions of trust and collaborative culture. As before, regression was first conducted with the control variables. The second regression was done with affective trust, cognitive trust and collaborative culture to test for main effects (see Table 3). The results indicate that cognitive trust and collaborative culture are significant predictors of creativity while affective trust is not significant, providing partial support for H4 and full support for H5.

In view of these results, in the final step, only the moderating effect of cognitive trust on the relationship between collaborative culture and creativity was tested. The results for moderation show that cognitive trust enhances the effect of a collaborative culture on creativity, thereby supporting H6.

Discussion and Implications

The results of this study present a more nuanced and complex picture of the antecedents of a team's creative output. Specifically, our results indicate that emotionally intelligent teams create both cognitive and affective team trust. Team trust, in turn, helps build a collaborative culture which leads to higher levels of team creativity. As well, cognitive trust enhances creativity by moderating the relationship between collaborative culture and team creativity.

The positive influence of particular elements of team emotional intelligence on both cognitive and affective trust highlights the importance of team emotional intelligence in creating team trust. Cognitive trust is based on a member's perception of the reliability and competence of his/her peers. When team members exhibit professional behaviour by managing their own emotions and those of their colleagues, such as being deliberate in their decision making by examining all sides of the argument, they are likely to be trusted and relied on for their competence and ability. On the other hand, affective trust is based on emotional bonds resulting from interpersonal care and concern for each other. When team members are aware of his/her own emotions and are able to manage others' emotions, they can empathize and provide support thereby creating affective team trust.

The lack of evidence to support a direct relationship between team emotional intelligence and a collaborative culture suggests that awareness and management of emotions is not necessary for team members to collaborate. However, that does not mean that emotional intelligence is not important in teams. As noted above, team emotional intelligence creates trust, both affective and cognitive, among team members, which in turn, leads to a collaborative culture. Thus, both emotional intelligence and trust are critical for effective teamwork.

Our findings support prior research that shows that team collaboration requires trust (Bierly, Stark & Kessler, 2009). Team members' trust is based on individuals' confidence that the actions of the members will be beneficial and not detrimental. Thus, the level of trust affects individual and team behaviours. In a trusting environment, individuals are more willing to take a risk by sharing information and co-operating with their team members (Mayer, Davis & Schoorman, 1995) thereby creating a sense of collaboration (Russ et al., 1998; Abrams et al., 2003; Hattori & Lapidus, 2004).

Our finding that cognitive trust positively impacts team creativity suggests that members' perceptions that their peers are reliable and competent is vital to enhancing the creativity of the team. This concurs with research that shows that knowledge and skill about one's function is critical to creativity (Amabile, 1997; Taggar, 2002). High cognitive trust teams are perceived to have members with strong functional as well as interpersonal capabilities which can create a feeling that the team can jointly make decisions, take risks and share ideas without fear of criticism (West, 1990) resulting in a creative solution to their task. The result that affective trust does not influence team creativity implies that the bonds of caring and concern for each other, though useful to collaboration, are not instrumental to enhancing team creativity. This supports research which indicates that compassion is not an element of creativity (Amabile, 1997; Taggar, 2002).

Finally, results of this study support prior research indicating that collaborative culture is a strong predictor of creativity (DeCusatis, 2008). Results also show that the existence of cognitive trust among members enhances this relationship. Collaborative teams are known to be open to others' suggestions, allow team members to take risks and are willing to consider diverse viewpoints; all of the qualities necessary for creative efforts. When team members trust each other to be competent and reliable, they are even more willing to exhibit those behaviours leading to an even more creative solution.

Implications for Managers

This study, though based on student teams, offers several potential implications for managers. First, the finding that emotional intelligence is a predictor of team trust suggests that managers need to assess the emotional intelligence of each subordinate in order to determine his/her level of emotional intelligence. Once this is accomplished, activities such as training in emotional intelligence, could be undertaken to improve individual and team capabilities. Also, assessments of emotional intelligence could be used with job candidates, particularly those applying for positions which require substantial teamwork.

Second, the impact of trust on a collaborative culture and cognitive trust on creativity reinforces that trust is a critical element of teams that managers need to pay attention to. To build and sustain trust, managers need to create situations for both formal and informal communication among team members (Jarvenpaa, Knoll & Leidner, 1998). For example, a kick-off meeting at the beginning of a project can help team members to get to know each other and start to build relationships that can ultimately lead to a creative approach to the task.

Finally, the positive impact of cognitive trust on the relationship between a team's collaborative culture and creativity suggests that managers need to recognize the importance of team members' perceptions of the reliability and competence of their colleagues. To aid these perceptions, it is obviously most useful to hire functionally competent individuals. However, functional competence is not sufficient for cognitive trust. Individuals need to also possess skills such as working with others, being reliable and dependable, doing whatever is needed to accomplish the task, and being flexible (Barczak & Wilemon, 2003).

Implications for Researchers

This research expands our knowledge of the antecedents of team creativity. Specifically, this study represents the first empirical study of the relationship between team emotional intelligence and affective and cognitive trust in a team context. Moreover, it explores a more complex relationship among precursors of team creativity, namely team emotional intelligence, team trust and a collaborative culture than prior research. Finally, this research investigates emotional intelligence as an important team characteristic.

Limitations and Future Research

The study uses cross-sectional data and hence causality of the relationships between predictor and criterion variables should not be implied from results of this study. Theory and previous research of the constructs used in the study have been used in interpreting the findings. Use of a convenience sample of students could be another limitation in terms of practical implications, even though student teams are known to provide useful insights into the dynamics of team work and creativity (Chiocchio & Essiembre, 2009; Qiu et al., 2009). Future research could examine our model with teams and team leaders working on real business issues to ascertain if the relationships we found with our student sample hold true. In relation, the study used team creativity as the dependent variable rather than a more practical measure of performance. Our future research will use student teams who are working on a project for a corporate client and, thus, will incorporate actual performance metrics, thereby enhancing the value of our research to managers. Finally, to minimize social desirability bias, respondents were guaranteed anonymity and responses were collected by a student volunteer instead of their own instructor. We also tested for common method bias using the method advocated by Lindell and Whitney (2001) and found that common method bias was not a threat to the study findings.

References

Abrams, L.C., Cross R., Lesser E. and Levin, D.Z. (2003) Nurturing Interpersonal Trust in Knowledge-Sharing Networks. *The Academy of Management Executive*, 17, 64–77.

Adler, P.S. (2001) Market, Hierarchy, and Trust: The Knowledge Economy and the Future of Capitalism. *Organization Science*, 12, 215–34.

Amabile, T. M. (1997) Motivating Creativity in Organizations: On Doing What You Love and Loving What You Do. *California Management Review*, 40, 39–58.

Amabile, T.M. (1998) How to Kill Creativity: Keep Doing What You're Doing. Or If You Want to Spark Innovation, Rethink How You Motivate, Reward and Assign Work to People. *Harvard Business Review*, September–October, 76–87.

Anderson, J.C. and Gerbing, D.W. (1987) On the Assessment of Unidimensional Measurement: Internal and External Consistency, and Overall Consistency Criteria. *Journal of Marketing Research*, 24, 432–7.

Ashforth, B.E. and Humphrey, R.H. (1995) Emotion in the Workplace: A Reappraisal. *Human Relations*, 48, 97–125.

Ashforth, B.E. and Mael, F. (1989) Social Identity Theory and Organization. *Academy of Management Review*, 14, 20–39.

Avey, J.B., Wernsing, T.S. and Luthans, F. (2008) Can Positive Employees Help Positive Organizational Change? *Journal of Applied Behavioral Science*, 44, 48–70.

Barczak, G. and Wilemon, D. (2003) Team Member Experiences in New Product Development: Views from the Trenches. *R&D Management*, 33, 463–79.

Bell, S.J., Menguc, B. and Stefani, S.L. (2004) When Customers Disappoint: A Model of Relational Internal Marketing and Customer Complaints. *Journal of the Academy of Marketing Science*, 32, 112–26.

Bell, S.J., Auh, S. and Smalley, K. (2005) Customer Relationship Dynamics: Service Quality and Customer Loyalty in the Context of Varying Levels of Customer Expertise and Switching Costs. *Journal of the Academy of Marketing Science*, 33, 169–83.

Bhuian, S.N., Menguc, B. and Borsboom, R. (2005) Stressors and Job Outcomes in Sales: A Triphasic Model Versus a Linear-Quadratic-Interactive Model. *Journal of Business Research*, 58, 114–50.

Bierly, P., Stark, E. and Kessler, E. (2009) The Moderating Effects of Virtuality on the Antecedents and Outcome of NPD Team Trust. *Journal of Product Innovation Management*, 26, 551–65.

Bijlsma, K. and Koopman, P. (2003) Introduction: Trust Within Organizations. *Personnel Review*, 32, 543–55.

Bstieler, L. and Hemmert, M. (2010) Increasing Learning and Time Efficiency in Interorganizational New Product Development Teams. *Journal of Product Innovation Management*, 27, 485–99.

Calton, J. and Lad, L. (1995) Social Contracting as a Trust-Building Process of Network Governance. *Business Ethics Quarterly*, 5, 271–95.

Chen, M.H. (2007) Entrepreneurial Leadership and New Ventures: Creativity in Entrepreneurial Teams. *Creativity and Innovation Management*, 16, 239–49.

Chiocchio, F. and Essiembre, H. (2009) Cohesion and Performance: A Meta-Analytic Review of Disparities between Project Teams, Production Teams, and Service Teams. *Small Group Research*, 40, 382–420.

DeCusatis, C. (2008) Creating, Growing and Sustaining Efficient Innovation Teams. *Creativity and Innovation Management*, 2, 155–64.

Dirks, K.T. and Ferrin, D.L. (2001) The Role of Trust in Organizational Settings. *Organization Science*, 12, 450–67.

Druskat, V.U. and Wolff, S.B. (2001a) Building the Emotional Intelligence of Groups. *Harvard Business Review*, 79, 80–90.

Druskat, V.U. and Wolff, S.B. (2001b) Group Emotional Intelligence and Its Influence on Group Effectiveness. In Cherniss, C. and Goleman, D. (eds.) *The Emotionally Intelligent Workplace*. Jossey-Bass, San Francisco, CA, pp. 132–55.

Dulewicz, V. and Higgs, M. (2000) Emotional Intelligence: A Review and Evaluation Study. *Journal of Managerial Psychology*, 15, 341–72.

Evans, P. and Wolf, B. (2005) Collaboration Rules. *Harvard Business Review*, July–August, 96–104.

Florida, R. and Goodnight, J. (2005) Managing for Creativity. *Harvard Business Review*, July–August, 124–31.

Gibb, J.R. (1978) *Trust: A New View of Personal and Organizational Development*. Guild of Tutors Press, Los Angeles, CA.

Goleman, D. (1995) *Working with Emotional Intelligence*. Bantam Books, New York.

Goleman, D., Boyatzis, R. and McKee, A. (2002) The Emotional Reality of Teams. *Journal of Organizational Excellence*, 21, 55–65.

Hattori, R.A. and Lapidus, T. (2004) Collaboration, Trust and Innovative Change. *Journal of Change Management*, 4, 97–104.

Hoegl, M. and Gemuenden, H.G. (2001) Teamwork Quality and the Success of Innovative Projects: A Theoretical Concept and Empirical Evidence. *Organization Science*, 12, 435–49.

Hosmer, L. (1995) Trust: The Connecting Link between Organizational Theory and Philosophical Ethics. *Academy of Management Review*, 20, 379–403.

Jarvenpaa, S., Knoll, K. and Leidner, D. (1998) Is Anybody Out There? Antecedents of Trust in Global Virtual Teams. *Journal of Management Information Systems*, 14, 29–64.

Jaskyte, K. (2008) Employee Creativity in US and Lithuanian Nonprofit Organizations. *Nonprofit Management and Leadership*, 18, 465–83.

Jeffries, F.L. and Reed, R. (2000) Trust and Adaptation in Relational Contracting. *Academy of Management Review*, 25, 873–82.

Jehn, K.A. and Mannix, E.A. (2001) The Dynamic Nature of Conflict: A Longitudinal Study of Intragroup Conflict and Group Performance. *Academy of Management Journal*, 44, 238–51.

Johnson, D. and Grayson, K. (2005) Cognitive and Affective Trust in Service Relationships. *Journal of Business Research*, 58, 500–7.

Jordan, P.J. and Lawrence, S.A. (2009) Emotional Intelligence in Teams: Development and Initial Validation of the Short Version of the Workgroup Emotional Intelligence Profile (WEIP-S). *Journal of Management and Organization*, 15, 452–69.

Jordan, P.J. and Troth, A.C. (2004) Managing Emotions during Team Problem Solving: Emotional Intelligence and Conflict Resolution. *Human Performance*, 17, 195–218.

Kanawattanachai, P. and Yoo, Y. (2002) Dynamic Nature of Trust in Virtual Teams. *Journal of Strategic Information Systems*, 11, 187–213.

Kasper-Fuehrer, E.C. and Ashkanasy, N.M. (2001) Communicating Trustworthiness and Building Trust in Interorganizational Virtual Organizations. *Journal of Management*, 27, 235–54.

Kemper, T.D. (1978) *A Social Interaction Theory of Emotions*. Wiley, New York.

Kichuk, S.L. and Wiesner, W.H. (1997) The Big Five Personality Factors and Team Performance: Implications for Selecting Successful Product Design Teams. *Journal of Engineering and Technology Management*, 14, 195–221.

Larson, C. and LaFasto, F. (1989) *Teamwork*. Sage, Newbury Park, CA.

Lindell, M.K. and Whitney, D.J. (2001) Accounting for Common Method Variance in Cross-Sectional Research Designs. *Journal of Applied Psychology*, 86, 114–21.

Littler, D., Leverick, F. and Bruce, M. (1995) Factors Affecting the Process of Collaborative Product Development: A Study of UK Manufacturers of Information and Communications Technology Products. *Journal of Product Innovation Management*, 12, 16–32.

Lopez, S.P., Peon, J.M.M. and Ordas, C.J.V. (2004) Managing Knowledge: The Link between Culture and Organizational Learning. *Journal of Knowledge Management*, 8, 93–104.

Mayer, R., Davis, J. and Schoorman, F. (1995) An Integrative Model of Organizational Trust. *Academy of Management Review*, 20, 709–34.

McAllister, D.J. (1995) Affect and Cognition Based Trust as Foundations for Interpersonal Cooperation in Organizations. *Academy of Management Journal*, 38, 24–59.

Middel, R., Boer, H. and Fisscher, O. (2006) Continuous Improvement and Collaborative Improvement: Similarities and Differences. *Creativity and Innovation Management*, 15, 338–47.

Pelled, L.H., Eisenhardt, K.M. and Xin, K.R. (1999) Exploring the Black Box: An Analysis of Work Group Diversity Conflict and Performance. *Administrative Science Quarterly*, 44, 1–28.

Peterson, R.A. (2000) A Meta-Analysis of Variance Accounted for and Factor Loadings in Exploratory Factor Analysis. *Marketing Letters*, 11, 261–75.

Qiu, T., Qualls, J., Bohlmann, J. and Rupp, D.E. (2009) The Effect of Interactional Fairness on the Performance of Cross-Functional Product Development Teams: A Multilevel Mediated Model. *Journal of Product Innovation Management*, 26, 173–87.

Rego, A., Sousa, F., Pina e Cunha, M., Correia, A. and Saur-Amaral, I. (2007) Leader Self-Reported Emotional Intelligence and Perceived Employee Creativity: An Exploratory Study. *Creativity and Innovation Management*, 16, 250–64.

Rigby, D.K., Gruver, K. and Allen, J. (2009) Innovation in Turbulent Times. *Harvard Business Review*, 87, 79–86.

Rousseau, D., Sitkin, S., Burt, R. and Camerer C. (1998) Not So Different After All: Cross Discipline View of Trust. *Academy of Management Review*, 23, 387–92.

Rozell, E.J., Pettijohn, C.E. and Parker, R.S. (2004) Customer-Oriented Selling: Exploring the Roles of Emotional Intelligence and Organizational Commitment. *Psychology and Marketing*, 21, 405–24.

Russ, F.A., McNeilly, K.M., Comer, J.M. and Light, T.B. (1998) Exploring the Impact of Critical Sales Events. *Journal of Personal Selling and Sales Management*, 18, 19–34.

Schein, E.H. (2004) *Organizational Culture and Leadership*. Jossey-Bass, San Francisco, CA.

Skilton, P.F. and Dooley, K.J. (2010) The Effects of Repeat Collaboration on Creative Abrasion. *Academy of Management Review*, 35, 118–34.

Smith, K.G., Smith, K.A., Olian, J.D., Smis, H.P., O'Bannon, D.P. and Scully, J.A. (1994) Top Management Team Demography and Process: The Role of Social Integration and Communication. *Administrative Science Quarterly*, 39, 412–38.

Strutton, D., Pelton, L.E. and Lumpkin, J.R. (1993) The Relationship between Psychological Climate and Salesperson-Sales Manager Trust in Sales Organizations. *Journal of Personal Selling and Sales Management*, 13, 1–14.

Suliman, A.M. and Al-Shaikh, F.N. (2007) Emotional Intelligence at Work: Links to Conflict and Innovation. *Employee Relations*, 29, 208–20.

Taggar, S. (2002) Individual Creativity and Group Ability to Utilize Individual Creative Resources: A Multilevel Model. *Academy of Management Journal*, 45, 315–30.

Verworn, B. (2009) Does Age Have an Impact on Having Ideas? An Analysis of the Quantity and Quality of Ideas Submitted to a Suggestion System. *Creativity and Innovation Management*, 18, 326–34.

Weingart, L.R., Todorova, G. and Cronin, M.A. (2008) Representational Gaps, Team Integration and Team Creativity. In *Academy of Management Best Paper Proceedings*. Academy of Management, Briarcliff Manor, NY.

West, M.A. (1990) The Social Psychology of Innovation in Groups. In West, M.A. and Farr, J.L. (eds.) *Innovation and Creativity at Work: Psychological and Organizational Strategies*. John Wiley & Sons, Chichester, pp. 101–22.

West, M.A., Borrill, C.S., Dawson, J.F., Brodbeck, F., Shapiro, D.A. and Haward, B. (2003) Leadership Clarity and Team Innovation in Health Care. *The Leadership Quarterly*, 14, 393–410.

Whitener, E., Bordt, S., Korsgaard, M. and Werner, J. (1998) Managers as Initiators of Trust: An Exchange Relationship Framework for Understanding Managerial Trustworthy Behavior. *Academy of Management Review*, 23, 513–30.

Wicks, A., Berman, S. and Jones, T. (1999) The Structure of Optimal Trust: Moral and Strategic Implications. *Academy of Management Review*, 24, 99–116.

Williams, M. (2007) Building Genuine Trust through Interpersonal Emotion Management: A Threat Regulation Model of Trust and Collaboration across Boundaries. *Academy of Management Review*, 32, 595–621.

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Appendix 1

Scale Items used in the Study

Team Emotional Intelligence (Jordan and Lawrence, 2009)	Standardized Loading
Awareness of Own Emotions (AWR)	
1. I can explain the emotions I feel to team members.	0.840
2. I can discuss the emotions I feel with team members.	0.850
3. If I feel down, I can tell team members what will make me feel better.	0.829
4. I can talk to other members of the team about the emotions I experience.	0.827
Management of Own Emotions (MGT)	
5. I respect the opinion of team members, even if I think they are wrong.	0.658
6. When I am frustrated with fellow team members, I can overcome my frustration.	0.742
7. When deciding on a dispute, I try to see all sides of a disagreement before I come to a conclusion.	0.825
8. I give a fair hearing to fellow team members' idea.	0.777

Appendix 1 *Continued*

Team Emotional Intelligence (Jordan and Lawrence, 2009)	Standardized Loading

Awareness of Others' Emotions (AWRO)

9. I can read fellow team members 'true' feelings, even if they try to hide them. — 0.817
10. I am able to describe accurately the way others in the team are feeling. — 0.761
11. When I talk to a team member I can gauge their true feelings from their body language. — 0.821
12. I can tell when team members don't mean what they say. — 0.807

Management of Others' Emotions (MGTO)

13. My enthusiasm can be contagious for members of a team. — 0.644
14. I am able to cheer team members up when they are feeling down. — 0.760
15. I can get fellow team members to share my keenness for a project. — 0.780
16. I can provide the 'spark' to get fellow team members enthusiastic. — 0.791

Affective Trust (McAllister, 1995)

1. We have a sharing relationship. We can all freely share our ideas, feelings, and hopes. — 0.638
2. I can talk freely to my team members about difficulties I am having at school and know that they will want to listen. — 0.948
3. If I shared my problems with my team members, I know they would respond constructively and caringly. — 0.884

Cognitive Trust (McAllister, 1995)

1. Team members approach this project with professionalism and dedication. — 0.905
2. Given my team members' track records, I see no reason to doubt their competence and preparation for the project. — 0.910
3. I can rely on team members not to make our project more difficult by careless work. — 0.909

Team Creativity (Rego et al., 2007)

1. My team members suggest new ways to achieve goals or objectives. — 0.821
2. My team members come up with new and practical ideas to improve performance. — 0.882
3. My team members suggest new ways to increase quality. — 0.865
4. My team members promote and champion ideas to others. — 0.774
5. My team members exhibit creativity when given the opportunity to. — 0.831
6. My team members develop adequate plans and schedules for the implementation of new ideas. — 0.864
7. My team members have new and innovative ideas. — 0.882
8. My team members come up with creative solutions to problems. — 0.919

Collaborative Culture (Lopez, Peon & Ordas, 2004)

1. My team considers change to be natural and necessary. — 0.706
2. My team considers individuals as an asset and tries to appreciate them continuously. — 0.828
3. Individuals who experiment and take reasonable risks are well-considered by the team even if they are mistaken. — 0.774
4. The preservation of different points of view is encouraged. — 0.819
5. Everybody's opinions and contributions are respected. — 0.778
6. Problems are discussed openly, to avoid finding culprits. — 0.694
7. Collaboration and co-operation among team members is encouraged. — 0.805
8. All team members are aware of instructor expectations. — 0.618