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The relationship among creative (Mis) fit, college culture, creative and academic self-efficacy

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Although person-environment fit (PEF) has been extensively studied in organizational psychology and business literature, its application to educational context has been limited. The current study used PEF framework in terms of creativity within the context of higher education. The nature of relationship between person-environment fit, college culture, creative and academic self-efficacy has been investigated. Analyses based on two different formulations of PEF indicated that college culture, creative and academic self-efficacy are the highest when both person and environment components are high. Specific analyses with misfit scores indicated that college culture generates a pro-environment discrepancy. Creative self-efficacy is more related to person component whereas college culture and academic self-efficacy were related to environment component. Results are discussed in relation to the literature and theories of creativity.

Key words: Person-environment fit, creativity, college culture, creative self-efficacy, academic self-efficacy.

INTRODUCTION

Creativity has been indicated as the highest form of thinking (Anderson et al., 2001; Krathwohl, 2002) and, therefore, is one of the most crucial skills needed in the workforce (IBM, 2010). Unfortunately, educators are slow in reacting to this phenomenon, and creativity is not a priority in most of the current educational models (Bronson and Merryman, 2010). In spite of that discouraging climate, it is crucial to offer solutions and models that are applicable in practice.

Broadly speaking, there seems to be two major approaches to supporting creativity in educational settings. The first approach is about the instructional and curriculum related solutions that explore various ways of immersing creativity and creative thinking in the curriculum (Cropley, 2001; Fairweather and Cramond, 2010). This is a crucial area of investigation because raising the students with the traditional models of learning and teaching imply an education that is limited to facts and knowledge, which stifles creativity (Best, 1991). The second approach is more climate-based that facilitates creativity through providing positive environmental conditions and support systems so that creative potential finds different ways to flourish (Crafts, 2005; de Souza-Fleith, 2000; Fasko, 2001; Peterson, 2001; Péter-Szarka, 2012).

The current study focuses on the second (climate -based) approach within the context of higher education

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from the perspective of person-environment fit (PEF). PEF is a framework rooted in the earlier works of psychology (for example, Lewin, 1936; Murray, 1938) and has been developed and widely studied in the organizational psychology and business (Chatman, 1989; Edwards, 2008; French et al., 1974). Person-environment fit is founded on the idea that the correspondence or congruence between the person and environment leads to greater outcome (French et al., 1974; Tinsley, 2000). Although it has been studied in the field of creativity (Choi, 2004; Choi and Price, 2005; Livingstone et al., 1997; Puccio et al., 2000; Sen et al., 2014), it was largely related to the organizational aspect of creativity rather than educational aspect.

The current study adopts PEF model to educational context, more specifically, creativity in higher education. This perspective is useful for at least two reasons. First, the distinction between creative potential and creative achievement (Runco, 2003, 2004) can be viewed from the perspective of environmental conditions and available opportunities for creativity. Transformation of creative potential to creative achievement could be impeded by environmental conditions and support. PEF provides a useful framework for understanding this gap between personal and environmental qualities for creativity. Research underlining the importance of experiences for creativity (Runco and Acar, 2010; Koestner et al., 1999; Leung et al., 2008) indicates that environmental conditions that offer rich and diverse opportunities can enhance creativity. Second, person and environment are two of the major four aspects of the creativity research as classified by Rhodes (1961). Rhodes' perspective also points to the interconnectedness of these four aspects of creativity (person, press or environment, process, and product). As creativity is complex, its assessment should also be multifaceted and various aspects of it should be considered. Hence, an ecological perspective should be adopted, that would require going beyond focusing on one aspect of creativity, and employing a more comprehensive and integrative approach to creativity assessment (Isaksen et al., 1993).

Sen et al. (2014) developed a measure of creativity (Person-Environment Fit Scale for Creativity (PEFSC)) based on this study framework. They designed two scales: Person and environment scales, which are commensurate or complementary to each other. In other words, each item in the person scale had a corresponding item that speaks to the environment. Commensurate measures have been indicated as crucial component of PEF based assessment (Edwards et al., 1998). A useful function of PEFSC is that it reveals the discrepancy between person and environment scores, leading to "misfit." This is particularly important for the development of creativity in educational context because understanding the environment related gaps would enable possible intervention strategies. The second function of PEFSC is that it yields quadrants based on high and low levels on two dimensions-person and environment. As indicated in Table 1, the first quadrant reflects those with strong representation of creative person characteristics, and rich and supportive environmental conditions. This will be simply stated as high person-high environment (hP-hE) group. The second quadrant represents those with low personal creativity traits and high environmental conditions (lP-hE). The third quadrant is the opposite of the second quadrant to reflect those with high personal creative traits and low environmental conditions (hP-lE). The final quadrant refers to low levels on both person and environmental conditions (lP-lE).

Person-environment fit: Antecedents and consequences

The fit between the person and environment tends to disappear when one of the two components (that is, person or environment) is higher than the other. The person is harder to change as creativity in an individual is related to psychological traits and personality whereas environment can be improved through changing the psychological climate and even organizational culture. When this framework is put into educational context and more specifically to college environment, college culture emerges as an important factor for a creative climate. From educational perspective, an environment can be enriched and improved with more resources and support units.

College culture

An established, rich, and supportive college culture also implies a positive climate for creativity. More specifically, faculty (Lamport, 1993; Komarraju et al., 2010; Newman and Newman, 1978; Pascarella, 1980; Thistlewaite, 1960; Terenzini and Pascarella, 1980; Pascarella et al., 1978) administrators such as counselors and dean of students (Newman and Newman, 1978), college structure (Chickering, 1969) and peers (Bean, 1985; Denzin, 1966; Feldman and Newcomb, 1969; Wallace, 1966) have been indicated as the key factors affecting the college culture. Chambers (1973) found that interaction with the faculty outside the classroom (for example, laboratory, home, office) plays a significant role in students' creative development. Behaviors that supported creativity included treating students as individuals and offering encouragement, encouraging them to be independent, serving as role models, spending considerable time with students outside the classroom, and encouraging one-on-one outside class interaction despite their performance in class. College culture may enhance the climate for creativity and may create a pro-environment misfit that is the discrepancy emerging as a result of higher environment scores than person scores. Therefore,

Table 1. Four quadrants of person-environment fit.

Environment	High person	Low person
High environment	High person and high environment	Low person and high environment
Low environment	High person and low environment	Low person and low environment

pro-environment misfit may be positively related to college culture.

Self-efficacy

Person-environment fit may also impact self-efficacy (Bandura, 1977). Self-efficacy is defined as perceived capabilities within a certain domain (Bandura, 1986). Two different forms of self-efficacy will be considered in this study: Creative self-efficacy and academic self-efficacy. The term “creative self-efficacy” has been coined by Tierney and Farmer (2002) who defined it as belief in the ability to be creative in the work. Because creative self-efficacy is related to the beliefs about skills and abilities, it is more closely tied to the person aspect of creativity rather than environment. Therefore, creative misfit is more likely to be negatively related to pro-environment misfit (therefore, positively related with pro-person misfit). Those with higher person scores than environment scores are more likely to have higher scores of creative self-efficacy.

Another form of self-efficacy, academic self-efficacy, is related to academic tasks. Schunk (1991) defined it as individuals’ expectations if they can accomplish academic tasks at the expected level. In academic settings, academic self-efficacy is more critical than generalized self-efficacy (Zajacova et al., 2005; Zimmerman, 2000). Students’ beliefs about mastering an academic activity determine their motivation and achievement (Bandura, 1993). Academic self-efficacy may be influenced by both person and environment components equally. Therefore, misfit would have no correlation to academic self-efficacy. The following hypotheses will be tested in this study.
When PEF quadrants are compared:

1. There will be no significant difference between hP-hE and lP_lE in all three criteria (creative self-efficacy, academic self-efficacy, school culture).
2. There will be no significant correlation between pro-environment misfit and college culture.
3. There will be no significant relationship between pro-environment misfit and creative self-efficacy.

METHODOLOGY

Participants

The population of the study was college students in Istanbul, Turkey. The sample comprised of 320 college students (252 females and 68 males) who attended different universities in Istanbul in Fall 2015 term. 64 students were from private universities and 256 were from state universities. Among the participants, 95 (29.7%) were freshmen, 67 (20.9%) were sophomores, 89 (27.8%) were juniors and 69 (21.6%) were seniors. The sample consisted of 50 (15.6) students from the college of arts and sciences, 38 (11.9%) from the college of business and economics, 147 (45.9%) from the college of education, 18 (5.6%) from the school of law, 17 (5.3%) from the medical school, and 50 (15.6%) from the college of engineering.

Instruments

The participants completed the person-environment fit scale for creativity (PEFSC), school culture scale (SCS), creative self-efficacy scale (CSES) and academic self-efficacy scale (ASES).

Person-environment fit scale for creativity (PEFSC)

The PEFSC is a 14-item self-report scale designed to measure the person and environment related aspects of creativity and their fit together. The scale has two factors, creative person and creative environment. The two-factor model explained 61.8% of the total variance. Each factor consists of seven items. A sample item for creative person factor is “I have a strong desire to attain my goals” and a sample item for creative environment is “My original ideas are rewarded by others.” The high correlation between PEFSC and the Runco Ideational Behavioral Scale-Short Form (r = .88) indicated the strong evidence of the criterion validity of the PEFSC. Alpha coefficients of the factors were 0.87 for the creative person and 0.90 for the creative environment as reported by Sen et al. (2014). The reliability coefficients for this study were 0.83 for creative environment factor and 0.84 for creative person factor.

School culture scale (SCS)

The SCS was developed specifically for the college students to measure their perceptions about the school culture of their universities by Kantek et al. (2010). The scale consist of 50 items and 8 subscales (that is, relations with college administration (7 items), connection to the college (7 items), instructor-students relations (8 items), reward and openness to change (5 items), structure and functions (10 items), relations among instructors (5 items), relations among students (4 items), and support (4 items)). The eight-factor model explained the 54.24% of the total variance. The Cronbach alpha coefficient of the whole scale was 0.93, and it ranged for the subscales from 0.70 to 0.89. The test-retest reliability of the scale was 0.61 (Kantek et al., 2010). The reliability coefficients of the scale for this study was 0.90 for relations with college administration, 0.91 for connection to the college, 0.93 for instructor-students relations, 0.79 for reward and openness to change, 0.83 for structure and functions, 0.80 for relations among instructors, 0.73 for relations among students, 0.81 for support and 0.96 for the total scale.

Creative self-efficacy scale (CSES)

The CSES is a three-item scale originally developed by Tierney and

Table 2. Correlations among PE fit Scores (E^2-P^2), school culture scales, creative self-efficacy, and academic self-efficacy (N = 320).

E^2-P^2	1	2	3	4	5	6	7	8	9	10	11
College culture	0.1										
Admin relations	0.13*	0.82**									
Connection	0.04	0.80**	.58**								
Instructor-student relations	-0.01	0.77**	.58**	0.51**							
Reward and openness to change	0.16**	0.83**	0.66**	0.65**	0.50**						
Structure	0.05	0.85**	0.59**	0.62**	0.56**	0.76**					
Relations among Instructors	0.01	0.70**	0.52**	0.45**	0.57**	0.46**	0.54**				
Relations among students	0.14*	0.59**	0.44**	0.35**	0.33**	0.45**	0.46**	0.43**			
Support	0.17**	0.83**	0.70**	0.58**	0.54**	0.74**	0.67**	0.47**	0.58**		
Academic self-efficacy	-0.06	0.26**	0.15**	0.14*	0.25**	0.18**	0.31**	0.19**	0.22**	0.15**	
Creative self-efficacy	-0.12*	0.14*	0.04	0.01	0.15**	0.15**	0.19**	0.19**	0.09	0.08	0.51**

E = Environment score P = Person score. **, $p > 0.01$ (two-tailed); *, $p > 0.05$ (two-tailed).

Farmer (2002) and adapted to Turkish population by Cayirdag (under review). The Turkish version of the scale has the same 3 items (for instance, “I have confidence in my ability to solve problems creatively”) and the one-factor structure with the original scale. The one-factor model explained the 83.90% of the total variance. Cronbach alpha coefficient for the original scale was 0.83, and it is 0.94 for the Turkish version. The reliability coefficient of the scale for this study was 0.84.

Academic self-efficacy scale (ASES)

The original scale was developed by Jerusalem and Schwarzer (1981), and adapted to Turkish population by Yilmaz et al. (2007). Both the original version and the Turkish adaptation of the scale were consisted of 7 items (for instance, “I feel confident to be successful even if the exams are difficult”) and one factor. The Cronbach alpha was 0.87 for the original scale and 0.79 for the Turkish version. The one-factor solution explained the 45% of the total variance. The correlation coefficient between the Self-Esteem Scale and the ASES was 0.75. The reliability coefficient of the scale for this study was 0.76.

Procedure

Questionnaires were administered to the participants one-on-one by the researcher. The researcher explained the goal of the study and procedures to the participants. Only volunteer students filled out the questionnaires and participated in the study. The surveys required 35 min in total to complete.

Upon collection of the data, fit scores were calculated. Different options were available in the literature (Edwards and Cooper, 2013) such as simple discrepancy scores that is, E-P or P-E (French et al., 1982; McGrath, 1976; Pervin, 1967; Tannenbaum and Kuleck, 1978), interactive scores, that is, P*E (Cherrington and England, 1980; Lyons, 1971; O’Brien and Dowling, 1980), and proportion scores, that is E/P or P/E (French et al., 1982; Stokols, 1979). Because of the specific hypotheses of the study (pro-environment discrepancy), a special form of discrepancy scores as suggested by Kahana et al. (1980) who calculated the difference of squared scores (E^2-P^2) was used. This preference was made because simple discrepancy (E-P) was criticized (O’Brien and Dowling, 1980).

RESULTS

The first set of analyses investigated the correlations between the misfit scores and school culture total and sub-scales. The misfit scores were defined as the difference between squared P and E scores (E^2-P^2). To test the first two hypotheses (Hypothesis 1: “There will be a significantly positive correlation between pro-environment misfit and school culture”; Hypothesis 2: “There will be a significant relationship between pro-person misfit and creative self-efficacy”), bivariate correlations were calculated between misfit scores (that is, E^2-P^2), college culture total and sub-scales, creative self-efficacy, and academic self-efficacy. Bivariate correlation values were provided in Table 2.

The correlation values indicated that the relationship between pro-environment difference scores (E^2-P^2) and school culture was not significant (r = 0.10, p = 0.08). It was significantly related to creative self-efficacy (r = -0.12, p = 0.03) but not related to academic self-efficacy (r = -0.06, p = 0.27). Correlations with the individual school culture subscales revealed more specific information about the specific aspects of school culture. Misfit scores were significantly and negatively related with college administrators (r = .13, p = .02), reward and openness to change (r = .16, p = .01), relations among students (r = 0.14, p = .02) and support (r = 0.17, p = 0.003). The same values were obtained with the pro-person misfit scores with the exception that all correlation values had the opposite value. Correlations were not significant with other college culture subscales. The values were not presented for the sake of parsimony on the table. The significant relationships reported above are considered small according to Cohen (1992).

Next set of analyses were built upon the four types of individuals based on the four quadrants that emerged as a function of high and low values of standardized P and E

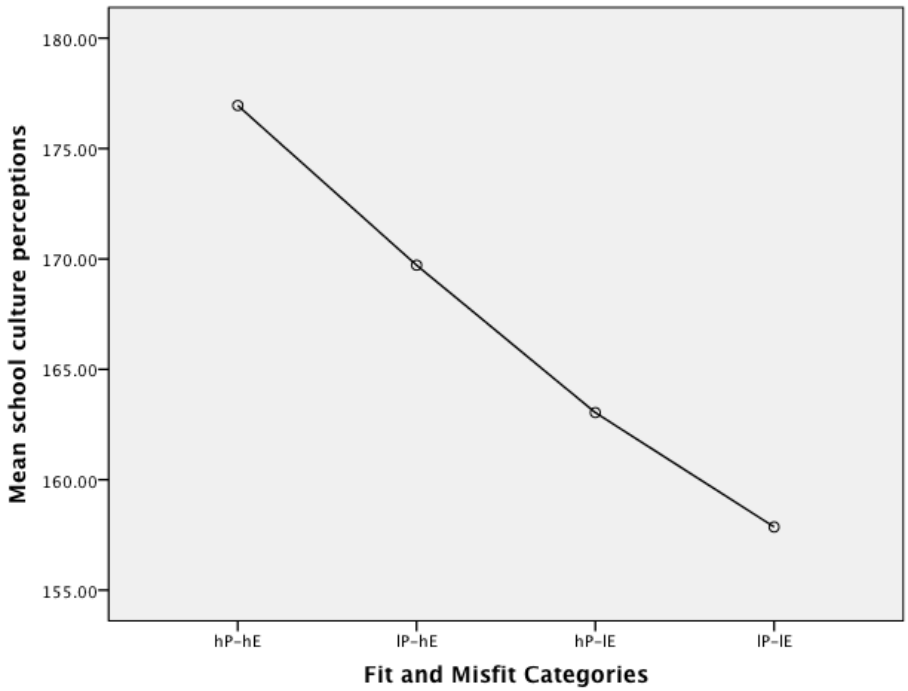

Figure 1. School culture perceptions across person-environment fit and misfit categories (four quadrants).

scores (Table 2). Individuals were assigned to one of these four quadrants based on the standardized *z*-scores of the P and E scales. As *z*-scores have a mean of 0 (with a standard deviation of 1), high scores were defined as all values above the average (that is, 0) and all low scores were defined as those below zero for both P and E scores. Based on this categorization, high person and high environment (hP-hE) group consisted of 139 participants (43%), low person and high environment (lP-hE) group consisted of 32 participants (10%), high person and low environment (hP-lE) group consisted of 48 participants (15%), and low person and low environment group consisted of 101 (32%) participants.

School culture, creative self-efficacy and academic self-efficacy were compared among these four types of individuals. ANOVA results indicated that school culture perceptions were significantly higher among the participants from these four quadrants ($F(3, 316) = 7.46$, $p < .001$, $\eta^2 = 0.066$). The hP-hE group had the highest scores ($M = 176.95$, $SD = 36.27$) followed by hE-lP group ($M = 169.72$, $SD = 29.87$), hP-lE group ($M = 163.04$, $SD = 29.45$), and lP-lE group ($M = 157.86$, $SD = 26.83$) respectively. Post-hoc analyses indicated that hP-hE was significantly higher than the lP-lE group only whereas lP-lE was significantly lower than all other three groups. The difference between hE-lP and lE-hP was not significant. As shown on Figure 1 and supported by the post-hoc analyses, school culture scale is higher among hP-hE and lP-hE groups. In other words, superior E scores are slightly more important for college culture than P scores.

Second ANOVA results using creative self-efficacy as the dependent variable indicated that creative self-efficacy were significantly higher among the participants from these four quadrants ($F(3, 316) = 38.56$, $p < .001$, $\eta^2 = 0.27$) with hP-hE group having significantly higher scores ($M = 12.34$, $SD = 2.02$) followed by hP-lE group ($M = 11.96$, $SD = 2.21$), hE-lP group ($M = 11.50$, $SD = 2.02$), and lP-lE group ($M = 9.49$, $SD = 2.15$). Post-hoc analyses showed that hP-hE was significantly higher than both hP-lE and lP-lE groups whereas other pairwise comparisons were not significant. As shown in Figure 2 and supported by the post-hoc analyses, creative self-efficacy is higher among hP-hE and hP-lE groups. Therefore, superior P scores are slightly more important for creative self-efficacy than E scores.

The final ANOVA compared the four groups of participants on academic self-efficacy ($F(3, 316) = 25.11$, $p < .001$, $\eta^2 = .19$). The order was exactly the same as the school culture perceptions with hP-hE group having the highest scores ($M = 26.60$, $SD = 3.93$) followed by hP-lE group ($M = 26.10$, $SD = 3.93$), hE-lP group ($M = 25.66$, $SD = 3.61$), and lP-lE group ($M = 22.23$, $SD = 4.22$). Post-hoc analyses revealed a similar pattern to those from college culture with significant differences observed between lP-lE and other three groups, but not among these three groups. Similar to school culture perceptions, academic self-efficacy was higher among hP-hE and lP-hE groups. Again, superior E scores are slightly more important for creative self-efficacy than E scores (Figure 3).

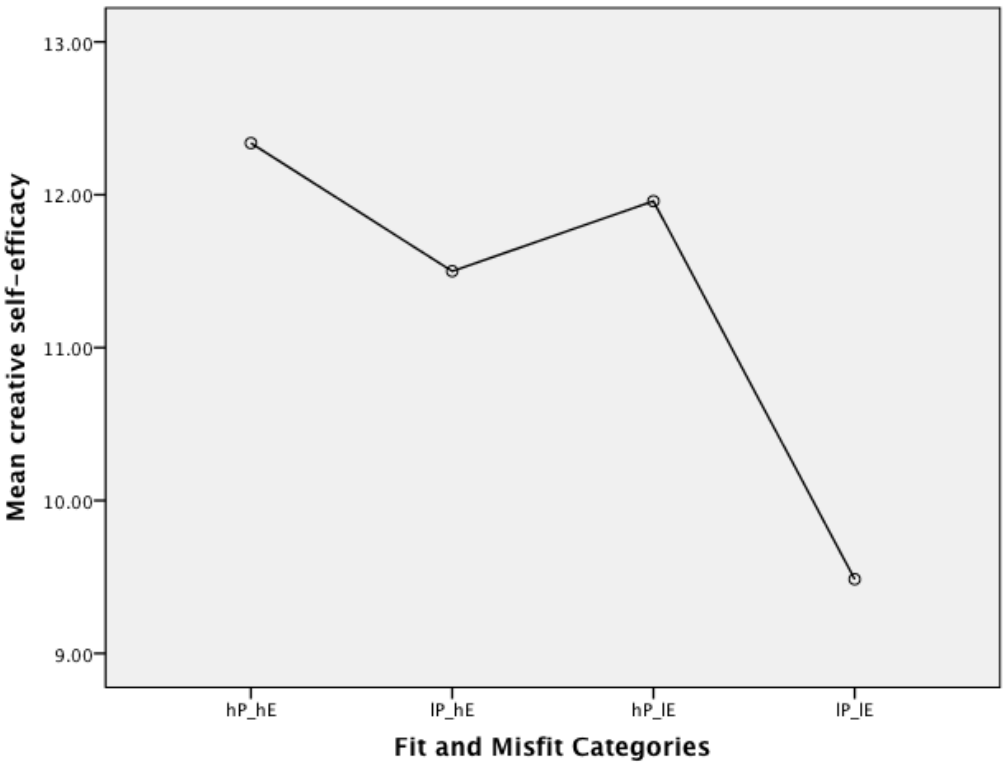

Figure 2. Creative self-efficacy across person-environment fit and misfit categories (four quadrants).

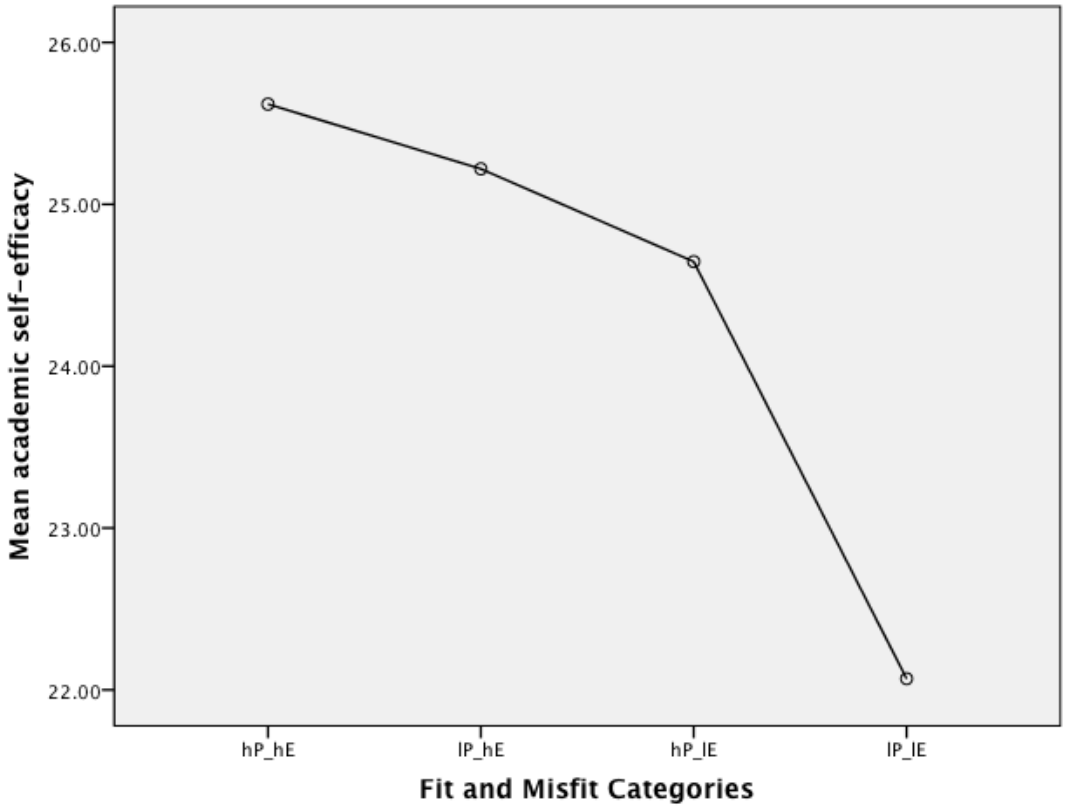

Figure 3. Academic self-efficacy across person-environment fit and misfit categories (four quadrants).

DISCUSSION

Person-environment fit is a useful theory to apply to the creativity research and the context of higher education. In that particular study, researcher used this framework to investigate “student-college fit” and how college culture impacts it. Also, two possible consequences of person-environment fit, namely creative and academic self-efficacy, were examined. The study findings indicated that certain aspects of college culture such as rewards and openness to change, peer relations, and support were positively related to pro-environment misfit. Pro-environment misfit was also negatively related to creative self-efficacy. Comparison of participants from four quadrants indicated significant differences between the groups in all three dependent variables. In all three analyses, high person-high environment (hP-hE) group was the highest and low person-low environment group (lP-lE) was the lowest. High person-low environment (hP-lE) was slightly higher on creative-self-efficacy whereas low person-high-environment (lP-hE) was slightly higher on college culture and academic self-efficacy.

Both correlational and comparative (ANOVAs) analyses converged on the fact that creative self-efficacy was more related to the person aspect of creativity, and college culture was related to the environment aspect. Academic self-efficacy seems relatively more independent of misfit, but, as the final ANOVA indicated (Figure 3), it was more related to the environment aspect. It is also important to note that post-hoc analyses showed no significant differences between the two discrepancy groups (for example, hP-lE and lP-hE) whereas the ideal condition (hP-hE) was always significantly higher than the least ideal condition (lP-lE). These findings point to the fact that person and environment components were highly intertwined and related and combination of the two make the largest difference rather than the presence of one only.

Colleges consist of students with a large variety of student types and creating a positive climate is a critical step toward supporting their creativity. As the earlier analyses indicated, both personal and environmental conditions are needed for superior outcomes. As Csikszentmihalyi (1996) stated “creativity does not happen inside people’s heads, but in the interaction between a person’s thoughts and a sociocultural context. It is a systematic rather than an individual phenomenon.” The hallmark of systems model (Csikszentmihalyi, 1999) lies in the interaction between the person, domain and field. Likewise, Amabile (1993) included both personal and environment factors in the componential theory of creativity. Runco (2007) explicitly used the term “person-by-environment interactions” as a predictor of creative achievement.

The study results indicate that rewards and openness to change, support, and other students (peers) make the most contribution to climate for creativity leading to a discrepancy (misfit) through relatively higher scores of environment whereas structure, relations with and within the instructors, relations with college administrators, and connection were not related. It is interesting to see that peers seem to be more important that the instructors and administrators. Because peers are the most important point of reference (Perkins, 1997) and become a major source of support (Paul and Kelleher, 1995), peer relations become the key variable for students’ perceptions of college culture. Therefore, colleges that provide various means of socialization contribute to the college culture and climate by allowing strong ties among students and peers.

Relations with the college administrators were also positively related with misfit. Students are more likely to associate with those in the formal administrative positions as the agents of change; responsiveness to students’ needs increase in their perceptions of positive climate. As Schein (1985) argued, leadership and culture are highly related: “The only thing of real importance that leaders do is to create and manage culture (p. 2).” McClafferty et al. (2002) listed commitment of school leadership to build a college culture as the first principle.

Rewards and openness to change was also related to pro-environment misfit. Openness to change was particularly important because Harzing and Hofstede (1996) suggested change is difficult in collectivist cultures such as Turkey and openness to change reflects the flexibility and freedom provided by the college.

Contrary to expectations (Anaya and Cole, 2001; Cokley, 2000; Lamport, 1993; Newman and Newman, 1978; Pascarella, 1980), faculty structure was not related with college culture. The informal and close interaction is key to effective relations with the faculty (Chambers, 1973; Komarraju et al., 2010). It is possible that the perceived hierarchy between students and college faculty may impede close and informal interaction especially in the colleges with higher student per professor ratio. Likewise, college structure and functions were not significantly related to misfit scores, which is inconsistent with the expectations (Chickering, 1969).

This study has several merits. First, there are very few empirical studies in the creativity literature that examine P-E fit. And those studies mostly focused on organizational or workplace settings. This study is one of the unique ones to apply P-E fit theory in education. The 2016 Future of Jobs Report of World Economic Forum indicated that creativity will be one of the top three skills in 2020. Thus, it is critical to support students’ creativity in college. The present study discussed which environmental variables contribute to creativity in college. Although mostly personal aspect of creativity was examined in the literature, the findings of the present study show the contribution of environmental factors to develop students’ creativity. Second, participants of this study were not from the United States or Western Europe. Therefore, this study provides valuable information to interpret P-E fit

from a different cultural perspective. Further research with other populations would be very informative to understand the creative environment at the college settings. As another suggestion to the future research, all instruments in the present study were self-report measures which may cause problems for common-method variance and social desirability. Therefore, further research may use performance measures to examine the actual values of person and environment aspects of creativity

Conflict of Interests

The authors have not declared any conflict of interests.

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