

# An Exploration of Some Antecedents and Consequences of Creative Self-Efficacy: The Role of Achievement Goals, Enjoyment and Divergent Thinking

Rogelio Puente-Díaz

Universidad Anáhuac México Norte

E-mail address: rogelio.puente@anahuac.mx

Judith Cavazos Arroyo

Universidad Popular Autónoma del Estado de Puebla

E-mail address: judith.cavazos@upaep.mx

## ARTICLE INFO

### Keywords:

Creativity  
Creative self-efficacy  
Achievement goals  
Achievement emotions  
Divergent thinking  
Self-beliefs

### Article history:

Received 21 January 2016  
Received in revised form 16 February 2016  
Accepted 18 February 2016

ISSN: 2354-0036

DOI: 10.1515/ctra-2016-0002

## ABSTRACT

We examined the role of task-, self- and other-approach achievement goals and enjoyment as antecedents of creative self-efficacy and the influence of creative self-efficacy on divergent thinking scores among children from Mexico. Participants completed a battery of questionnaires measuring achievement goals, creative self-efficacy, enjoyment and divergent thinking skills. We used Structural Equation Modeling to test our hypotheses, treating the variables as latent. Results showed a positive influence of other-approach achievement goals and enjoyment on creative self-efficacy. The influence of creative self-efficacy on divergent thinking scores was not significant. The implications of our results are discussed.

The examination of creative self-beliefs and their implications for achievement settings has grown in recent years (Karwowski & Barbot, 2016). Researchers suggest that creative self-beliefs might influence creative achievement and creative potential (Karwowski & Lebeda, in press). Recently, one of the variables attracting increased attention from researchers is creative self-efficacy (Karwowski & Barbot, 2016; Tierney & Farmer, 2002). Creative self-efficacy can be conceptualized in different ways but one suggestion is that it acts as a process variable explaining how personal and contextual factors influence creative performance and also as a significant, direct predictor of different forms of creativity (see Karwowski & Barbot, 2016 for a book chapter; Puente-Díaz, in press, for recent literature review). Given the importance of understanding creativity and the specific role of creative self-efficacy, the purpose of the present investigation is twofold. First, we examine the role of achievement goals and enjoyment as antecedents of creative self-efficacy. Specifically, we focus on the relatively new conceptualization of achievement

goals referred to as the 3 X 2 achievement goal model and on one achievement emotion: enjoyment. Second, we examine divergent thinking as one consequence of creative self-efficacy among children from Mexico. We begin with the discussion of the origins of the creative self-efficacy construct.

### **CREATIVE SELF-EFFICACY**

Creative self-efficacy represents an extension of the more general self-efficacy construct proposed by the social cognitive theory of human agency (Bandura, 2001). The examination of creative self-efficacy and its implications for educational psychology began 10 years ago (Beghetto, 2006), with an empirical article in which the motivational antecedents and consequences of creative self-efficacy were examined. A more detailed elaboration of creative self-efficacy as a construct capable of predicting important educational outcomes was proposed in recent years (Karwowski, 2012, Karwowski, Lebuda, Wisniewska, & Gralewski, 2013; Karwowski, 2014) and defined as “people’s beliefs in their own competence in the area of creativity” (Karwowski & Barbot, 2016, p. 307). Recently, further efforts have been applied in trying to examine the nomological network of creative self-efficacy and its implications among children (Karwowski, 2015) and adults (Karwowski, in press). The examination of creative self-efficacy among children is justified given that conceptions of creative self-efficacy, a facet of self-concept, begin to form at about 10 years of age (Karwowski, 2015).

Regarding the antecedents of creative self-efficacy, the original model of self-efficacy postulates the existence of four sources of information that help construct self-efficacy beliefs: mastery experience, vicarious experience, verbal persuasion and affective states (Bandura, 1997). Even though achievement goals are not mentioned as a possible antecedent of creative self-efficacy in achievement settings, they seem to be particularly relevant (Beghetto, 2006) because they capture the aims that individuals try to achieve in order to assess their competence (Elliot, Murayama, & Pekrun, 2011). Hence as suggested by previous research (Beghetto, 2006), achievement goals might represent an important antecedent of creative self-efficacy. To organize the rest of the article, we adopt the conceptualization that creative self-efficacy might act as a mediator explaining how different motivational and personality variables influence creative achievement through their influence on creative self-efficacy (Karwowski & Lebuda, in press). Hence, we divide our introduction into antecedents and consequences of creative self-efficacy.

---

## **Antecedents of creative self-efficacy**

### **Achievement goals**

Achievement goals explain what energizes and directs behaviour in achievement settings (Elliot, 1999). The energization component deals with whether individuals approach positive outcomes or avoid negative outcomes and is labelled as goal valence. The directional component deals with the aims individuals try to seek in achievement settings and is referred to as the definitional component of achievement goals. The original formulation of achievement goal theory proposed that individuals could aim at improving or mastering a given task or at outperforming others (Elliot, 1999), leading to four achievement goals when combined with the energization component: mastery-approach, mastery-avoidance, performance-approach and performance-avoidance. Whereas improving or mastering a given task implies the use of self-referent standards, outperforming others uses other-referent standards.

Recent developments in achievement goal theory (Elliot et al., 2011) postulate that there might be two types of self-referent standards, one focusing on mastering a task (task-goals) and one focusing on doing better than in the past (self-goals), suggesting that there are three ways of defining competence. When we combine the three ways for defining competence with the two ways competence might be valenced, we end up with six achievement goals with a slightly different nomenclature: task- and self-approach (formally known as mastery-approach), task- and self-avoidance (formally known as mastery-avoidance), and other-approach and other-avoidance achievement goals (formally known as performance-approach and avoidance goals). For the remainder of the article, we try to use this new nomenclature when talking about the assessment of achievement goals.

How do we connect achievement goals with creative self-efficacy? We would like to propose that creativity usually takes place in achievement settings where the way competence is defined and valenced can have important implications because motivation is one of the key components of the creativity process (Amabile, 1996). As suggested earlier, the first investigation on creative self-efficacy in educational psychology examined achievement goals as antecedents. Specifically, Beghetto (2006) assessed the role of mastery- and performance-approach and performance-avoidance achievement goals on creative self-efficacy among middle and secondary students. The results showed a positive relationship between mastery- and performance-approach achievement goals and creative self-efficacy. Similarly, other investigations in the workplace domain have also found a positive influence of mastery goals on creative self-efficacy (Gong, Huang, & Farh, 2009; Shiu & Lin, 2012). Yet, these investigations have had some limitations.

First, they did not explore the distinction between mastery-approach and mastery-avoidance goals. Second, they did not examine the distinction between mastery goals focusing on the task or the self. As stated earlier, recent theoretical developments of achievement goal theory suggest that the distinction between task and self goals might be relevant for achievement settings. Hence, we seek to make a small contribution by examining the influence of task-approach, self-approach and other-approach achievement goals on creative self-efficacy.

One of the reasons why the distinction between task- and self-approach achievement goals is relevant is because the former might be easier to regulate than the latter. Specifically when assessing one's competence in achievement settings, task-approach goals give individuals immediate feedback. Conversely with self-based goals, individuals need to form a standard of comparison from the past in addition to a current assessment of competence (Elliot et al., 2011). Hence, self-based goals involve a more complex type of regulation. There is some empirical evidence supporting the distinction between task- and self-based approach goals. For example, one investigation found that only task-approach goals were significantly related to learning self-efficacy (Elliot et al., 2011), lending evidence for the different implications of task- versus self-approach goals. Given the conceptual similarity between learning and creative self-efficacy, we expect that task-approach goals would be a positive predictor of creative self-efficacy.

Given that the examination of self-approach goals is somewhat new and the empirical evidence scant, we speculate that self-approach might also have a positive relationship with creative self-efficacy. In addition, we also include the examination of other-approach goals because previous research has found a positive relationship between this type of achievement goals and creative self-efficacy (Beghetto, 2006). Hence, we formulate and test three hypotheses:

1. Task-approach achievement goals would have a positive relationship<sup>1</sup> with creative self-efficacy
2. Self-approach achievement goals would have a positive relationship with creative self-efficacy
3. Other-approach achievement goals would have a positive relationship with creative self-efficacy

### **Achievement emotions: Enjoyment**

Our proposition that enjoyment might be an antecedent of creative self-efficacy comes from two main sources. First, emotions play a significant role in achievement settings

---

<sup>1</sup> We are using the word "relationship" because our research design is cross-sectional, yet it is important to note that we are proposing and testing a specific directionality.

(Pekrun, 2006). Second, social cognitive theory includes affective states as one of the four sources of information for defining one's sense of efficacy (Bandura, 1997). Hence, combining the important role that emotions play in achievement settings with the proposition that emotions represent one source of information for developing efficacious beliefs, we propose that enjoyment would be an antecedent of creative self-efficacy. Previous theoretical developments suggest that enjoyment plays an important role in the creativity process (Amabile, 1996). In addition, there is empirical support for the role of emotions as antecedents of self-efficacy (Gibson, 2003). Yet, the influence of enjoyment on creative self-efficacy has not, to our knowledge, been explored. Hence, we propose the following hypothesis:

4. Enjoyment would have a positive relationship with creative self-efficacy.

Given that achievement emotions are related to achievement goals (Pekrun, Elliot, & Maier, 2006), we take into account these empirically supported connections. Hence when testing our model, we control for the influence of task-, self- and other-approach goals on enjoyment, expecting a positive influence.

### **Consequences of creative self-efficacy**

#### **Divergent thinking**

Now that we have explored the role of achievement goals and enjoyment as antecedents of creative self-efficacy, we turn our attention to the discussion of divergent thinking as a consequence of creative self-efficacy. There are many ways of operationalizing creative performance and divergent thinking is probably one of the most popular ones (Kaufman, Plucker & Baer, 2008). Divergent thinking tasks ask participants to come up with novel and useful ideas for problems that do not have unique solutions. Divergent thinking scores can be obtained by counting the number of unique ideas, fluency, and the originality of these ideas and dividing the originality score by the fluency score (Plucker, Qian, & Schmalensee, 2014). The relationship between creative self-efficacy and divergent thinking scores has been explored with mixed support. Some studies have found a positive relationship between these two variables (e.g., Karwowski, Lebuda, & Wisniewska, in press; Mathisen & Bronnick, 2009), whereas others have found a non-significant relationship (e.g., Reither-Palmon, Robinson-Morrall, Kaufman & Santo, 2012). Even though there is mixed evidence about the influence of creative self-efficacy on divergent thinking scores, we still, tentatively, propose the following research hypothesis:

5. Creative self-efficacy would have a positive relationship with divergent thinking scores

In sum, the purpose of the present investigation is twofold. First, we examine the role of self-approach, task-approach and other-approach achievement goals and enjoy-

ment as antecedents of creative self-efficacy. Second, we examine the relationship between creative self-efficacy and scores on a divergent thinking task. In order to accomplish our research goals, we have conducted one study with children from Mexico.

## METHOD

### Participants and procedure

Participants were 291 (163 females and 128 males; ages 9 to 14,  $M = 10.54$  years and  $SD = 0.97$ ) children from two elementary public schools in Mexico. Parental consent was obtained before administering a battery of questionnaires during regular class time. Students' participation lasted between 12-15 minutes.

### Measures

3 X 2 achievement goal questionnaire (Elliot et al., 2011). This is an 18-item questionnaire designed to assess six achievement goals. The original questionnaire uses a 7-point scale ranging from 1 (not true of me) to 7 (extremely true of me). For our investigation, we only focused on assessing self-approach, task-approach, and other-approach achievement goals (9 items). Participants were instructed to think about their learning goals for the school year. Scores from this questionnaire have been shown to have adequate psychometric properties (Elliot et al., 2011).

Creative self-efficacy (Tierney & Farmer, 2002). This is a three-item questionnaire designed to assess creative self-efficacy. The original questionnaire uses a 7-point scale ranging from 1 "very strongly disagree" to 7 "very strongly agree". Scores from this questionnaire have been shown to have acceptable properties for scientific research (Tierney & Farmer, 2002).

Enjoyment (Duda & Nicholls, 1992). We used a brief version of the school enjoyment questionnaire developed by Duda and Nicholls (1992). The original questionnaire has eight items designed to measure enjoyment. The questionnaire uses a Likert-type scale (scale goes from 1 to 5). We selected six items that reflect the positive side of enjoyment (e.g., we excluded items that represent the opposite of enjoyment: boredom).

Divergent thinking task (Wallach & Kogan, 1965). Participants received the following instruction: "Name all of the things you can think of that have wheels". Responses were scored on fluency (number of responses given by each participant) and originality (number of responses provided by less than 20% of the sample). We then divided the originality score by the fluency score to obtain a ratio and this ratio of originality and fluency was used as one of our endogenous variables (Plucker et al., 2014). High scores reflect more original responses.

Given that we conducted our study with children, we used a four-point scale in each of the questionnaires. We acknowledge the limitations of changing the number of catego-

ries in the scale, yet some researchers with experience of working with children have suggested that presenting them with more than four categories is not optimal (Deci, Hodges, Pierson & Tomassone, 1992).

## RESULTS

We used Structural Equation Modelling (SEM) with Mplus 7.11 treating the variables as latent given the fact that it was important to take into account measurement error in order to have a more robust test of our hypotheses. In order to assess the robustness of the model, we used a combination of absolute and incremental fit index. Hence, we report the  $\chi^2$ , Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), and Tucker Lewis Index (TLI) for each of the analyses conducted. We first assessed the overall fit of the measurement model before continuing with the assessment of the latent model.

Given that the achievement goal questionnaire was relatively new, we first examined the psychometric properties of this questionnaire alone, testing the hypothesized three-factor structure. Results showed an acceptable model fit  $\chi^2 = 24.85$ ,  $p = .41$  ( $df = 24$ ), RMSEA = .01, CFI = .99 and TLI = .99. Examination of the factor loadings revealed that they were all significant and in the expected direction. Examination of the correlation between the latent variables showed that task-approach and self-approach goals were highly correlated  $r = .96$ . This correlation exceeded the cutoff criterion of .85, suggested for establishing discriminant validity (Brown, 2006). Even though our model fit was acceptable, having two variables with a correlation of .96 might lead to multicollinearity problems when testing the latent model. In addition, the separation of task- and self-approach goals was relevant for our study. Given that the separation of goals into task and self-approach is relatively new and might need further empirical validation and that our results did not support this distinction, we conducted an additional analysis allowing all the task and self-approach items to load onto a single factor.

Results showed again an acceptable model fit  $\chi^2 = 26.39$ ,  $p = .44$  ( $df = 26$ ), RMSEA = .01, CFI = .99 and TLI = .99. Examination of the factor loadings revealed that they were all significant and in the expected direction and the correlation between the two latent variables was below the cutoff criterion of .85 ( $r = .66$ ). Hence, we decided to use this factorial structure of the achievement goal questionnaire to test our full measurement model. Our new achievement goal was labelled as task/self - approach and represented the combination of the items from the task - and self-approach achievement goals.

Our full measurement model had four latent variables with their respective observed indicators, task/self- and other-approach goals, creative self-efficacy, and enjoyment (we could not model divergent thinking scores as a latent variable because we only had a ra-

tio of fluency and originality). Results showed an acceptable model fit,  $\chi^2 = 181.58$ ,  $p = .002$  (df= 129), RMSEA = .04, CFI = .96 and TLI = .95. Examination of the factor loadings revealed that they were all significant and in the expected direction and all the correlations between the latent variables were below the cutoff criterion of .85. Hence, we decided to keep this measurement model because the model fit was acceptable and the correlations between the latent variables showed adequate levels of discriminant validity. We thus proceeded to testing our latent model, acknowledging the limitation of failing to truly capture the difference between self-approach and task-approach achievement goals (see Table 1 for latent correlations, coefficients of internal consistency, Cronbach's alpha and descriptive statistics and Table 2 for factor loadings).

**Table 1**  
**Latent correlations, coefficients of internal consistency and descriptive statistics for all variables**

	<i>CSE</i>	<i>TASEPPRO</i>	<i>OTAPPRO</i>	<i>ENJOY</i>	<i>DTS</i>
CSE	0.60				
TASEPPRO	0.47	0.64			
OTAPPRO	0.56	0.66	0.62		
ENJOY	0.38	0.39	0.34	0.87	
DTS	0.04	0.02	0.02	0.01	NA
Mean	1.75	1.31	1.52	1.57	0.28
SD	0.50	0.34	0.54	0.57	0.19

CSE = Creative self-efficacy, TASEPPRO = Task/self-approach, OTAPPRO = Other-approach, ENJOY = Enjoyment, DTS = Divergent thinking score Coefficient of internal consistency on the diagonal



**Table 2**  
**Standardized factor loadings and H indexes for each latent variable**

<b>Task/self-approach</b>		<b>Enjoyment</b>	
Have a better performance than I have done in the past	0.46	I usually find school interesting	0.71
Do the in class exercises better than I have done in the past	0.49	I usually have fun at school	0.77
Obtain better results than I have done in the past	0.44	I usually get involved when I am doing school work	0.63
Do the in class exercises correctly	0.57	I usually enjoy doing school work	0.76
Know the right answer when the teacher asks a question in classroom	0.52	I usually find time flies when I am at school	0.79
Learn correctly the material from class	0.45	Learning new things is fun	0.75
H index	0.66	H index	0.88
<b>Creative self-efficacy</b>		<b>Other-approach</b>	
I have confidence in my ability to solve problems creatively	0.72	Learn more material than the rest of my classmates	0.63
I have good new ideas	0.62	Do more in class exercises correctly than the rest of my classmates	0.59
I have a good imagination	0.43	Know more right answers when the teacher asks a question than the rest of my classmates	0.62
H index	0.66	H index	0.64

Results for the latent model showed an acceptable model fit,  $\chi^2 = 198.90$ ,  $p = .002$  (df= 146), RMSEA = .04, CFI = .96 and TLI = .95. Regarding the antecedents of creative self-efficacy, examination of the individual parameters revealed a significant effect of other-approach achievement goals and enjoyment,  $\gamma = .41$ ,  $p = .004$  and  $\beta = .19$ ,  $p = .04$ , respectively. The influence of a task/self-approach achievement goal was not significant,  $\gamma = .13$ ,  $p = .40$  (the indirect influence through enjoyment was not significant either, .05,  $p = .14$ ). Whereas task/self-approach goals had a positive, significant relationship with enjoyment,  $\gamma = .29$ ,  $p = .02$ , other-approach goals did not,  $\gamma = .15$ ,  $p = .25$ . Regarding the consequences of creative self-efficacy, we did not find a significant influence on divergent thinking scores,  $\beta = .04$ ,  $p = .64$ . Finally, the indirect effects of task/self-approach and other-approach goals on divergent thinking scores were not significant, .006,  $p = .66$ .

and .02,  $p = .64$  (see Figure 1 for a graphical representation of the results). Squared multiple correlations for the endogenous variables were, respectively, creative self-efficacy (.36), enjoyment (.16), and divergent thinking scores (.001).

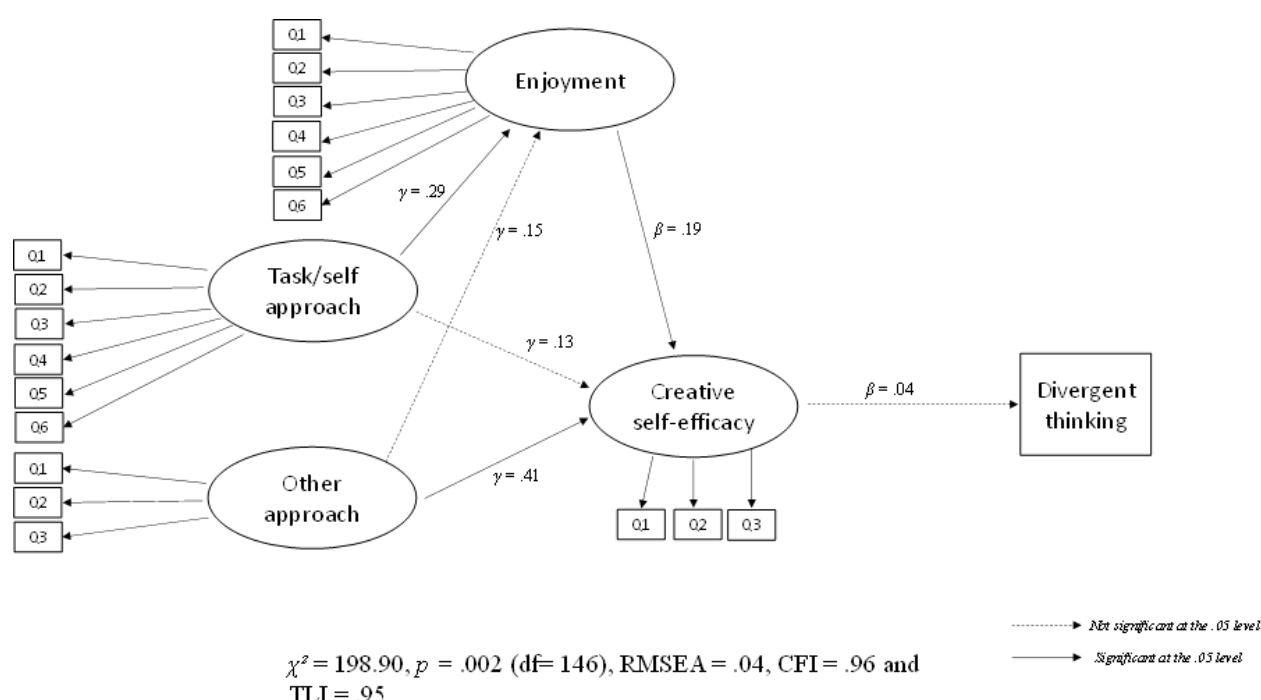


Figure 1 Summary of results of the latent model.

## Discussion

The purpose of our investigation was twofold. First, we wanted to examine the influence of achievement goals and enjoyment on creative self-efficacy. Second, we also wanted to assess one consequence of creative self-efficacy: divergent thinking scores among children from Mexico. We organized our discussion by first focusing on the antecedents followed by the consequences of creative self-efficacy.

### Antecedents of creative self-efficacy

Our first hypotheses stated that task-approach, self-approach, and other-approach achievement goals would have a positive influence on creative self-efficacy. When testing our measurement model, it was evident that the differentiation between task- and self-approach goals was not supported. It is important to mention that previous investigations with children (Wu, 2012) and adults (Johnson & Kestler, 2013) have encountered similar problems in terms of model fit and correlations as high .90 between different achievement goals. This does not mean, however, that the theoretical differentiation between task- and self-approach goals is not relevant. It could just be that children do not fully differentiate, yet between standards related to the task itself versus standards related to previous performance (see Szumski & Karwowski, 2015 for a recent discussion). Hence, we decided

to test a model with all the task- and self-approach items loading on a single factor. The model fit was better and we proceeded to testing our hypotheses.

First, we did not find support for the influence of task/self-approach achievement goals on creative self-efficacy, thus failing to find support for hypotheses one and two. Our results were not consistent with previous research that found a positive influence of mastery-approach goals (a combination of task and self-approach goals) on creative self-efficacy (Beghetto, 2006; Gong et al., 2009; Shiu & Lin, 2012). However, we need to emphasize that our task/self-approach goal might not be identical to the mastery-approach goals examined previously, which represents a limitation. Our task/self-approach goals and mastery-approach goals share the energization component, both have approach tendencies, and also the use of intrapersonal standards, either coming from intrapersonal trajectories or from mastering a given task, yet at the item level they might not have the same mix of items reflecting self and task standards for assessing competence. Despite this limitation, we still believe that it was important to test for the influence of task/self-approach goal on creative self-efficacy.

Conversely, we found support for the positive influence of other-approach achievement goals on creative self-efficacy, supporting hypothesis three. Our results were consistent with previous investigations showing a positive influence of other-approach goals on creative self-efficacy (Beghetto, 2006). It seems that assessing one's competence by using normative standards, according to the performance of others, is not detrimental for developing creative efficacious beliefs. In fact, recent theoretical developments on creative self-efficacy suggest that social comparisons might play an important role. However, more research is needed to determine if the effect of social comparisons is positive or negative or under which conditions, it is positive/negative (Karwowski & Barbot, 2016).

Similarly, we found a positive influence of enjoyment on creative self-efficacy, supporting hypothesis four. Our results were consistent with the postulates of social cognitive theory (Bandura, 1997), which suggest that affective states is one of the four sources of information to form self-efficacious beliefs. Given the importance of emotions for achievement settings (Pekrun et al., 2006), it is surprising to see that the examination of emotions as antecedents of creative self-efficacy has been, to our knowledge, somewhat neglected. Research on group efficacy, for example, has shown that positive emotions play an important role as a source of information (Gibson, 2003). Given that our investigation only focused on assessing the role of enjoyment and that there are more relevant emotions, we suggest that future research should focus on assessing the role of other achievement emotions as antecedents of creative self-efficacy such as pride, frustration and boredom.

### **Consequences of creative self-efficacy**

Our investigation examined the influence of creative self-efficacy on divergent thinking scores. The connection between creative self-efficacy and divergent thinking scores has received mixed support. Some studies have found a positive relationship between these two variables (e.g., Karwowski et al., in press; Mathisen & Bronnick, 2009), whereas others have found a non-significant relationship (e.g., Reither-Palmon et al., 2012). Similarly, some authors have concluded that self-beliefs about one's creative abilities tend to have a low correlation with divergent thinking scores (Furnham, Batey, Anand, & Manfield, 2008). Our results showed that creative self-efficacy was not significantly related to divergent thinking scores, failing to support hypothesis five. One possible explanation for our results is that self-perceptions might be related to subjective but not objective indicators of creative performance (Reither-Palmon et al., 2012). A recent literature review on creative self-efficacy showed that even though creative self-efficacy was significantly related to different indicators of creative performance, most articles used subjective as opposed to more objective indicators of creative performance (Puente-Díaz, in press). Future research should continue exploring the influence of creative self-efficacy on children's ability to produce novel and useful ideas to problems that do not have unique solutions.

Another explanation for the lack of a significant influence of creative self-efficacy on divergent thinking scores might come from how a sense of creative self-efficacy is developed. One study found that children start developing a sense of their creative self-efficacy at about 10 years of age, yet this sense might not be entirely clear or well-defined yet (Karwowski, 2015). If the sense of creative self-efficacy does not have complete clarity yet, it follows that it might not be a reliable predictor of creative performance. This does not mean, however, that it is not important to examine creative self-efficacy. Creative self-efficacy might still be able to predict other relevant variables involved in the creative process such as effort and persistence. Future research should continue exploring if creative self-efficacy represents a reliable predictor of creative performance among children.

### **Limitations**

Our study had several limitations. First, we used a cross sectional as opposed to a longitudinal design, which limits our ability to establish the directionality of our proposed relationships. Specifically, we conceptualized some variables as antecedents or consequences of creative self-efficacy. This conceptualization was consistent with social cognitive theory (Bandura, 1997), the achievement motivation literature, and with a recent integration of empirical findings on creative self-efficacy (Karwowski & Lebuda, in press), yet we cannot rule out alternative directionalities for our proposed model such as the proposition

that students with higher levels of creative self-efficacy might enjoy school more than students with lower creative self-efficacy.

A second limitation is that we were unable to obtain a clear assessment of task- and self-approach achievement goals. Similar problems with high correlations between achievement goals have been encountered by previous investigations (e.g., Johnson & Kestler, 2013). We do believe that the distinction between goals defining competence in terms of mastering a task vs. doing better than in the past is useful and theoretically intriguing because it might have important implications for self-regulation (Elliot et al., 2011). Hence, we hope that future research can provide further empirical evidence to validate this distinction and place our findings as mere exceptions.

In sum, we found support, weak and somewhat stronger, for the role of achievement goals and enjoyment as antecedents of creative self-efficacy. Creative self-efficacy was not related to divergent thinking scores. Even though our results were not as clear and conclusive as we would have hoped for, we still believe that our findings provided support for the important role that creative self-efficacy plays in educational settings. If today's society highly values creativity and innovation, then we should continue exploring how creative self-efficacy develops among children (Karwowski 2015; Karwowski, in press).

## REFERENCES

- Amabile, T. M. (1996). *Creativity in context*. Boulder, CO: Westview Press.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman and Company.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1-26.
- Beghetto, R. A. (2006). Creative self-efficacy: Correlates in middle and secondary students. *Creativity Research Journal*, 18, 447-457.
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York, NY: Guilford Press.
- Deci, E. L., Hodges, R., Pierson, L., & Tomassone, J. (1992). Autonomy and competence as motivational factors in students with learning disabilities and emotional handicaps. *Journal of Learning Disabilities*, 25, 457-471.
- Duda, J. L., & Nicholls, J. G. (1992). Dimensions of achievement motivation in school-work and sport. *Journal of Educational Psychology*, 84, 290-299.
- Elliot, A.J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, 34, 149-169.
- Elliot, A.J., Murayama, K., & Pekrun, R. (2011). A 3 x 2 achievement goal model. *Journal of Educational Psychology*, 103, 632-648.
- Furnham, A., Batey, M., Anand, K., & Manfield, J. (2008). Personality, hypomania, intelligence and creativity. *Personality and Individual Differences*, 44, 1060-1069.

- Gibson, C. B. (2003). The efficacy advantage: Factors related to the formation of group efficacy. *Journal of Applied Social Psychology*, 33, 2153-2186.
- Gong, Y., Huang, J-C., & Farh, J-L. (2009). Employee learning orientation, transformational leadership, and employee creativity: The mediating role of employee creative self-efficacy. *Academy of Management Journal*, 52, 765-778.
- Johnson, M. L., & Kestler, J. L. (2013). Achievement goals of traditional and nontraditional aged college students: Using the 3 X 2 achievement goal framework. *International Journal of Educational Research*, 61, 48-59.
- Karwowski, M. (2012). Did curiosity kill the cat? Relationship between trait curiosity, creative self-efficacy and creative personal identity. *Europe's Journal of Psychology*, 8, 547-558.
- Karwowski, M. (2014). Creative mindsets: Measurement, correlates, consequences. *Psychology of Aesthetics, Creativity, and the Arts*, 8, 62-70.
- Karwowski, M. (2015). Development of the creative self-concept. *Creativity: Theories-Research-Applications*, 2, 165-180.
- Karwowski, M. (in press). Dynamic of the creative self-concept: Changes and reciprocal relations between creative self-efficacy and creative personal identity. *Creativity Research Journal*.
- Karwowski, M. & Barbot, B. (2016). Creative self-beliefs: Their nature, development, and correlates. In J. C. Kaufman & J. Baer (Eds.) *Cambridge companion to reason and development* (pp. 302-326). New York: Cambridge University Press.
- Karwowski, M. & Lebuda, I. (in press). Creative self-concept: A surface characteristic of creative personality. In G. Feist, R. Reiter-Palmon, & J. C. Kaufman (Eds.). *Cambridge handbook of creativity and personality research*. New York: Cambridge University Press.
- Karwowski, M., Lebuda, I., & Wiśniewska, E. (in press). Measuring creative self-efficacy and creative personal identity. *International Journal of Creativity and Problem Solving*.
- Karwowski, M., Lebuda, I., Wisniewska, E., & Gralewski, J. (2013). Big five personality traits as predictors of creative self-efficacy and creative personal identity: Does gender matter? *The Journal of Creative Behavior*, 47, 215-232.
- Kaufman, J. C., Plucker, J. A., & Baer, J. (2008). *Essentials of creativity assessment*. New Jersey: Wiley.
- Mathisen, G. E., & Bronnick, K. S. (2009). Creative self-efficacy: An intervention study. *International Journal of Educational Research*, 48, 21-29.
- Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational- Psychology Review*, 18, 315-341.
- Pekrun, R., Elliot, A. J., & Maier, M. A. (2006). Achievement goals and discrete achievement emotions: A theoretical model and prospective test. *Journal of Educational Psychology*, 98, 583-597.
- Plucker, J., Qian, M., & Schmalensee, S. L. (2014). Is what you see what you really get? Comparison of scoring techniques in the assessment of real-world divergent thinking. *Creativity Research Journal*, 26, 135-143.

- Puente-Díaz, R. (In press). Creative self-efficacy: An exploration of its antecedents, consequences and applied implications. *The Journal of Psychology: Interdisciplinary and Applied*.
- Reither-Palmon, R., Robinson-Morrall, E., Kaufman, J. C., & Santo, J. B. (2012). Evaluation of self-perceptions of creativity: Is it a useful criterion? *Creativity Research Journal*, 24, 107-114.
- Shiu, S-C., & Lin, S-Y. (2012). The relationship between learning motivation and innovate behavior in university students: From the perspective of creative self-efficacy. *International Journal of Arts & Sciences*, 5, 33-38.
- Szumski, G., & Karwowski, M. (2015). Emotional and social integration and the big-fish-little-pond effect among students with and without disabilities. *Learning and Individual Differences*, 43, 63-74.
- Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management Journal*, 45, 1137-1148.
- Wallach, M. A., & Kogan, N. (1965). *Modes of thinking in young children: A study of the creativity–intelligence distinction*. New York: Holt, Rinehart, & Winston.
- Wu, C-C. (2012). The cross-cultural examination of 3x2 achievement goal model in Taiwan. *Social and Behavioral Sciences*, 69, 422-427.

**Corresponding author at:** Rogelio Puente-Díaz, Av. Lomas de Anáhuac 46, Col. Lomas de Anáhuac, Huixquilucan, Estado de México, C.P. 52786

E-mail: [rogelio.puente@anahuac.mx](mailto:rogelio.puente@anahuac.mx)

**Corresponding author at:** Judith Cavazos Arroyo, Universidad Popular Autónoma del Estado de Puebla 21 sur No. 1103 col. Santiago, C.P. 72410 Puebla, Puebla.

E-mail: [judith.cavazos@upaep.mx](mailto:judith.cavazos@upaep.mx)

