

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/321024739>

Teacher Self-concepts of Creativity: Meeting the Challenges of the 21 st Century Classroom

Article · October 2017

CITATION

1

READS

421

4 authors, including:



David H Cropley

University of South Australia

150 PUBLICATIONS 1,422 CITATIONS

[SEE PROFILE](#)



Rebecca Marrone

University of South Australia

3 PUBLICATIONS 1 CITATION

[SEE PROFILE](#)



James C. Kaufman

University of Connecticut

377 PUBLICATIONS 8,329 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Creatively solving sex differences in mathematics [View project](#)



Engineering Creativity [View project](#)

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom

Timothy J. Patston[#]; David H. Cropley^{*}; Rebecca L. Marrone^{*}; James C. Kaufman[@]

[#]Geelong Grammar School, Victoria, AUSTRALIA

^{*}University of South Australia, Adelaide, AUSTRALIA

[@]University of Connecticut, USA

Correspondence concerning this article should be addressed to Timothy Patston, Geelong Grammar School, CORIO 3214, Victoria, Australia. Email: tpatston@ggs.vic.edu.au

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

Abstract

School systems around the world are, for a variety of reasons, moving towards a greater emphasis on creativity in the classroom. This paradigm shift raises important questions for teachers. Do teachers need to be creative themselves in order to develop creativity in their students? Is teaching a creative profession? Regardless of the importance and interplay between teaching creatively, and teaching for creativity, what role does teachers' belief in their own creativity play in this move to a more creative classroom? In this paper, we examine the creative self-concept of teachers across a range of countries, disciplines, and other variables, asking which groups of teachers, if any, may be best prepared for the reorientation of the 21st century curriculum towards creativity in the classroom?

Keywords

Creativity, self-concept, teaching, creative education

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

INTRODUCTION

Around the world, national education bodies as well as individual schools are calling for a shift from “traditional” pedagogy and standardized testing to a more “creative” education paradigm (Beghetto & Kaufman, 2016; Beghetto, Kaufman, & Baer, 2014). Teachers are being advised, if not compelled, to introduce creativity into their daily classroom practice in countries ranging from Australia (ACARA, 2010) to Iceland (MESC, 2011) and Hong Kong (HKCDC & HKEAA, 2007). Are teachers equipped for this change, and what preparation and development might be needed to support this fundamental re-orientation? Is there a risk that teachers are being set up to fail?

If teachers are expected to teach, nurture, model, and evaluate creativity in their students, does this imply that they should themselves be creative? Research certainly suggests that individuals – including teachers – who are more original are better able to evaluate their *own* creative ideas (Benedek et al, 2016; Silvia, 2008). However, this capacity for self-evaluation may not always translate into being able to accurately assess other people’s – for example, students’ – creative ideas (Grohman, Wodniecka, & Kłusak, 2006). At the same time, a number of studies have shown that people with more expertise or experience in a creative domain are more likely to excel at judging creativity in this same domain (Kaufman et al, 2014; Kaufman & Baer, 2012; Kaufman, Baer, & Cole, 2009 Kaufman, Baer, Cole, & Sexton, 2008). Together, these studies suggest that individual creativity in teachers is a necessary, but not sufficient, condition for meeting the demands of the 21st century classroom.

If creativity is a necessary, albeit insufficient, pre-requisite quality required by teachers to fulfill the expectations of modern classroom practice, then is this a reasonable expectation? Is teaching, in other words, normally considered to be a creative profession, capable of meeting these requirements? Although typical associations tend to see creativity as linked with activities and professions in the arts (e.g. Hass, 2014), there is a great deal of research highlighting the role that creativity plays across a

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

wide range of domains (Kaufman & Baer, 2005; Kaufman, Glăveanu, & Baer, 2017; Carson, Peterson, & Higgins, 2005), including both arts (e.g. Baer, 1991), science (e.g. Simonton, 2004), engineering (e.g. Cropley & Cropley, 2005; Cropley 2015), and other domains (e.g. Weisberg, 2006). In addition, there is much evidence to suggest that teachers are quite creative.

Teachers frequently are required to develop useful and novel solutions in a variety of contexts, consistent with most conceptions of creativity (e.g., Kaufman, 2016), demonstrating the importance of an ability to teach creatively. Further, several studies have found (much like established creators) that teachers qualify as strong judges of creative work, signifying their expertise in recognizing creativity (Baer, Kaufman, & Riggs, 2009; Kaufman, Baer, Cropley, Reiter-Palmon, & Sinnott, 2013).

Although teachers' ability to be creative may support creativity in the classroom, and while teaching may be a creative profession, the key to achieving the 21st century curriculum objectives in relation to creativity may be teachers' *beliefs* about their own creativity. Do teachers need to *believe* that they are creative in order to nurture or teach student creativity (Westby & Dawson, 1995; Saracho, 2012)? What role does teachers' creative *self-concept* play in the development of creativity in the modern classroom? While there is ample anecdotal evidence that teachers of different subjects perceive themselves as having qualities that are unique to their discipline, apart from some literature looking at teacher personality attributes between disciplines (Bastian, McCord, Marks, & Carpenter 2017), it is unclear whether these differences exist with regard to creativity, or creative self-concept.

Self-concept, in general, encompasses a set of ideas or beliefs which one has about oneself (Plucker & Stocking, 2001). The notion of *creative* self-concept is a more recent phenomenon, but one that continues to evolve and emerge (Karwowski & Kaufman, 2017) in the field of creativity. Creative self-concept includes many related constructs, from creative self-efficacy (Beghetto, 2006; Karwowski, 2012), creative mindset (Karwowski, 2014), to creative personal identity (Karwowski, 2012; Farmer,

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

Tierney, & Kung-Mcintyre, 2003). All, however, revolve around the central idea concerning the extent to which someone believes that he or she is a creative person. High creative self-concept extends to valuing creativity in one's self and others (Randel & Jaussi, 2003). Further, this construct is generally related to subsequent creative performance, whether on the job (Farmer et al, 2003) or in life (Karwowski & Lebuda, 2017). A teacher with a high creative self-concept is therefore more likely to be creative in his or her own life *and* the classroom, and may be more likely to encourage and nurture creativity in others. "Teaching creatively" and "teaching for creativity" (Jeffrey & Craft, 2004; Brinkman, 2010; Gregerson, Synder, & Kaufman, 2012), while vital to the development of classroom creativity, may both depend on teacher creative self-concept.

The purpose of this exploratory study was to investigate individual differences in teacher creative self-concept across the following: (a) different subjects; (b) different school levels (primary/elementary and secondary); (c) teacher gender; (d) different professional levels (ranging from pre-service undergraduate teachers, through postgraduate education students, through to in-service teachers), and (e) different countries. Through this investigation, we hoped to gain insights into which group(s) of teachers, if any, are best prepared to tackle the new initiatives and responsibilities of the new national curricula, and why that might be the case.

METHODS

Participants and Procedures

A total of 2,093 student and professional teachers from six countries (or geographical regions) were recruited for the present study. Respondents identified their country/region of origin as: Iceland (n = 1,045), Australia (n = 657), Norway (n = 143), United Kingdom (n = 113), North America (n = 72),

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

Russia (n = 31), while 32 respondents did not indicate a country/region of origin. Participants completed the survey online, and participation was voluntary.

A total of 1,569 females and 474 males completed the survey, with 50 respondents choosing not to identify gender. No data relating to the age or ethnicity of participants were collected.

A total of 188 respondents identified as undergraduate students (i.e. undertaking a Bachelor's degree, or equivalent in a range of subject areas), while 278 identified as postgraduate student teachers (i.e. undertaking a post-Bachelor's degree in Education). A further 1,404 respondents identified as professional teachers, and 223 did not give a response for this item.

Respondents were coded to one of four disciplinary groups, reflecting their main teaching discipline. A total of 646 respondents identified as Mathematics/Science/ICT teachers in Group 1; 385 respondents identified as Humanities/English/Language in Group 2; 354 identified as Arts/Crafts teachers in Group 3, for a total of 1,385 respondents teaching at secondary school level. A further 533 respondents identified as primary/elementary teachers in Group 4, while 175 respondents did not indicate a disciplinary grouping.

Measures

Participants completed an online survey with a single measure – the 14-item Self-Assessed Creativity (SAC) scale. The SAC is a modified form of items designed to measure creativity and imagination, which had its origins in the International Personality Item Pool (IPIP; see Goldberg, 1999). Versions of this measure have been used in studies by Kaufman & Baer (2004), Kaufman, Bromley & Cole (2006), Reiter-Palmon, Robinson-Morrall, Kaufman & Santo (2012) and Kaufman, Pumacchua & Holt (2013). Participants responded on a 5-pt Likert-type scale, with “1” indicating *Strongly Disagree*, 3

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

indicating a neutral response, and “5” indicating *Strongly Agree*. In this study, three items were removed for statistical reasons, the final eleven items had a scale reliability (Cronbach’s Alpha) = .88.

RESULTS

Means and standard deviations of Self-Assessed Creativity (SAC) are presented in Table 1.

Table 1: Self-Assessed Creativity (SAC) by Gender

	N	Mean	SD
Females	1241	3.60	.53
Males	405	3.52	.51
Total	1646	3.58	.53

A series of two-way, between-groups ANOVAs was conducted to explore the individual and joint effects of the independent variables (Gender, Discipline Group, Professional Level, Country/region of origin, and Teaching Level) on the dependent variable Self-Assessed Creativity (SAC). Table 2 shows the results for these analyses.

Table 2: Two-way ANOVAs

Variable	Group	<i>F</i> (x, y)	η^2
Self-Assessed Creativity	Gender	$F(1, 1499) = 5.06^*$	.003
	Discipline Group	$F(3, 1499) = 12.01^{**}$	.020
	Gender x Discipline Group	$F(3, 1499) = .57$	.001
Self-Assessed Creativity	Gender	$F(1, 1458) = 1.57$	.001
	Professional Level	$F(2, 1458) = 1.82$	.002
	Gender x Professional Level	$F(2, 1458) = 1.30$	.002
Self-Assessed Creativity	Gender	$F(1, 1616) = .27$	.000
	Country	$F(5, 1616) = 3.00^*$	.010
	Gender x Country	$F(5, 1616) = 1.63$	.005
Self-Assessed Creativity	Gender	$F(1, 1503) = 1.73$	.001
	Teaching Level	$F(1, 1503) = .99$	.001
	Gender x Teaching Level	$F(1, 1503) = 1.73$	.001
Self-Assessed Creativity	Discipline Group	$F(3, 1335) = 8.67^{**}$	.020
	Professional Level	$F(2, 1335) = 3.64^*$	.005
	Discipline Group x Professional Level	$F(6, 1335) = 1.14$	.005
Self-Assessed Creativity	Discipline Group	$F(3, 1492) = 3.48^*$	.010
	Country	$F(5, 1492) = 3.47^*$	.010
	Discipline Group x Country	$F(15, 1492) = 1.60$	.020
Self-Assessed Creativity	Professional Level	$F(2, 1440) = 9.95^{**}$	.010
	Country	$F(5, 1440) = 7.62^{**}$	.030
	Professional Level x Country	$F(9, 1440) = 4.95^{**}$	.030
Self-Assessed Creativity	Professional Level	$F(2, 1341) = 3.43^*$	.005
	Teaching Level	$F(1, 1341) = 6.71^*$	.005
	Professional Level x Teaching Level	$F(2, 1341) = 1.36$	.002
Self-Assessed Creativity	Country	$F(5, 1504) = 2.78^*$	.010
	Teaching Level	$F(1, 1504) = 2.36$	.002
	Country x Teaching Level	$F(5, 1504) = 2.61^*$	.010

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

* $p < .05$, ** $p < .01$

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

These results indicate statistically significant main effects for Gender, Discipline Group, Professional Level, Country and Teaching Level, but only two statistically significant interaction effects – for Professional Level x Country, and for Teaching Level x Country. Post-hoc analyses of the significant main effects are described below.

Post-hoc Analysis of Significant Main Effects

Gender

Post-hoc analysis (T-test) indicated that the main effect for Gender comprised a statistically significant difference in Self-Assessed Creativity (SAC) scores for females ($M = 3.60$, $SD = .54$) and males ($M = 3.52$; $SD = .51$). The effect size ($\eta^2 = .003$), however, was very small.

Discipline Group

Post-hoc comparisons using the Tukey HSD test indicated that the mean Self-Assessed Creativity (SAC) score for Group 1 ($M = 3.50$, $SD = .53$) was significantly different from Group 2 ($M = 3.60$, $SD = .54$), which was significantly different from Group 3 ($M = 3.78$, $SD = .49$). Furthermore, the mean score for Group 3 ($M = 3.78$, $SD = .49$) was significantly different from Group 4 ($M = 3.53$, $SD = .54$). The effect size ($\eta^2 = .020$) for this main effect was, however, small.

Professional Level

Post-hoc comparisons using the Tukey HSD test indicated that the mean Self-Assessed Creativity (SAC) score for Undergraduates ($M = 3.46$, $SD = .58$) was significantly different from Professional Teachers ($M = 3.59$, $SD = .49$), with no significant difference between Postgraduates ($M = 3.57$, $SD = .64$), and either of the other groups. The effect size ($\eta^2 = .005$) for this main effect was very small.

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

Country

Post-hoc comparisons using the Tukey HSD test indicated that the mean Self-Assessed Creativity (SAC) score for Australia ($M = 3.50$, $SD = .56$) was significantly different from Iceland ($M = 3.60$, $SD = .49$), North America ($M = 3.70$, $SD = .51$), and Russia ($M = 3.23$, $SD = .63$). There were also significant differences between Russia ($M = 3.23$, $SD = .63$), and Iceland, North America, Norway ($M = 3.64$, $SD = .39$), and the United Kingdom ($M = 3.58$, $SD = .60$). The effect size ($\eta^2 = .030$) for this main effect was small to moderate.

Teaching Level

Post-hoc analysis (T-test) indicated that the main effect for Teaching Level comprised a statistically significant difference in Self-Assessed Creativity (SAC) scores for primary teachers ($M = 3.53$, $SD = .53$) and secondary teachers ($M = 3.59$; $SD = .53$). The effect size ($\eta^2 = .005$) for this main effect was very small.

Post-hoc Analysis of Significant Interaction Effects

Professional Level and Country

The interaction effect between Professional Level and Country was statistically significant, $F(9, 1440) = 4.95$, $p = .00$ (Table 2). This result suggests that the influence of Professional Level on SAC is different for respondents from different countries. However, this must be treated with caution because the result appears to be heavily influenced by the small sample of Russian participants. Removing the

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

Russian respondents from the sample resulted in a statistically significant interaction effect, $F(7, 1412) = 4.06, p = .00$, with an effect size ($\eta^2 = .020$) that is small (Figure 1).

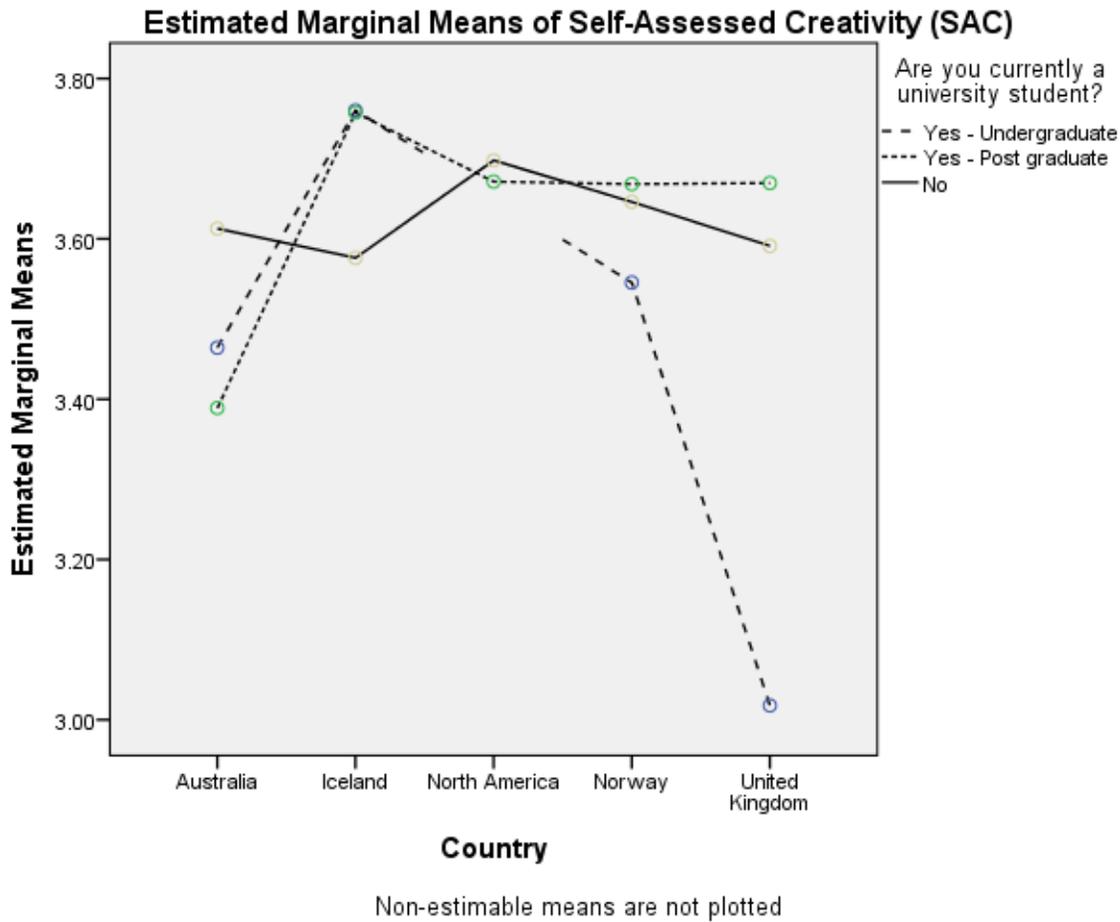


Figure 1: Interaction Effect, Teaching Level x Country

Teaching Level and Country

The interaction effect between Teaching level and Country was statistically significant, $F(5, 1504) = 2.61, p = .02$. This result suggests that the influence of Country on SAC is different for primary and secondary teachers. Once again, the result seems to be strongly influenced by the small Russian sample. The analysis was repeated, with Russian respondents removed, and showed a statistically significant interaction effect, $F(4, 1480) = 3.28, p = .01$, with an effect size ($\eta^2 = .010$) that is small (Figure 2).

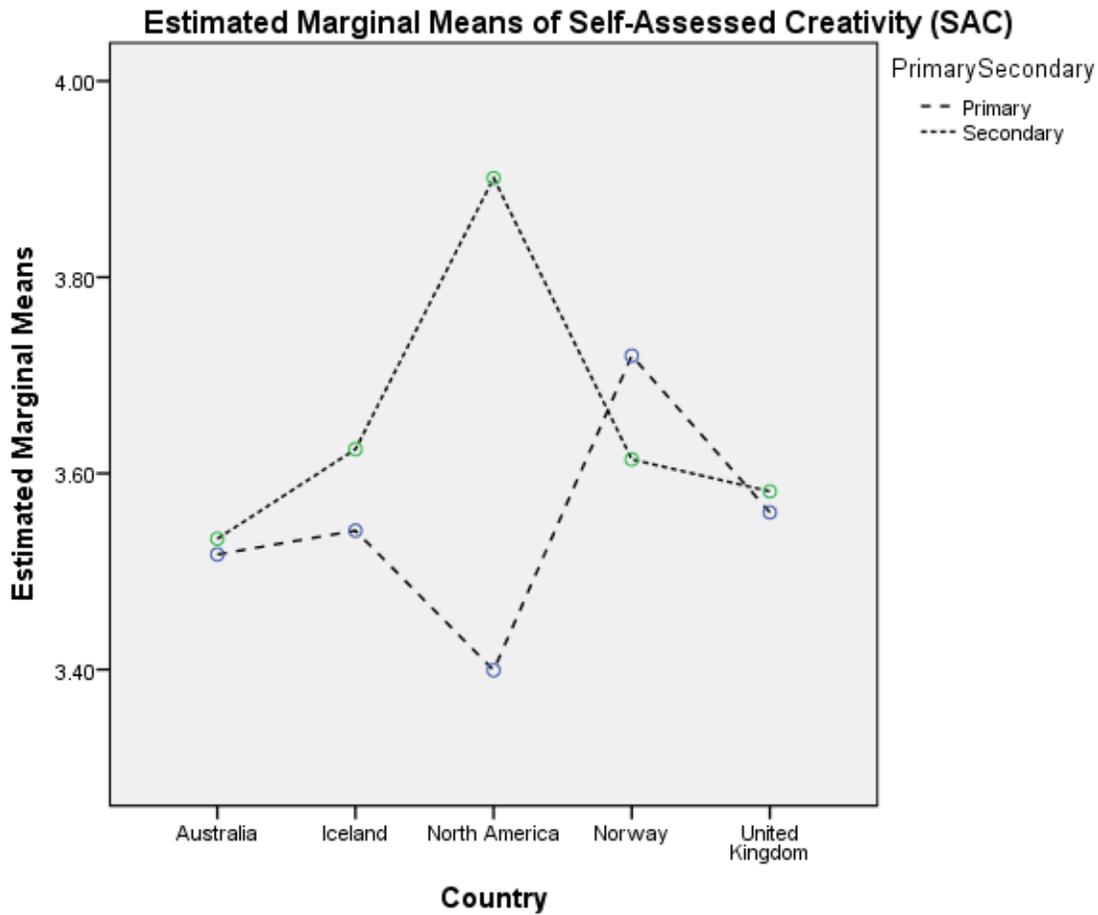


Figure 2: Interaction Effect: Teaching Level and Country

DISCUSSION

This study serves as an initial exploration of creative self-concept in teachers across many different countries, school discipline, and professional levels. We anticipate additional research will examine these similarities and differences in a more in-depth manner. We will now briefly address each component of the study.

Gender

The teachers in this study showed a small, positive self-concept of creativity ($M = 3.58$) on the SAC scale, with a statistically significant, but very small, difference between male ($M = 3.52$) and female (M

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

= 3.60) teachers. Most creativity research proposes that there are no gender differences regarding creativity (e.g. Runco, Crammond, & Pagnani, 2010) and the current results support this (for a more extensive discussion of related issues, see also Cropley & Cropley, 2009). Despite females displaying a significantly higher self-concept in this study, the effect size shows the differences were negligible. Moreover, there were no significant gender differences when observing each discipline level. This suggests that both males and females hold positive creative self-concepts regardless of whether they teach in widely different domains such as arts and crafts, or mathematics and science.

Discipline Group

A more nuanced picture of teacher creative self-concept emerges as the data are examined by discipline, professional level, and country. The results of comparisons by discipline, for example, indicated that teachers working in the broad domain of Arts and Crafts showed a statistically significant stronger positive self-concept of creativity ($M = 3.78$) compared to other disciplinary groupings, including elementary teachers. However, the small effect size ($\eta^2 = .020$) means that these differences are of limited importance. For practical purposes, there is no difference in self-assessed creativity across the different disciplines, suggesting, therefore that there is little in the way of an *arts bias* in teacher self-concepts of creativity. Indeed, this provides some evidence to refute Snow's (1959) "two cultures" concept; it might be argued that STEM disciplines see themselves as being as creative as Arts disciplines. Furthermore, despite mathematics and science teachers possessing the 'lowest' self-concept, the minimal effect size of this difference indicates that the stereotype of people not seeing mathematics as being creative (e.g., Kaufman & Baer, 2004) may not fully translate to a teacher population. Considering that research suggests that creativity should be embedded into STEM curriculums, it is positive to note that these teachers appear to have positive self-concepts and are not

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

notably lower than other disciplines. Based on this positive self-concept the STEM teachers appear poised to encourage and adapt well to creative based curriculums.

Professional Level

In similar fashion, the data indicated a statistically significant, but very small, difference between undergraduate students ($M = 3.46$), and professional teachers ($M = 3.57$). Thus, for practical purposes, there is little difference in teacher self-concepts of creativity on the basis of maturity and experience in the profession. Both groups have a slightly positive self-concept of creativity, but this does not appear to shift markedly as student teachers transition into professional practice. It is well known that creativity often develops once an individual is confident in a particular field. This is because experience or knowledge within domains helps foster a sense of confidence to take risks and be creative.

Considering working teachers and post graduates are more likely to have more experience teaching than undergraduates, they may be more confident, and therefore they have the ‘right conditions’ for creativity to flourish. Two explanations for the observed lack of difference require further investigation. On the one hand, teacher training may be failing to develop in student teachers those skills in recognizing and utilizing creativity that can then flourish as their experience develops (an explanation centered on cognitive *processes*). On the other hand, the ability of professional teachers to make use of their greater experience and confidence may be lost through, for example, unfavorable environmental factors (an explanation centered on the *press*). A third, and less palatable, explanation is that both student and professional teachers are uninterested in creativity, and little is done to alter this both in teacher training, and in-service development (this explanation focusing on the *person* – motivation, example). The result in this study suggests that not enough is being done to support the development of a positive creative self-concept in teacher training, with a flow-on effect to in-service teaching.

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

Teaching Level

Also comparable to the differences by professional level, there was a statistically significant, but negligible difference between primary/elementary ($M = 3.53$) and secondary ($M = 3.59$) teachers. One explanation of the lower scores for primary teachers in this study may be the pressure on this group to teach across the curriculum, and the necessity to understand a wide variety of subjects that may, or may not, be the teacher's area of specialty and training. Despite research suggesting that creative self-concept is not domain specific (Plucker, 2004) it is also well established that confidence in an area (i.e. a subject) enhances creativity. As we know, a person is more likely to be creative when they have a solid foundation of knowledge in a particular domain. This suggests that, if a primary school teacher has a strength in mathematics, and not humanities, then they are less likely to be creative in the humanities subject and might therefore be expected possess a lower creative self-concept than a specialized high-school teacher working primarily in one subject, or in one domain. This is further supported by the results of this study, suggesting that secondary teachers have a more positive self-concept than primary teachers, regardless of subject taught at secondary level (see also Baer, 1991). In addition, the finding is consistent with recent measures of self-perceived creative aptitude, which use a domain-specific structure (Kaufman, 2012; McKay, Karwowski, & Kaufman, 2017).

To encourage an increased positive creative self-concept amongst primary school teachers, it is suggested that teachers' development of 'expertise' across subjects be strengthened, helping the development confidence at teaching a range of subjects. This can be achieved through the provision of extra school resources including extra in-service training, and support from other teachers and school

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

leaders. Moreover, simply educating primary teachers on the definition of creativity within each subject may be a key to encouraging their self-concept (e.g., Aljughaiman, & Mowrer-Reynolds, 2005).

Country

The only variable on which larger, significant differences were observed was the country in which the teachers work. Teachers in the United States showed the strongest positive self-concept of creativity ($M = 3.70$), compared to teachers in Russia ($M = 3.23$); however, these two samples were small ($N = 72$ and $N = 31$ respectively), in comparison to the overall sample. Regardless of this fact, the general levels of Self-Assessed Creativity remain only slightly positive. Deducing inferences about individual countries' self-concepts is difficult. Each country has its own curriculum and set of beliefs regarding the place of creativity within education, despite the general thrust for more creativity. Focusing only on working teachers (as distinct from student teachers), the results suggest that North American teachers had the highest positive self-concept, while the Icelandic the lowest, however the differences are minimal. Interestingly, all countries have slightly positive beliefs, suggesting that all countries value creativity at least to some extent. Important to note is that all countries examined are currently embedding 'creativity' within school curriculums in one form or another. This shift towards creative curricula requires that these teachers accurately understand the concept of creativity, (i.e. how can they teach to the new creative pedagogies outlined in their curricula if they do not understand the concept?). The results in this study support the notion of altering pedagogy towards creativity because research suggests that if a teacher is creative then they will possess a creative self-concept. In turn, this creative self-concept will help foster similar beliefs in their students, thus enabling them to receive a quality education.

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

These results appear to offer little in the way of clues as to how teacher self-concepts of creativity might be better supported and developed. There is no clear pattern indicating that any one country, or discipline, or other grouping is any better than any other at developing teacher self-concepts of creativity. Indeed, it may be said that there is a remarkable degree of consistency across these groups – teachers of all types, levels, gender and nationality have a surprisingly consistent, and slightly positive, self-concept of creativity.

Not surprisingly, even interaction effects – e.g. the impact of professional level (Undergraduate, Postgraduate, Professional) on Self-Assessed Creativity, for different countries – while significant, were also small and therefore, of limited practical importance. The picture therefore remains highly consistent across the different grouping variables.

Future Work

Despite the results being positive, more effort into developing the teachers' self-concept would be beneficial, firstly for the teacher, and then for their students. Considering creativity can facilitate learning, it is important to develop the necessary skills to ensure optimal learning occurs.

Aforementioned teachers who possess a positive self-concept are more likely to pass these positive beliefs onto their students. Therefore, future research into how to positively shape creative self-concept would benefit the education system. As it is well known that teachers often misunderstand the definition of creativity it is recommended that teachers be instructed clearly on creative ideologies as to deter incorrect understandings and maximize their creative self-concept. Further, although there are many benefits to understanding creative self-concept and self-beliefs (Reiter-Palmon, Robinson-Morrall, Kaufman, & Santo, 2012), there are nonetheless many potential flaws in such measures. For

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

example, not everyone has strong insight into their own creative strengths or weaknesses (Kaufman & Beghetto, 2013).

CONCLUSION

The larger finding that teachers show more similarities than differences in creative self-concept may make for a less exciting conclusion, yet has many positive implications. If future studies continue to show that teachers around the world and across discipline share beliefs about creativity in the classroom, then potential interventions to increase creativity may not need to be as individualized or tailored to a specific country or discipline. The same core principles may be useful to all populations, suggesting the possibility of a more straightforward path toward increased creativity acceptance and nurturance in schools.

REFERENCES

ACARA. (2010). *The Shape of the National Curriculum*. Retrieved from Sydney, Australia:

http://docs.acara.edu.au/resources/Shape_of_the_Australian_Curriculum.pdf

Aljughaiman, A., & Mowrer-Reynolds, E. (2005). Teachers' conceptions of creativity and creative students. *The Journal of Creative Behavior*, 39(1), 17-34.

Baer, J. (1991). Generality of creativity across performance domains. *Creativity Research Journal*, 4(1), 23-39.

Baer, J., Kaufman, J. C., & Riggs, M. (2009). Brief report: rater-domain interactions in the consensual assessment technique. *The International Journal of Creativity & Problem Solving*, 19(2), 87-92.

Beghetto, R. A. (2006). Creative self-efficacy: Correlates in middle and secondary students. *Creativity Research Journal*, 18(4), 447-457.

- Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.
- Beghetto, R. A., & Kaufman, J. C. (Eds.). (2016). *Nurturing creativity in the classroom* (2 ed.). New York, NY: Cambridge University Press.
- Beghetto, R. A., Kaufman, J. C., & Baer, J. (2014). *Teaching for creativity in the common core classroom*. New York, NY: Teachers College Press.
- Benedek, M., Nordtvedt, N., Jauk, E., Koschmieder, C., Pretsch, J., Krammer, G., & Neubauer, A. C. (2016). Assessment of creativity evaluation skills: A psychometric investigation in prospective teachers. *Thinking Skills and Creativity*, 21, 75-84.
- Brinkman, D. J. (2010). Teaching creatively and teaching for creativity. *Arts Education Policy Review*, 111(2), 48-50.
- Carson, S. H., Peterson, J. B., & Higgins, D. M. (2005). Reliability, validity, and factor structure of the Creative Achievement Questionnaire. *Creativity Research Journal*, 17(1), 37-50.
- Cropley, A. J., & Cropley, D. H. (2009). *Fostering creativity: A diagnostic approach for education and organizations*. Cresskill, NJ: Hampton Press.
- Cropley, D. H. (2015). *Creativity in engineering: Novel solutions to complex problems*. San Diego: Academic Press.
- Cropley, D. H., & Cropley, A. J. (2005). Engineering creativity: A systems concept of functional creativity. In J. C. Kaufman & J. Baer (Eds.), *Creativity across domains: Faces of the muse* (pp. 169-185). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Farmer, S. M., Tierney, P., & Kung-Mcintyre, K. (2003). Employee creativity in Taiwan: An application of role identity theory. *Academy of management journal*, 46(5), 618-630.
- Goldberg, L. R. (1999). A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. In I. Mervielde, I. Deary, F. D. Fruyt, & F. Ostendorf

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

(Eds.), *Personality Psychology in Europe* (Vol. 7, pp. 7-28). Tilburg, The Netherlands: Tilburg University Press.

Gregerson, M. B., Snyder, H. T., & Kaufman, J. C. (Eds.). (2012). *Teaching creatively and teaching creativity*: Springer Science & Business Media.

Grohman, M., Wodniecka, Z., & Kłusak, M. (2006). Divergent thinking and evaluation skills: Do they always go together? *Journal of Creative Behavior*, 40, 125-145.

Hass, R. W. (2014). Domain-specific exemplars affect implicit theories of creativity. *Psychology of Aesthetics, Creativity, and the Arts*, 8, 44-52.

HKCDC, & HKEAA. (2007). *Music curriculum and assessment guide (Secondary 4–6)*. Retrieved from Hong Kong: <http://www.edb.gov.hk/en/curriculum-development/kla/arts-edu/references/curriculum-docs.html>

Jeffrey, B., & Craft, A. (2004). Teaching creatively and teaching for creativity: distinctions and relationships. *Educational studies*, 30(1), 77-87.

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(4), 547-558.

Karwowski, M. (2014). Creative mindsets: Measurement, correlates, consequences. *Psychology of Aesthetics, Creativity, and the Arts*, 8(1), 62-70.

Karwowski, M., & Kaufman, J. C. (2017). *The Creative Self Effect of Beliefs, Self-Efficacy, Mindset, and Identity*. San Diego, CA: Academic Press.

Karwowski, M., & Lebuda, I. (2017). 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* (pp. 84-101). New York, NY: Cambridge University Press.

- Patston, T. J., Crompton, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.
- Kaufman, J. C. (2012). Counting the muses: Development of the Kaufman Domains of Creativity Scale (K-DOCS). *Psychology of Aesthetics, Creativity, and the Arts*, 6(4), 298.
- Kaufman, J. C. (2016). *Creativity 101* (2nd ed.). New York, NY: Springer Publishing Company.
- Kaufman, J. C., & Baer, J. (2004). Sure, I'm creative – but not in math!: Self-reported creativity in diverse domains. *Empirical Studies of the Arts*, 22, 143-155.
- Kaufman, J. C., & Baer, J. (2012). Beyond new and appropriate: Who decides what is creative? *Creativity Research Journal*, 24(1), 83-91.
- Kaufman, J. C., & Baer, J. (Eds.). (2005). *Creativity across domains: Faces of the muse*. Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Kaufman, J. C., Baer, J., & Cole, J. C. (2009). Expertise, domains, and the Consensual Assessment Technique. *Journal of Creative Behavior*, 43, 223-233.
- Kaufman, J. C., Baer, J., Cole, J. C., & Sexton, J. D. (2008). A comparison of expert and nonexpert raters using the Consensual Assessment Technique. *Creativity Research Journal*, 20, 171-178.
- Kaufman, J. C., Baer, J., Crompton, D. H., Reiter-Palmon, R., & Sinnott, S. (2013). Furious activity vs. understanding: How much expertise is needed to evaluate creative work? *Psychology of Aesthetics, Creativity, and the Arts*, 7(4), 332-340.
- Kaufman, J. C., & Beghetto, R. A. (2013). In praise of Clark Kent: Creative metacognition and the importance of teaching kids when (not) to be creative. *Roepers Review*, 35(3), 155-165.
- Kaufman, J. C., Bromley, M. L., & Cole, J. C. (2006). Insane, poetic, lovable: Creativity and endorsement of the “Mad Genius” stereotype. *Imagination, Cognition, and Personality*, 26, 149-161.
- Kaufman, J. C., Glăveanu, V., & Baer, J. (Eds.). (2017). *Cambridge handbook of creativity across domains*. New York: Cambridge University Press.

- Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.
- Kaufman, J. C., Pumacchua, T. T., & Holt, R. E. (2013). Personality and creativity in realistic, investigative, artistic, social, and enterprising college majors. *Personality and Individual Differences*, 54(8), 913-917.
- McKay, A. S., Karwowski, M., & Kaufman, J. C. (2017). Measuring the muses: Validating the Kaufman Domains of Creativity Scale (K-DOCS). *Psychology of Aesthetics, Creativity, and the Arts*, 11, 216-230.
- MESC. (2011). *Icelandic National Curriculum*. Retrieved from Reykjavik, Iceland: <https://eng.menntamalaraduneyti.is/publications/curriculum/>
- Plucker, J. A. (2004). Generalization of creativity across domains: Examination of the method effect hypothesis. *Journal of Creative Behavior*, 38(1), 1-12.
- Plucker, J. A., & Stocking, V. B. (2001). Looking outside and inside: Self-concept development of gifted adolescents. *Exceptional children*, 67(4), 535-548.
- Randel, A. E., & Jaussi, K. S. (2003). Functional background identity, diversity, and individual performance in cross-functional teams. *Academy of management journal*, 46, 763–774.
- Reiter-Palmon, R., Robinson-Morrall, E. J., Kaufman, J. C., & Santo, J. B. (2012). Evaluation of self-perceptions of creativity: Is it a useful criterion? *Creativity Research Journal*, 24(2-3), 107-114.
- Runco, M. A., Cramond, B., & Pagnani, A. R. (2010). Gender and creativity. In J. C. Chrisler & D. R. McCreary (Eds.), *Handbook of gender research in psychology* (Vol. 1: Gender research in general and experimental psychology, pp. 343-357). New York, NY: Springer.
- Saracho, O. N. (2012). Creativity theories and related teachers' beliefs. *Early Child Development and Care*, 182, 35-44.
- Silvia, P. J. (2008). Discernment and creativity: How well can people identify their most creative ideas? *Psychology of Aesthetics, Creativity, and the Arts*, 2(3), 139-146.

Patston, T. J., Cropley, D. H., Marrone, R. L. and Kaufman, J. C. (2017). Teacher Self-concepts of Creativity: Meeting the Challenges of the 21st Century Classroom, *International Journal of Creativity and Problem Solving*, 27:2, pp. 23-34.

Simonton, D. K. (2004). *Creativity in science: Chance, logic, genius, and zeitgeist*. Cambridge: Cambridge University Press.

Snow, C. P. (1959). Two cultures. *Science*, 130(3373).

Weisberg, R. W. (2006). *Creativity: Understanding innovation in problem solving, science, invention, and the arts*. Hoboken, NJ: John Wiley & Sons.

Westby, E. L., & Dawson, V. L. (1995). Creativity: Asset or burden in the classroom? *Creativity Research Journal*, 8, 1-10.