Teacher implicit beliefs of creativity: Is there an arts bias?

Timothy J. Patston a, *, David H. Cropley b, Rebecca L. Marrone b, James C. Kaufman c

a Geelong Grammar School, Victoria, Australia
b University of South Australia, Adelaide, Australia
c University of Connecticut, USA

HIGHLIGHTS
- This study measured Arts Bias in creativity for 2485 teachers across seven countries.
- No major interactions among discipline, gender and self-assessed creativity were found.
- Significant differences in Arts Bias by discipline, gender, and self-assessed creativity exist.
- These differences point to specific strategies for teacher training and development in creativity.

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ABSTRACT
The field of creativity remains misunderstood by the general public and implicit beliefs, in particular an Arts Bias, continue to permeate popular culture. This has the potential to derail efforts to embed creativity in the 21st century classroom, at a time when it is most needed. We therefore ask if teachers endorse such an Arts Bias in creativity. The present study found a lower than expected tendency towards an Arts Bias among teachers from more than seven countries. However, differences by discipline and level of self-rated creativity suggest specific pathways for enhancing efforts to embed creativity in the classroom.

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1. Introduction
There has been extensive research into the field of creativity since Guilford’s (1950) seminal address to the American Psychological Association. Since that time, creativity research has established itself, in particular, in the field of educational psychology. Creativity research is therefore closely tied to an exploration of the cognitive and behavioural aspects of the production of novelty, and informs specialisations such as instructional design and curriculum development. Psychological studies of creativity have been conducted across a wide variety of domains (Kaufman, Glaveanu, & Baer, 2017), including engineering (Cropley, 2015; Cropley, Cropley, & Sandwith, 2017), psychology (Kaufman, 2016), business (Florida, 2012), science (Feist, 1998, 2004), mathematics (Kaufman & Baer, 2004; Leikin & Sriraman, 2017), and education (Beghetto & Kaufman, 2014, 2017), and complement other educational perspectives on creativity and imagination, such as Greens (2011), who takes a more experiential and aesthetic view of the production of novelty in domains such as dance. Creativity has therefore established itself as a mature field of study spanning Snow’s (1959) so-called two cultures: art and science.
However, the field continues to be misunderstood or misconceived by the general population (Glaveanu, 2014), in ways that may undermine and undervalue the quality and quantity of empirically rigorous work in the field. A pervasive positive valence linked to creativity has been noted (e.g. Cropley, Kaufman, White, & Chiara, 2014), and has been referred to as a “benevolence bias” (Cropley & Cropley, in press). Among the key misconceptions that bedevil the systematic study of creativity are: (a) the notion that creativity is a genetically endowed gift bestowed on a select few (Ukko-Vuori et al., 2013); (b) that it is the realm of the mind genius (Simonton, 2002), or simply, geniuses (Baas, Nisbett, & De Dreu, 2018).
degree of creative intelligence are the least likely to be automated in the 21st century. Therefore, as business leaders and politicians realise that the global economy is shifting to a new paradigm, one in which people may be expected to have many careers and associated skill sets over their lifetimes (Wohlsen, 2012; Zhao, 2015), and where creativity will be a prerequisite ability, so educators are being called upon to develop new skills, not least creativity, in students. This challenge is compounded by a steady shift towards a more constructivist approach to teaching and pedagogy (see Steffe & Gale, 1995), with emphasis on student-centred, individualised learning and progression plans (e.g. Biggs, 2001). Consequently, countries ranging from Iceland (Ministry of Education, Science and Culture [MESCI], 2011) to Australia (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2010) are asking teachers to teach both with and for creativity. However, this shift in education implies that two conditions are already in place: (a) that teachers know what creativity is, and (b) that teachers know where creativity fits into their curricula.

Fasko (2001) suggested that the ability of teachers to foster students’ creativity in fact, depends on the interaction between two key factors: (a) their own implicit beliefs, and (b) the training they receive with the latter shaping the former. It is, of course, reasonable to expect teachers to teach knowledge and skills with which they are familiar. Unfortunately, the international push towards more creative education paradigm has frequently not been either properly supported or adequately resourced by national education systems or even individual schools (Beghetto & Kaufman, 2009; Lucas, Glaxton, & Spencer, 2013), suggesting a third factor — the environment — may also be at play. While teachers are trained in their specialist subject areas, and in the general principles of underpinning topics such as educational psychology and pedagogy, they are rarely explicitly educated in the field of creativity and creative education (Cachia, Ferrari, Ala-Mutka, & Punie, 2010). Consequently, the first exposure for many teachers to the teaching of creativity may be a national policy document stipulating a requirement for creativity in the curriculum, with little additional guidance or support, for example, in the form of developmental models of creativity (e.g. Barbot, Lubart, & Besançon, 2016; Rosén & Winner, 1988; Taylor, 1975; Urban, 1991). While it is therefore of critical importance to understand how teachers train and professional development shape implicit beliefs of creativity — not least, how environmental factors such as the available resources (e.g. time, materials, funding; see Amabile, 1996), and even the so-called "apprenticeship of observation" (Lortie, 1975), affect the development of creativity (Beghetto, 2010) the primary focus of this paper is the teachers themselves, and specifically, the views, opinions and concepts they hold in relation to creativity as they embark on a process of teaching students for this 21st century competency.

Understanding teacher implicit beliefs regarding creativity begins by exploring implicit beliefs in the general population. Lay people, of course, hold misconceptions about creativity (Baas, Koch, et al., 2015; Glaveau, 2014) as already outlined. However, do these general misconceptions also hold true for teachers? What are the implicit beliefs of creativity held specifically by schoolteachers, and are teachers equipped with the specific knowledge and skills necessary to introduce, successfully, creativity into their classrooms? Will the 21st century push for creativity in the classroom fall on fertile ground, or will it be frustrated by factors that could, if properly understood, be addressed as part of teacher education and in-service training?

There is some cause for optimism in this process. Mullet, Willerson, Lamb, and Kettler (2016) found reasonable evidence, in a comprehensive review of related studies, that teachers believe creativity is important, and that creativity can be facilitated (e.g.
Myhill & Wilson, 2013; Vedenpää & Lonka, 2014; Zhanior & Anastasiopoulou, 2012). Similarly, recent research on creative mindsets, their relationship to creative self-efficacy and creative identity, and the relationship between teacher implicit beliefs and student creativity (see Haas, Katz-Buonincontro, & Reiner-Falmon, 2016; Karwowski, 2014; Paek & Sumners, 2017), suggest that the issue under investigation here is far from uniformly negative — indeed, there are many positive findings. However, the primary concern in this study is the potential impact of faulty implicit beliefs—specifically, an arts bias—on teachers.

One of the most commonly held misconceptions of creativity in the literature is that it resides predominantly in the arts (Glaveanu, 2014; Runco & Baehle, 1989). This view poses some difficulties for those attempting to implement new creative pedagogies in classrooms. The first concern is that under the Arts Bias misconception, creativity is often thought of only at the highest levels of human endeavour: what Kaufman and Beghetto (2009) describe as Big C creativity. For classroom teachers, the view for over one hundred years is that all students have potential and capabilities in some areas, which can be developed through education (Dewey, 1916). Although there are some genetic predispositions that may inhibit development in some areas, most now believe that the majority of students are capable of development through education. With some small exceptions therefore, the Darwinian view of education is dead (Phillips & Siegel, 2013). An exception, however, seems to be found in the field of creativity, possibly driven by faulty implicit beliefs. In other words, if teachers believe that only gifted, eminent artists can be creative, then it follows that creativity is not accessible to the majority, and therefore cannot be taught (Glaveanu, 2011).

It is now widely accepted in the literature that creativity can, in fact, be taught, nurtured, and developed (e.g. Espinel, 1995; Feldman, 1999; Jeffrey & Craft, 2004). However, if teachers hold an implicit bias (specifically a Big C Arts Bias), it may lead them to believe that this is not the case, and if teachers do not understand the developmental trajectory of creativity (e.g. Coyle, 2001; Rosenblatt & Winner, 1988; Urban, 1991), then it follows that they may be less likely to teach either with or for creativity in the classroom. Given that very few students, in very few fields, can be expected to rise above the mini- or little-c level by the time they complete their schooling (Kaufman & Beghetto, 2009), it is therefore essential that teachers are aware of the developmental phases and expectations of the creative process, and can address student needs in their classrooms accordingly.

There is one further problem that can result from misconceptions. For over fifty years (Karwowski, Gralewski, & Szumski, 2015; Torrance, 1963; Werby & Dawson, 1995) there have been consistent findings indicating that teachers say they support the idea of creativity being important in the classroom, but do not necessarily like the personality qualities (as defined by the literature) of creative students. One reason for this may be that teachers possess inaccurate concepts as to what constitutes creativity —flawed implicit beliefs, once again (Alujohghanian & Mower-Reynolds, 2005; Fleith, 2000; Kamyrlos, Berki, & Saariluoma, 2006; Runco, 2003). It is important to note that in this regard, teachers are no different from business people or the average person (Mueller, Goncalo, & Xandari, 2011; Mueller, Melwani, & Goncalo, 2012). However, it is becoming clear that this problem is not due to a malicious desire in teachers to hold back creative students. Rather, it may reflect a lack of information, support, and professional development from policy makers and education systems. It is a symptom, in other words, of faulty implicit beliefs. This raises the question as to whether teachers have the knowledge and skills to explicitly, or even implicitly, introduce creativity to their classrooms, as they are being asked to do by education authorities.

Further evidence of a disconnect between education policy and practice in relation to creativity can be found in a study by Davies et al. (2014). They noted that “A systematic review of 210 educational research, policy and professional literature studies from the period 2005–2011 identified only 17 publications which met the criteria for inclusion and contained findings relating to teacher roles in constructing creative learning environments” (p 37). In the light of this evidence, it is hardly surprising if teachers appear to know little about what creativity is and lack support that enables them to introduce it effectively into their classes (Morais & Azevedo, 2011).

This problem may be exacerbated by a lack of teacher education in creativity during teacher training. Teachers arrive at their courses with belief systems regarding creativity that are not addressed — in this case, corrected — in their courses. A number of studies suggest that teachers hold a range of preconceptions about creativity and pedagogy, with many of these findings apparent in initial teacher education (Bolden, Harries, & Newton, 2010; Crow, 2008; Kampilis et al., 2009; Newton & Newton, 2009). One common misconception is the difference between ‘teaching creatively’ rather than ‘teaching for creativity’. For example, Newton and Newton (2009) found that student teachers’ conceptions of creativity can focus mainly on practical investigations of matters of fact. It may be that this perceived conflict is one reason that teachers do not tend to teach creatively in the classroom (Schaefer, Thum, & Zifkin, 2006). A second prevailing, and critical, misconception is that, as creativity lies only in the arts, it does not have a place in other subject areas (Glaveanu, 2014; Saracho, 2012; Spiel & von Kortzf, 1988).

This combination of implicit theories, biases and misconceptions indicates that educational authorities may have some way to go in terms of teacher education before even hoping, never mind expecting, that creativity will find its way into classrooms around the world. Implicit theories influence behaviour (Glaveanu, 2014). Teachers who believe in the Arts Bias, a romanticised view of creativity going back to the Greeks (Sternberg & Lubart, 1999), may be less likely to nurture the roots of creativity at the mini-c and little-c levels in the classroom. Implicit theories can also be powerful and deeply entrenched. Teachers are no different to the general population when it comes to shifting ideas and transforming them into practice. Writing about the social sciences in general, Furnham (1988) noted that lay theories typically suffer from ambiguity and inconsistency, resulting in the fact that two individuals can hold mutually incompatible beliefs, with little discomfort stemming from that discrepancy. This contradiction makes it possible for teachers to say that they like having creativity in their classrooms, but at the same time demonstrate through their behaviour that they do not like qualities of creativity manifest in their students (Grälewski & Karwowski, 2018).

It is clear that education systems around the globe, including Iceland (MEIS, 2011) Australia (ACARA, 2010), Estonia (Ministry of Education and Research [MEAR], 2014) and Hong Kong (Hong Kong Curriculum Development Council [HKCDC] & Hong Kong Examinations and Assessment Authority [HKEAA], 2007) are seeking to implement creative teaching into their classrooms. It is less clear that teachers have the prerequisite attitudes, let alone the skills, needed to implement this new pedagogic direction. Muller et al. (2016) provide an excellent review of some 18 individual studies of teacher perceptions of creativity, over the period 1990–2015. From these studies (e.g. Alujohghanian & Mower-Reynolds, 2005; Chan & Chan, 1999; Liu & Lin, 2014; Odena & Welch, 2009), and others such as Andilloni & Murphy (2010), Gralewski and Karwowski (2018), and Rubenstein, Ridgley, Callan, Karam, & Ehringer (2018), some underlying negative issues can be identified. These include (Muller et al., 2016) mismatches in teacher/researcher definitions of creativity, a lack of preparation for
teaching/developing creativity among teachers, and a view that creativity is synonymous with the arts. The studies in this review have some limitations — either they are mono-cultural, or have small sample sizes, or are limited to single school subjects — opening up an opportunity for a larger, multi-cultural, multi-subject study, to further develop the understanding of the status and impact of flawed implicit beliefs of creativity among teachers on a broader scale.

Education is facing challenging times. Education systems are increasingly asking teachers to teach with and for creativity, but it appears from existing research that this pedagogic transformation — with respect to creativity, at least — may be inhibited by a combination of implicit beliefs that prevent the uptake of new pedagogies, and a lack of explicit definitions and professional development materials by education authorities. Related discussions on the relationship between implicit beliefs and pedagogical approaches — for example, Richardson (2003) — reinforce a need for a better understanding of the implicit beliefs of creativity among teachers.

Although self-assessments of creativity are often disparaged, they tend to have better reliability than might be expected (Cropley & Kaufman, 2012; Silvia, Kaufman, & Petz, 2009). Critically, however, the only way to test implicit beliefs and self-perceptions is by using such self-report measures (Kaufman, forthcoming). It is important to emphasize that this study focuses on beliefs, perceptions, and unconscious biases; we are not using performance-based measures of creativity.

Building off of Richardson (2003), this study assesses implicit beliefs in a large sample of teachers from a range of countries and discipline areas, and asks the fundamental question: Do teachers endorse an Arts Bias in relation to creativity? Further, what variables impact a teacher’s level of Arts Bias, from his or her self-beliefs about creativity, to gender, to subject taught?

2. Methods

2.1. Participants and procedures

A total of 2485 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 = 1185), Australia (n = 657), Poland (n = 255), Norway (n = 154), United Kingdom (n = 113), North America (n = 72), and Russia (n = 31), while there were fewer than five respondents from each of Sweden, France, Italy and Hong Kong. Finally, 10 respondents did not indicate a country/region of origin. Participants completed the survey online, and participation was voluntary.

The sample of individuals who completed this survey consisted of a total of 1911 females and 538 males, with 52 respondents choosing not to identify gender. There were 189 respondents who identified as undergraduate students who were planning teaching careers, (i.e. undertaking a Bachelor’s degree, or equivalent in a range of subject areas), while 292 identified as postgraduate student teachers (i.e. undertaking a post-Bachelor’s degree in Education), and 1797 respondents identified as professional teachers. A total of 223 participants did not give a response for this item. Finally, no demographic data relating to the age or ethnicity of participants were collected.

After collection of the data, respondents were coded to one of four disciplinary groups, reflecting their main teaching discipline. A total of 701 respondents identified as Mathematics/Science/Information & Communication Technology (ICT) teachers in Group 1 (abbreviated as Math/Science); 520 respondents identified as Humanities/English/Language in Group 2 (Humanities); 366 identified as Arts or Crafts teachers in Group 3 (Arts/Crafts), for a total of 1385 respondents teaching at secondary school level. A further 516 respondents identified as non-subject-specific primary/elementary teachers in Group 4 (Primary), while 218 respondents did not indicate a disciplinary grouping.

2.2. Measures

Participants completed an online survey with two measures. The first was the Arts Bias scale. This scale was derived from a larger instrument (originally developed by Leong & Qiu, 2013) consisting of 43 questions addressing a range of facets of creativity across different disciplines and contexts, with a general focus on school education. Participants were asked to respond on a five-point Likert-type scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, 5 = Strongly Agree) to indicate the extent to which each of the statements characterised their views about the nature of creativity in schools and education. Six items were extracted from this larger scale to form an Arts Bias scale. These items were:

- "Creativity is best demonstrated in the process of creating an artwork" (Q11);
- "Students should not take risks when being assessed in the arts" (Q21);
- "Creativity refers only to music performance or creating artworks" (Q24);
- "Acquiring basic knowledge in the arts is more important than fostering creativity" (Q25);
- "Creative expression is confined to the arts" (Q35);
- "Creativity refers only to music composition or creating original artworks" (Q42).

The Arts Bias scale showed solid reliability, with Cronbach’s alpha of r = 0.70. The Corrected Item-Total Correlations ranged from r = 0.17 to r = 0.60. Participants also completed the 14-item Self-Assessed Creativity (SAC) scale. This scale was designed by Ivcevic and Mayer (2009), and included 14 items tapping into a person’s self-concept of how creative he or she is. Participants responded on a 5-pt Likert-type scale, with “1” indicating Strongly Disagree, “5” indicating a neutral response, and “5” indicating Strongly Agree. The instrument has been used in past studies (e.g., Patston, Cropley, Kaufman, & Mannone, 2007). In this study the fourteen items had excellent scale reliability with a Cronbach’s Alpha of r = 0.90. Mean Self-Assessed Creativity for the sample was M = 3.53, SD = 0.53 (N = 2184). For the purposes of this study, the sample was split into four groups on the basis of quartile scores for Self-Assessed Creativity: Low (M = 2.85; SD = 0.31); Low-Medium (M = 3.35; SD = 0.10); Medium-High (M = 3.71; SD = 0.10); High (M = 4.21; SD = 0.29).

3. Results

Tests of normality, including skewness and kurtosis, indicated that the Arts Bias data were normally distributed, and therefore suitable for further parametric analysis. Means and standard deviations for the Arts Bias scale, by gender, discipline and level of self-assessed creativity, are presented in Table 1.

An initial Multivariate Analysis of Variance was conducted with the Arts Bias subscale as the dependent variable, and with discipline, gender, and self-assessed creativity level of the teachers as the independent variables. None of the interactions (e.g., gender x discipline) were significant. As a result, three follow-up Univariate ANOVAs were conducted with each variable (discipline, gender, and self-assessed creativity) serving separately as an independent
Table 1: Mean Arts Bias score by group.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1671</td>
<td>1.87</td>
<td>.47</td>
</tr>
<tr>
<td>Male</td>
<td>490</td>
<td>1.93</td>
<td>.52</td>
</tr>
<tr>
<td>Total</td>
<td>2161</td>
<td>1.88</td>
<td>.49</td>
</tr>
<tr>
<td>Discipline</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math/Science</td>
<td>522</td>
<td>1.95</td>
<td>.50</td>
</tr>
<tr>
<td>Humanities</td>
<td>353</td>
<td>1.81</td>
<td>.45</td>
</tr>
<tr>
<td>Arts/English</td>
<td>391</td>
<td>1.86</td>
<td>.50</td>
</tr>
<tr>
<td>Primary</td>
<td>450</td>
<td>1.87</td>
<td>.48</td>
</tr>
<tr>
<td>Total</td>
<td>1628</td>
<td>1.89</td>
<td>.49</td>
</tr>
<tr>
<td>Self-Assessed Creativity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>512</td>
<td>2.00</td>
<td>.47</td>
</tr>
<tr>
<td>Low-Medium</td>
<td>466</td>
<td>1.97</td>
<td>.49</td>
</tr>
<tr>
<td>Medium-High</td>
<td>543</td>
<td>1.87</td>
<td>.44</td>
</tr>
<tr>
<td>High</td>
<td>408</td>
<td>1.67</td>
<td>.47</td>
</tr>
<tr>
<td>Total</td>
<td>1929</td>
<td>1.88</td>
<td>.48</td>
</tr>
</tbody>
</table>

Correlation of SAC and Arts Bias: -.251**.

** Gender differences significant at p < .01.
*** Math/Sciences was significantly higher than Humanities, p < .001, and Primary, p < .05.
* Low was significantly higher than Medium-High and High, p < .001.
** Low-Medium was significantly higher than Medium-High and High, p < .001.

variable. Significant differences are noted in the table above (Table 1). It is important to note that in Table 1, and the following discussions, higher scores indicate more Arts Bias. Specific analyses will be discussed separately below. No significant differences based on country of origin were detected in the sample.

3.4. Analysis of variance – arts bias and gender

A one-way, between-groups analysis of variance was conducted to explore the impact of self-assessed creativity on levels of Arts Bias, as measured by the 6-item Arts Bias scale (derived from Leung et al.). Participants were divided into four groups according to quartile marks of their self-assessed creativity (Group 1: Low Creativity; Group 2: Low-Medium Creativity; Group 3: Medium-High Creativity; Group 4: High Creativity). There was a statistically significant difference at the p < .05 level in Arts Bias scores for the four self-assessed creativity groups: F (3, 2180) = 52.0, p < .0001. The effect size, calculated using eta squared, was .07 (medium). Post-hoc comparisons using the Bonferroni test indicated that the mean scores for Group 1 (Low) (M = 2.00; SD = .47) and Group 2 (Low-Medium) (M = 1.97; SD = .49) were significantly different from Group 3 (Medium-High) (M = 1.87; SD = .44) and Group 4 (High) (M = 1.67; SD = .49). In addition, the mean score for Group 3 (Medium-High) (M = 1.87; SD = .44) was significantly different from and Group 4 (High) (M = 1.67; SD = .49). These results indicate that teachers with higher levels of self-reported creativity were significantly less likely to endorse the Arts Bias than teachers with lower levels of self-reported creativity. In addition, people with high-medium self-reported creativity were significantly less likely to endorse the Arts Bias than the low and low-medium groups (Fig. 1).

3.2. Analysis of variance – arts bias and discipline

A one-way, between-groups analysis of variance was conducted to explore the impact of discipline on levels of Arts Bias, as measured by the 6-item Arts Bias scale (derived from Leung et al.). Participants were divided into four groups according to their discipline (Group 1 = Math/Science; Group 2 = Humanities; Group 3 = Arts/Crafts; Group 4 = Primary School). There was a statistically significant difference at the p < .05 level in Arts Bias scores for the four discipline area groups: F (3, 1024) = 6.46, p = .0001. The effect size, calculated using eta squared, was .01 (very small). Post-hoc comparisons using the Bonferroni test indicated that the mean score for Group 1 (Math/Science) (M = 1.95; SD = .50) was significantly different from Group 2 (Humanities) (M = 1.81; SD = .45) and Group 4 (Primary) (M = 1.87; SD = .48). These results indicate that Math/Science teachers were significantly more likely to endorse the Arts Bias than Humanities or Primary teachers (Fig. 2).

3.4. Analysis of variance – arts bias and gender

A one-way, between-groups analysis of variance was conducted to explore the impact of gender on levels of Arts Bias, as measured by the 6-item Arts Bias scale (derived from Leung et al.). Participants were divided into two groups according to their gender (Group 1: Female; Group 2: Male). There was a statistically significant difference at the p < .05 level in Arts Bias scores for the two gender groups: F (1, 2159) = 7.19, p = .007. The effect size, calculated using eta squared, was less than .01 (very very small). Analysis indicated that the mean score for Group 1 (Female) (M = 1.87; SD = .47) was significantly different from Group 2 (Male) (M = 1.93; SD = .52). These results indicate that male teachers were significantly more likely to endorse the Arts Bias than female teachers (Fig. 3).

4. Discussion

This study serves as an initial exploration of implicit attitudes toward creativity – specifically, endorsement of the Arts Bias – in teachers across a number of different countries, across disciplinary boundaries, and between genders. The results are limited, to some degree, by the structure and scope of the questions in the scale used. Although there is no comparison group (i.e. non-teachers) enabling more definitive statements to be made, Arts Bias scores tended to be on the lower side for most teachers (M = 1.88, SD = .49). Furthermore, this is the case across the range of countries examined in the study, and is true regardless of the level of experience of the teachers surveyed. At first glance, this appears to be a positive characteristic of the sample group, suggesting that efforts to embed creativity in the 21st century classroom are likely to be relatively unimpeded by teachers’ implicit beliefs in relation to the association between creativity and art. Teachers who understand implicitly that creativity is found in science and mathematics, languages and humanities, as well as art and music seem well-placed to rise to the demand for greater creativity in the classroom.

Notwithstanding this generally positive finding, there remains the opportunity to ask if there are differences within this broad sample of teachers that may influence how creativity is embedded in the 21st classroom? For example, should the demand for teachers to teach both for and with creativity be presented uniformly, and to the same extent and depth, across all disciplines? Should the training and development that will support this be applied uniformly, or in a differentiated fashion, based on factors such as the discipline of the teachers? Moreover, in an era of shrinking resources and competing demands, is it possible to streamline the process of the training and development of teachers in creativity, expending those resources where they are most needed, and where they will have the greatest impact?

An obvious starting point is to examine possible differences in Arts Bias according to teacher gender. However, although our results suggest that male teachers subscribe to the Arts Bias to a greater degree than female teachers, the practical difference in levels was so small (eta squared was less than 0.01) as to be
unimportant. Both groups, broadly speaking, do not endorse the Arts Bias, and therefore this does not appear to offer any meaningful potential for differentiated training or development of creativity.

In a similar manner, the discipline in which the teacher operates, ranging from math/science through humanities and the arts, and including generalist primary/elementary teachers, shows statistically significant, but very small differences that appear to offer little to differentiate training and development of teachers in relation to creativity (eta squared for this test was equal to 0.01). One possibility does emerge from the data – the higher level of Arts Bias among math/science teachers, coupled with the statistical distribution of their results ($M = 1.95; SD = 0.50$), indicates that there are meaningful numbers of math/science teachers who either are uncertain or who positively endorse the Arts Bias. While these numbers are small, this does offer a strategy for how schools and policy makers might direct training and development resources to greatest effect. Math/science teachers may need additional help, in
comparison to other discipline groups, to overcome implicit biases that may impede the development of creativity in their discipline. It is also possible, however, given the low levels of Arts Bias endorsement overall, that this finding occurred for a different reason. Math/science teachers may be less likely to strongly agree or disagree to any particular statement, either because they are considering all possibilities or because they are less likely to simply be agreeable and respond with extremes (Beghetto, Kaufman, & Baxter, 2011).

One variable, however, emerges from this study as a potential differentiator for teacher training and development in creativity. The finding that teachers with higher levels of self-assessed creativity were significantly less likely to endorse the Arts Bias — with a medium effect size (eta squared was 0.07) — offers a strategy for successfully embedding creativity in the 21st century classroom. In other words, the more creative the teacher believes him or herself to be, the less they associate creativity solely with the arts. This suggests that the foundation of creativity in the 21st century classroom may be in training teachers themselves to embrace and develop their own creativity. Although this study suggests that teachers are not excessively constrained by an Arts Bias, their ability to teach both for and with creativity is enhanced by their own ability to be creative. This suggests that it is not enough merely to explain to teachers what creativity is. To be effective teachers both for and with creativity, teachers must develop their own skills in creativity. Teacher education must therefore be designed to ensure that this occurs, seeking to ensure that training and development is both theoretical and practical — apparent across the full spectrum of subjects — and providing teachers with opportunities to develop and exercise their own creativity in their profession.

5. Conclusions

Somewhat counter to expectations, teachers in this large, multicultural study of teacher implicit beliefs of creativity did not strongly endorse an Arts Bias. Generally speaking, scores indicated a possible rejection of the notion that creativity is synonymous with art, music, or other related activities. This suggests that efforts to embed creativity in the 21st century classroom will fall on favourable ground. However, the findings of this study also suggest that there remains work to be done, in particular when drilling down to the level of different discipline areas, before teachers hold views of creativity that are consistent with the literature. When this happens, the opportunity for embedding creativity in the classroom will be maximized. Around the world, teachers are being asked to be more creative and teach creative skills to their students. Yet at the same time, it is suggested from the distributions of the data that many teachers still retain some uncertainty about the nature and definition of creativity, and hold implicit views that, if not blocking creativity in the classroom, impede efforts to develop this vital 21st century skill. Our findings suggest that the greatest opportunity for correcting misconceptions of creativity, and speeding its appearance as a core part of school education, will be for education authorities and schools to develop the creativity of individual teachers through practical training and development. In addition, special attention should be paid to ensuring that teachers of STEM-based disciplines — e.g. mathematics — are given opportunities to understand the role that creativity plays in solving scientific and technological problems.

References


