sciendo

CREATIVITY

Vol. 5, Issue 2, 2018

Theories – Research – Applications

Creativity's Need for Relevance in Research and Real Life: Let's Set a New Agenda for Positive Outcomes

James C. Kaufman

Neag School of Education, University of Connecticut, USA

E-mail: james.kaufman@uconn.edu

ARTICLE INFO

Keywords:

Creativity
Conscientiousness
Grades
Work performance
Improving creativity

Article history:

Received 08 July 2018
Received in revised form 20 August 2018
Accepted 30 August 2018

ISSN: 2354-0036
DOI: 10.1515/ctra-2018-0008

ABSTRACT

Despite an ongoing surge of interest in creativity (both in academia and the public eye), it is essential that researchers focus on why creativity matters. Studies that empathize variables that help increase creativity are absolutely valuable, but I argue that need more work on how creativity can lead to positive outcomes. Much of the existing literature examines how creativity can improve school or work performance – which it does. Yet when these studies are compared with similar ones on conscientiousness, it is hard to argue that increasing creativity is the best way to succeed in school or work (at least using traditional metrics). I argue that as a field, we need to expand our ideas about how creativity can be beneficial. I end with an open call for suggestions.

On the surface, it seems an odd time to question the relevance of creativity. New books about how to unleash your inner creative genius or live a more creative life seem to be released every week. Adobe's (2016) *State of Create* global survey found widespread layperson belief that creativity was important for leaders, businesses, schools, and in the general population, a view shared by CEOs (IBM, 2010) and school superintendents (Lichtenberg, Woock, & Wright, 2008). On the research side, creativity scholarship can be argued to be at an all-time high; there are multiple journals devoted to the study of creativity. The number of published articles, citations, and impact factors of these journals are generally rising (Long, Plucker, Yu, Ding, & Kaufman, 2014).

Indeed, it makes sense for creativity to be in the spotlight. An overview of the basic research is quite compelling. Creativity is a driving force in economic and technological

developments around the world (Florida, 2014). Creative workers are promoted more and earn higher salaries (Seibert, Kraimer, & Crant, 2001). Creative products are seen as more desirable (Horn & Salvendy, 2009) and companies that support creativity are more likely to experience market breakthroughs (Lee, Rho, Kim, & Jun, 2007). At the individual level, creative students are more likely to obtain higher grades in school (Grigorenko, Jarvin, Diffley, Goodyear, Shanahan, & Sternberg, 2009; Vock, Preckel, & Holling, 2011). Creative people have higher resiliency (Metzl, 2009) and less stress (Nicol & Long, 1996); further, they can use their creativity to relieve their personal burdens (Goncalo, Vincent, & Krause, 2015) and work exhaustion (Eschleman, Madsen, Alarcon, & Barelka, 2014).

From this lens, it makes sense that approximately ¾ of studies emphasize which variables predict creativity as opposed to how creativity predicts other variables (Forgeard & Kaufman, 2016). In other words, most studies concentrate on how we can improve creativity, and who will be creative, rather than on the ways that creativity may lead to desired (or undesired) outcomes. Although the efficacy of actually training people to be more creative is debatable (Baer, 2012; Scott, Leritz, & Mumford, 2004), there are nonetheless established techniques and best practices that can be used to foster creativity in the classroom (Beghetto, Kaufman, & Baer, 2014) and workplace (Amabile, Schatzel, Moneta, & Kramer, 2004). In this paper, I will first review the literature that suggests that school and organizational support for creativity may be overestimated or a result of misunderstanding the construct. I will then pose a more pressing issue, which is whether the existing research actually supports schools and businesses investing in creativity. Finally, I will open the floor for suggestions to start this special issue.

Is Creativity Genuinely the Best Path to Success?

It is not enough to argue that creativity is related to academic or workplace achievement; there are many traits and abilities that also have a positive connection to these outcomes. Consider the role of creativity in the classroom (for both students and teachers). A common argument is that it will lead to higher student engagement and, subsequently, higher test scores and grades (Beghetto et al., 2014). This argument has to be made because test scores and grades are the currency of the realm. Yet the actual benefit, when measured, is less impressive. A recent meta-analysis that examined creativity and academic achievement across 120 studies found only a slight connection (r = .22, Gajda, Karwowski, & Beghetto, 2017), which is just a bit larger than the connection that an earlier meta-analysis found between creativity and intelligence (r = .17, Kim, 2005).

The benefits of creativity in the workplace may be similarly overstated. Despite the surge of interest in creativity that appears to be happening, innovative products usually

fail (Heidenreich & Speith, 2013), in part because they encounter consumer resistance (Ram & Sheth, 1989), most notably from older customers (Laukkanen, Sinkkonen, Kivijärvi, & Laukkanen, 2007). It is common for the companies that truly innovate to be overtaken by early adaptors who find ways of making the process cheaper and more efficient (Martin-Rios & Parga-Dans, 2016; Sternberg, Pretz, & Kaufman, 2003).

How does creativity compare to other constructs that might lead to academic and corporate success (with, perhaps, easier paths to improvement and fewer negative associations)? A good place to start is to examine the research on the personality factor of conscientiousness. Conscientiousness is comprised of two facets: Industriousness (the ability to work in disciplined and effective manner) and orderliness (being able to follow rules and be organized; DeYoung, 2015). A meta-analysis that examined student personality as rated by adults found a relationship of r = .43 with academic achievement (Poropat, 2014). Examining self-rated personality is less ideal in children because it takes cognitive development for personal self-ratings of personality to better correspond with other people's observations (Measelle, John, Ablow, Cowan, & Cowan, 2005). Even so, a different meta-analysis using self-rated personality still found a relationship with academic achievement was r = .21 (Poropat, 2009), which is comparable to the role of creativity. Some patterns of individual differences may strength the conscientious-GPA connection. The benefits of conscientious do not stop in the classroom; it is also one of the strongest predictors of workplace success (Brown, Lent, Telander, & Tramayne, 2011; Schmidt & Hunter, 1998).

Creativity vs Conscientious: Improvement

Which is easier to improve, creativity or conscientious? Neither are especially easy. Personality traits are considered to be stable across the lifespan once someone is a young adult (McCrae & Costa, 2008). There are only small changes occurring over decades. That said, conscientiousness tends to slightly improve with age (Wortman, Lucas, & Donnellan, 2012), especially when corresponding life events, such as becoming more involved in one's job, take place (Hudson & Roberts, 2016; Hudson, Roberts, & Lodi-Smith, 2012). In some ways, however, whether personality itself can change is a moot point because *behaviors* can change, from training to tools to pure willpower. Someone who is sufficiently motivated could use calendars, digital organizers, appointment books, to-do checklists, or other aides to change their behavior and reap the same benefits as those who are naturally conscientious.

Many people want to change their personality. Conscientiousness (along with emotional stability) is one of the two factors that people most want to change (Hudson

& Roberts, 2014). Simply having the desire to change is not enough; people who wanted to become more conscientious were less likely to demonstrate conscientious-related behaviors (such as finishing a task on time, checking every detail on a task, or putting away clothes neatly; Church, Katigbak, Reyes, Salanga, Miramontes, & Adams, 2008) compared to those with no such desire (Hudson & Roberts, 2014). However, it is a reasonable hypothesis that people who want to improve their conscientiousness may be lower on the personality factor than people who are satisfied.

It takes more to improve conscientiousness than wanting to change. Hudson and Fraley (2015, 2016) conducted a series of studies to test how an intervention might help people reach their goals. After the initial change plan used did not fully succeed, they refined it into a more extensive and specific intervention in participants envisioned how they could change and then generated specific ways (behavioral, affective, and cognitive) in which they could reach their goals (see Hudson & Fraley, 2015, for more detail). This revised intervention did produce significant increases in both the trait of conscientious ness and conscientious-related behaviors. A follow-up study found that people who were able to change their personality in their desired way showed increased well-being (Hudson & Fraley, 2016).

Interestingly, the personality factor most resistant to change was openness to experience, which has been consistently associated with creativity (Feist, Reiter-Palmon, & Kaufman, 2017). Relatedly, a meta-analysis on 207 studies of personality change via interventions found that openness to experience was the only factor that did not show significant change with interventions (Roberts, Luo, Briley, Chow, Su, & Hill, 2017). Conscientious ness was not the factor most susceptible to improvement (which was emotional stability), but it was shown to be more malleable. Conscientiousness would seem to be more straightforwardly linked to specific, positive academic or workplace outcomes and no harder to train than creativity.

Nurturing creativity is difficult even with the best intentions. For example, rewards in educational settings can stifle student creativity (Hennessey, 2010), particularly if they are not explicitly tied to creative performance (Byron & Khazanchi, 2012). Competition decreases creativity in females (Baer, 1997, 1998). Overly harsh feedback can completely kill someone's desire to be creative (Beghetto, 2013, 2014). Even when people want to be creative, they still need to have clear goals for a final product to translate their desire into actual creativity (Aleksić, Černe, Dysvik, & Škerlavaj, 2016).

In some situations, variables usually associated with higher creativity can actually decrease creative performance (Kaufman, 2016). For example, domain knowledge is

usually considered an essential part of creativity (Kaufman & Baer, 2002, 2006). Yet Ward and colleagues (Ward, 1994; Ward, Dodds, Saunders, & Sifonis, 2000) have found that it can also lead people to gravitate toward standard responses: If asked to name an animal, someone is more likely to offer “horse” or “dog” than “serval” or “shrike.”. Further, if people are asked to think of new ideas, it actually decreases creativity to offer an example beforehand (Ward & Sifonis, 1997).

Similarly, working in teams, particular diverse ones, often results in higher creativity (Tadmor, Satterstrom, Jang, & Polzer, 2012; Yap, Chai, & Lemaire, 2005). Yet when social identity is emphasized, people want to be more like the others in their group. What that can mean is that group members are then more likely to be creative in the same type of way as their group and stick to the established social norms (Adarves-Yorno, Postmes, & Haslam, 2007). Further, people who are part of the group are rated as more creative than non-group members (Adarves-Yorno, Haslam, & Postmes, 2008; S. A. Haslam, Adarves-Yorno, Postmes, & Jans, 2013). If the group tends toward being conservative, people have been shown to select less creative work as being both better and more creative (Adarves-Yorno, Postmes, & S. A. Haslam, 2006). In general, people are more likely to give lower scores to particularly original ideas (Licuanan, Dailey, & Mumford, 2007), opting for safer alternatives.

People are not necessarily better at rating their own creativity when there are no groups involved. Creative metacognition (Kaufman & Beghetto, 2013) is comprised of two different parts. One aspect is knowing when to be creative (and when to hold off), which can help avoid projects that may take up a lot of time but not produce anything (Sternberg & Lubart, 1995). The other aspect is understanding one’s creative strengths and weaknesses, which is more aligned with the broader construct of metacognition. Dunning and Kruger and colleagues have found that smarter people tend to be better at *metacognition* (Dunning, Johnson, Ehrlinger, & Kruger, 2003; Kruger & Dunning, 1999). Most people are less accurate at assessing their own abilities if they are working on tasks that are subjective, complex, or broad (Zell & Krizan, 2014). The research is inconsistent about how well people can identify their creative strengths and weaknesses (e.g., Beghetto, Kaufman, & Baxter, 2011; Kaufman, Beghetto, & Watson, 2016; Karwowski, 2011; Pretz & McCollum, 2014; Priest, 2006).People with higher intelligence have been shown to be better at the evaluation component of creative metacognition (Karwowski, Czerwonka, & Kaufman, in press).

Creativity vs. Conscientiousness: Layperson beliefs

There are many reasons to assume that creativity is a desired and positive attribute. De-

spite potential discussions about malevolent creativity (Cropley, Kaufman, & Cropley, 2008) or creativity's relationship with mental illness (Kaufman, 2014), my goal is not to challenge this notion in this article. Rather, I argue that because many laypeople believe in these negative associations (Cropley, Kaufman, White, & Chiera, 2014; Kaufman, Bromley, & Cole, 2006), creativity and creators are not always received well.

Repeated studies have shown genuine bias against creativity. For example, implicit negative attitudes about creative people are found in the workplace (Mueller, Goncalo, & Kamdar, 2011), in schools (Aljughaiman & Mowrer-Reynolds, 2005; Mullet, Willerson, Lamb, & Kettler, 2016), and in the general population (Mueller, Melwani, & Goncalo, 2012).

Going deeper into the roots of these issues, Eidelman and colleagues have conducted several studies that explore strong preferences for conformity. For example, people tend to prefer the status quo (Eidelman & Crandall, 2012), items that already exist (Eidelman, Crandall, & Pattershall, 2009), and things that are older (Eidelman, Pattershall, & Crandall, 2010). One reason for these beliefs can be found in Zajonc's (2001) "mere exposure" effect, which states that people like things more just by being exposed to them more often.

Further, creativity has potential negative repercussions other than many people having implicit (or occasionally explicit) biases against creative people and products. In the workplace, creative people are more likely than non-creative people to produce poorer quality products and be careless with details (Miron, Erez, & Naveh, 2004); be more focused on their own career than the company's welfare (Madjar, Greenberg, & Chen, 2011); and make their teams be more conflicted and decrease adherence to standards (Miron-Spektor, Erez, & Naveh, 2011). In school, creative students are more likely to be impulsive, disruptive, and disagreeable (A. Cropley, 1992; Karwowski, 2010; Torrance, 1963). People who can use their creativity in their job are more likely to have more demands placed on them from work, thereby leading them to susceptible to have a difficult time juggling work and family responsibilities (Schieman & Young, 2010).

Although there are many negative beliefs about creativity and creators, there is much less evidence of any bias against conscientiousness. A very conscientious person may be considered to be anal (N. Haslam, 2011) or obsessive compulsive (Carter, Guan, Maples, Williamson, & Miller, 2016). In general, however, conscientiousness is considered a positive, desired trait (Kyllonen, Walters, & Kaufman, 2005).

Conscientiousness is but one of many traits or abilities that may be argued to be more closely connected to positive outcomes than creativity. Some are considered (like

creativity and conscientiousness) to be "non-cognitive," such as ethics, emotional intelligence, leadership, or resiliency (e.g., Schmitt, 2012). There is also the recurring argument that *g* (general intelligence), whether measured through intelligence, achievement, or admissions tests, is the best predictor of school and workplace performance (Kuncel, Ones, & Sackett, 2010; Schmidt & Hunter, 1998). These proponents argue that cognitive abilities are much more predictive of success than non-cognitive. It is, therefore, necessary to note that the studies discussed early which showed creativity's importance in academic success also found that more traditional cognitive abilities remained better predictors that accounted for more variance in performance (Freund & Holling, 2008; Grigorenko et al., 2009; Vock et al., 2011). Much of the argument for creativity's importance is that it can provide additional *incremental* validity, as opposed to supplanting established standardized measures based on achievement or cognitive ability (Kaufman, 2015; Pretz & Kaufman, 2017). Yet if there are other constructs that are equally predictive, one of creativity's fallback arguments for its importance is challenged. If creativity is not more of a mechanism to increase or foretell school and work performance than (for example) conscientiousness, then we need to focus on the myriad of additional benefits that creativity can offer. There has already been arguments that we need to expand the positive outcomes and criteria for success (Forgeard & Kaufman, 2016; Kaufman & Agars, 2009). The time has come to mobilize and put forth suggestions for the new creativity agenda. There are many I could begin listing – ones that are already being empirically studied - but I want to make this exercise interactive and take advantage of some of the brightest minds that creativity has to offer. I look forward to reading and synthesizing these ideas in my next paper.

REFERENCES

Adobe (2016). *State of Create*. Retrieved from /http://www.adobe.com/content/dam/acom/en/max/pdfs/AdobeStateofCreate_2016_Report_Final.pdf

Aleksić, D., Černe, M., Dysvik, A., & Škerlavaj, M. (2016). I want to be creative, but … preference for creativity, perceived clear outcome goals, work enjoyment, and creative performance. *European Journal Of Work And Organizational Psychology, 25*, 363-383.

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

Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Kramer, S. J. (2004). Leader behaviors and the work environment for creativity: Perceived leader support. *The Leadership Quarterly*, *15*, 5-32.

Adarves-Yorno, I., Haslam, S. A, & Postmes, T. (2008). And now for something completely different? The impact of group membership on perceptions of creativity. *Social Influence, 3*, 248-266.

Adarves-Yorno, I., Postmes, T., & Haslam, S. A. (2007). Creative innovation or crazy irrelevance? The contribution of group norms and social identity to creative behavior. *Journal of Experimental Social Psychology, 43*, 410-416.

Arndt, J., Greenberg, J., Solomon, S., Pyszczynski, T., & Schimel, J. (1999). Creativity and terror management: The effects of creative activity on guilt and social projection following mortality salience. *Journal of Personality and Social Psychology, 77*, 19-32.

Baer, J. (2012). Domain specificity and the limits of creativity theory. *Journal Of Creative Behavior*, *46*, 16-29.

Beghetto, R. A., Kaufman, J. C., & Baer, J. (2014). *Teaching for creativity in the common core classroom.* New York: Teachers College Press.

Beghetto, R. A., Kaufman, J. C., & Baxter, J. (2011). Answering the unexpected questions: Exploring the relationship between students' creative self-efficacy and teacher ratings of creativity. *Psychology of Aesthetics, Creativity, and the Arts*, *5*, 342-349.

Brown, S. D., Lent, R. W., Telander, K., & Tramayne, S. (2011). Social cognitive career theory, conscientiousness, and work performance: A meta-analytic path analysis. *Journal of Vocational Behavior*, *79*, 81-90.

Byron, K., & Khazanchi, S. (2012). Rewards and creative performance: A meta-analytic test of theoretically derived hypotheses. *Psychological Bulletin*, *138*, 809-830.

Carter, N. T., Guan, L., Maples, J. L., Williamson, R. L., & Miller, J. D. (2016). The downsides of extreme conscientiousness for psychological well-being: The role of obsessive compulsive tendencies. *Journal of Personality*, *84*, 510-522.

Church, A. T., Katigbak, M. S., Reyes, J. S., Salanga, M. C., Miramontes, L. A., & Adams, N. B. (2008). Prediction and cross-situational consistency of daily behavior across cultures: Testing trait and cultural psychology perspectives. *Journal of Research in Personality*, *42*, 1199-1215.

Cropley, A. J. (1992). *More ways than one: Fostering creativity*. Westport, CT: Ablex Publishing.

Cropley, D. H., Kaufman, J. C., & Cropley, A. J. (2008). Malevolent creativity: A functional model of creativity in terrorism and crime. *Creativity Research Journal*, *20*, 105-115.

Cropley, D. H., Kaufman, J. C., White, A.E., & Chiera, B. A. (2014). Layperson perceptions of malevolent creativity: The good, the bad, and the ambiguous. *Psychology of Aesthetics, Creativity, and the Arts, 8,* 400-412.

DeYoung, C. G. (2015). Cybernetic Big Five theory. *Journal of Research in Personality*, *56*, 33-58.

Dunning, D., Johnson, K., Ehrlinger, J., & Kruger, J. (2003). Why people fail to recognize their own incompetence. *Current Directions in Psychological Science, 12,* 83-86.

Eidelman, S. & Crandall, C. S. (2012). Bias in favor of the status quo. *Social and Personality Psychology Compass, 6*, 270-281.

Eidelman, S., Crandall, C.S., & Pattershall, J. (2009). The existence bias. *Journal of Personality and Social Psychology, 97*, 765-775.

Eidelman, S., Pattershall, J., & Crandall, C. S. (2010). Longer is better. *Journal of Experimental Social Psychology*, *46*, 993-998.

Eschleman, K.J., Madsen, J., Alarcon, G. M., & Barelka, A. (2014). Benefiting from creative activity: The positive relationships between creative activity, recovery experiences, and performance-related outcomes*. Journal Occupational and Organizational Psychology, 87*, 579-598.

Feist, G. J., Reiter-Palmon, R., & Kaufman, J. C. (Eds.) (2017). *Cambridge handbook of creativity and personality research*. New York: Cambridge University Press.

Florida, R. (2014). *The rise of the creative class – revisited: Revised and expanded.* New York: Basic Books.

Forgeard, M. J. C., & Kaufman, J. C. (2016). Who cares about imagination, creativity, and innovation, and why? A review. *Psychology of Aesthetics, Creativity, and the Arts, 10,* 250-269.

Freund, P. A., & Holling, H. (2008). Creativity in the classroom: A multilevel analysis investigating the impact of creativity and reasoning ability on GPA. *Creativity Research Journal*, *20*, 309-318.

Gajda, A., Karwowski, M., & Beghetto, R. A. (2017). Creativity and academic achievement: A meta-analysis. *Journal of Educational Psychology*, *109,* 269-299.

Goncalo, J. A., Vincent, L. C., & Krause, V. (2015). The liberating consequences of creative work: How a creative outlet lifts the physical burden of secrecy. *Journal of Experimental Social Psychology, 59,* 32-39.

Grigorenko, E. L., Jarvin, L., Diffley, R., Goodyear, J., Shanahan, E., & Sternberg, R. J. (2009). Are SATS and GPA enough? A theory-based approach to predicting academic success in secondary school. *Journal of Educational Psychology, 101*, 964-981.

Haslam, N. (2011). The return of the anal character. *Review of General Psychology*, *15*, 351-360.

Haslam, S. A., Adarves-Yorno, I., Postmes, T., & Jans, L. (2013). The collective origins of valued originality: A social identity approach to creativity. *Personality and Social Psychology Review, 17*, 384-401.

Heidenreich, S., & Spieth, P. (2013). Why innovations fail - The case of passive and active innovation resistance. *International Journal of Innovation Management, 17*, 1-42.

Hennessey, B.A. (2010). Intrinsic motivation and creativity in the classroom: Have we come full circle? In R. A. Beghetto & J. C. Kaufman (Eds.), *Nurturing creativity in the classroom* (pp. 329-361). New York: Cambridge University Press.

Horn, D., & Salvendy, G. (2009). Measuring consumer perception of product *creativity*: Impact on satisfaction and purchasability. *Human Factors and Ergonomics in Manufacturing, 19,* 223-240.

Hudson, N. W., & Fraley, R. C. (2015). Volitional personality trait change: Can people choose to change their personality traits? *Journal of Personality and Social Psychology*, *109*, 490-507.

Hudson, N. W., & Fraley, R. C. (2016). Changing for the better? Longitudinal associations between volitional personality change and psychological well-being. *Personality and Social Psychology Bulletin, 42,* 603-615.

Hudson, N. W., & Roberts, B. W. (2014). Goals to change personality traits: Concurrent links between personality traits, daily behavior, and goals to change oneself. *Journal of Research in Personality*, *53,* 68-83.

Hudson, N. W., & Roberts, B. W. (2016). Social investment in work reliably predicts change in conscientiousness and agreeableness: A direct replication and extension of Hudson, Roberts, and Lodi-Smith (2012). *Journal of Research in Personality*, *60,* 12-23.

Hudson, N. W., Roberts, B. W., & Lodi-Smith, J. (2012). Personality trait development and social investment in work. *Journal of Research in Personality, 46,* 334-344.

IBM. (2010). IBM 2010 Global CEO Study: Creativity selected as most crucial factor for future success [press release]. Retrieved from https://www-03.ibm.com/press/us/en/pressrelease/31670.wss

Karwowski, M. (2010). Are creative students really welcome in the classroom? Implicit theories of "good" and "creative" student' personality among Polish teachers. *Procedia Social and Behavioural Sciences Journal, 2*, 1233-1237.

Karwowski, M. (2011). It doesn't hurt to ask... But sometimes it hurts to believe. Predictors of Polish students' creative self-efficacy. *Psychology of Aesthetics, Creativity and the Arts, 5*, 154-164.

Kaufman, J. C. (Ed.) (2014). *Creativity and mental illness.* New York: Cambridge University Press.

Karwowski, M., Czerwonka, M., & Kaufman, J. C. (in press). Does intelligence strengthen creative metacognition? *Psychology of Aesthetics, Creativity, and the Arts.*

Kaufman, J. C. (2015). Why creativity isn't in IQ tests, why it matters, and why it won't change anytime soon…. Probably. *Journal of Intelligence 3*, 59-72.

Kaufman, J. C. (2016). *Creativity 101* (2nd Ed). New York: Springer.

Kaufman, J. C., & Agars, M. D. (2009). Being creative with the predictors *and* criteria for success. *American Psychologist, 64,* 280-281.

Kaufman, J. C., & Baer, J. (2002). Could Steven Spielberg manage the Yankees?: Creative thinking in different domains. *Korean Journal of Thinking & Problem Solving, 12*, 5-15.

Kaufman, J. C., & Baer, J. (2006). Intelligent testing with Torrance. *Creativity Research Journal, 18*, 99-102.

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. *Roeper Review, 35,* 155-165.

Kaufman, J. C., Beghetto, R A., & Watson, C. (2016). Creative metacognition and self-ratings of creative performance: A 4-C perspective. *Learning and Individual Differences*, *51,* 394-399.

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.

Kim, K. H. (2006). Can only intelligent people be creative? A meta-analysis. *Journal of Secondary Gifted Education, 16*, 57-66.

Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology, 77,* 1121-1134.

Kuncel, N. R., Ones, D. S., & Sackett, P. R. (2010). Individual differences as predictors of work, educational, and broad life outcomes. *Personality and Individual Differences*, *49*, 331-336

Kyllonen, P. C., Walters, A. M., & Kaufman, J. C. (2005). Noncognitive constructs and their assessment in graduate education. *Educational Assessment, 10,* 153-184.

Laukkanen, T., Sinkkonen, S., Kivijärvi, M. & Laukkanen, P. (2007). Innovation resistance among mature consumers. *Journal of Consumer Marketing, 24*, 419-427.

Lee, K., Rho, S., Kim, S., & Jun, G. J. (2007). Creativity-innovation cycle for organizational exploration and exploitation: Lessons from Neowiz - A Korean Internet company. *Long Range Planning: International Journal of Strategic Management*, *40,* 505-523.

Lichtenberg, J., Woock, C., & Wright, M. (2008). *Ready to innovate: Are educators and executives aligned on the creative readiness of the U.S.* (Conference Board Research Report No. R-1424-08-RR). New York: The Conference Board.

Licuanan, B. F., Dailey, L. R., & Mumford, M. D. (2007). Idea evaluation: Error in evaluating highly original ideas. *Journal of Creative Behavior, 41*, 1-27.

Long, H., Plucker, J. A., Yu, Q., Ding, Y., & Kaufman, J. C. (2014). Research productivity and performance of journals in creativity sciences: A bibliometric analysis. *Creativity Research Journal, 26,* 353-360.

McCrae, R. R., & Costa, P. T. (2008). The five-factor theory of personality. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of Personality: Theory and Research* (3rd ed., pp. 150–181). New York: Guilford Press.

Madjar, N., Greenberg, E., & Chen, Z. (2011). Factors for radical creativity, incremental creativity, and routine, noncreative performance. *Journal of Applied Psychology*, *96*, 730-743.

Martin-Rios, C., & Parga-Dans, E. (2016). The early bird gets the worm, but the second mouse gets the cheese: Non-technological innovation in creative industries. *Creativity and Innovation Management*, *25*, 6-17

Measelle, J. R., John, O. P., Ablow, J. C., Cowan, P. A., & Cowan, C. P. (2005). Can children provide coherent, stable, and valid self-reports on the Big Five dimensions? A longitudinal study from ages 5 to 7. *Journal of Personality and Social Psychology*, *89*, 90-106

Metzl, E. S. (2009). The role of creative thinking in resilience after hurricane Katrina. *Psychology of Aesthetics, Creativity, and the Arts, 3*, 112-123.

Miron, E., Erez, M., & Naveh, E. (2004). Do personal characteristics and cultural values that promote innovation, quality, and efficiency compete or complement each other? *Journal of Organizational Behavior*, *25*, 175-199.

Miron-Spektor, E., Erez, M., & Naveh, E. (2011). The effect of conformist and attentive-to-detail members on team innovation: Reconciling the innovation paradox. *Academy of Management Journal*, *54*, 740-760.

Mueller, J. S., Goncalo, J. A., & Kamdar, D. (2011). Recognizing creative leadership: Can creative idea expression negatively relate to perceptions of leadership potential? *Journal of Experimental Social Psychology*, *47*, 494-498.

Mueller, J. S., Melwani, S., & Goncalo, J. A. (2012). The bias against creativity: Why people desire but reject creative ideas. *Psychological Science*, *23*, 13-17.

Mullet, D. R., Willerson, A., Lamb, K. N., & Kettler, T. (2016). Examining teacher perceptions of creativity: A systematic review of the literature. *Thinking Skills and Creativity*, *21,* 9-30.

Nicol, J. J., & Long, B. C. (1996). Creativity and perceived stress of female music therapists and hobbyists. *Creativity Research Journal*, *9*, 1-10.

Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Bulletin, 135*, 322–338.

Poropat, A. E. (2014). A meta-analysis of adult-rated child personality and academic performance in primary education. *British Journal of Educational Psychology, 84*, 239-252.

Pretz, J. E., & Kaufman, J. C. (2017). Do traditional admissions criteria reflect applicant creativity? *Journal of Creative Behavior, 51,* 240-251.

Pretz, J. E., & McCollum, V. A. (2014). Self-perceptions of creativity do not always reflect actual creative performance. *Psychology of Aesthetics, Creativity, and the Arts*, *8*, 227-236

Priest, T. (2006). Self-evaluation, creativity, and musical achievement. *Psychology of Music, 34,* 47-61.

Ram, S., & Sheth, J. N. (1989). Consumer resistance to innovations: the marketing problem and its solutions. *Journal of Consumer Marketing*, *6*, 5-14.

Roberts, B. W., Luo, J., Briley, D. A., Chow, P. I., Su, R., & Hill, P. L. (2017). A systematic review of personality trait change through intervention. *Psychological Bulletin*,*143*, 117-141.

Schieman, S., & Young, M. (2010). The demands of creative work: Implications for stress in the work-family interface. *Social Science Research*, *39*, 246-259.

Schmidt, F. L., & Hunter, J. E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin*, *124*, 262-274.

Schmitt, N. (2012). Development of rationale and measures of noncognitive college student potential. *Educational Psychologist*, *47*, 18-29.

Scott, G., Leritz, L. E., & Mumford, M. D. (2004). The effectiveness of creativity training: A quantitative review. *Creativity Research Journal*, *16*, 361-388.

Seibert, S. E., Kraimer, M. L., & Crant, J. M. (2001). What do proactive people do? A longitudinal model linking proactive personality and career success. *Personnel Psychology, 54,* 845-874.

Sternberg, R. J., & Lubart, T. I. (1995). *Defying the crowd.* New York: Free Press.

Sternberg, R. J., Pretz, J. E., & Kaufman, J. C. (2003). Types of innovations. In L. Shavinina (Ed.), *The international handbook of innovation* (pp. 158-169). Mahwah, NJ: Lawrence Erlbaum.

Tadmor, C. T., Satterstrom, P., Jang, S., & Polzer, J. T. (2012). Beyond individual creativity: The superadditive benefits of multicultural experience for collective creativity in culturally diverse teams. *Journal of Cross-Cultural Psychology*, *43*, 384-392.

Torrance, E. P. (1963). *Education and the creative potential.* Minneapolis, MN: University of Minnesota Press.

Vock, M., Preckel, F., & Holling, H. (2011). Mental abilities and school achievement: A test of a mediation hypothesis. *Intelligence*, *39*, 357-369.

Ward, T. B. (1994). Structured imagination: The role of category structure in exemplar generation. *Cognitive Psychology*, *27*, 1-40.

Ward, T. B., Dodds, R. A., Saunders, K. N., & Sifonis, C. M. (2000). Attribute centrality and imaginative thought. *Memory & Cognition, 28,* 1387–1397.

Ward, T. B., & Sifonis, C. M. (1997). Task demands and generative thinking: What changes and what remains the same? *Journal of Creative Behavior*, *31*, 245-259.

Wortman, J., Lucas, R. E., & Donnellan, M. B. (2012). Stability and change in the Big Five personality domains: Evidence from a longitudinal study of Australians. *Psychology and Aging*, *27*, 867-874.

Yap, C., Chai, K., & Lemaire, P. (2005). An empirical study on functional diversity and innovation in SMEs. *Creativity and Innovation Management, 14,* 176–190.

Zajonc, R. B. (2001). Mere exposure: A gateway to the subliminal. *Current directions in psychological science*, *10*, 224-228.

Zell, E., & Krizan, Z. (2014). Do people have insight into their abilities? A metasynthesis. *Perspectives on Psychological Science, 9*, 111–125.

Corresponding author at: James C. Kaufman, University of Connecticut, Neag School of Education, 2131 Hillside Road, Unit 3007, Storrs, CT 06269-3007
E-mail: james.kaufman@uconn.edu