

# Beyond Big and Little: The Four C Model of Creativity

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Most investigations of creativity tend to take one of two directions: everyday creativity (also called “little-c”), which can be found in nearly all people, and eminent creativity (also called “Big-C”), which is reserved for the great. In this paper, the authors propose a Four C model of creativity that expands this dichotomy. Specifically, the authors add the idea of “mini-c,” creativity inherent in the learning process, and Pro-c, the developmental and effortful progression beyond little-c that represents professional-level expertise in any creative area. The authors include different transitions and gradations of these four dimensions of creativity, and then discuss advantages and examples of the Four C Model.

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Two separate events helped bring creativity to the forefront of psychology and the United States. One event took place at the 1950 meeting of the American Psychological Association, when Guilford (1950) used his presidential address to argue that the area of creativity was an understudied yet essential field. Creativity research, Guilford said, comprised only .2% of all psychological research; he challenged the field to increase this number. Although the impact of this talk can be easily overstated, Guilford’s call to arms resonated with psychologists around the world (see, e.g., essays from most countries in *The International Handbook on Creativity*, J. Kaufman & Sternberg, 2006). A few years later, Russia launched the Sputnik satellite and triggered a great talent hunt in the United States that emphasized scientific ability, giftedness, and creativity (S. Kaufman & Sternberg, 2007).

In the decades that have followed, creativity research has continued at a solid pace. A quick PsycINFO search reveals that there have been more than 10,000 papers written about creativity in the last 10 years, across such diverse areas of psychology as cognitive, developmental, clinical, social, and industrial/organizational—and across such other fields as economics, education, and the arts (J. Kaufman & Sternberg, 2007). Creativity is seen as a desired quality for admissions to graduate school (Enright & Gitomer, 1989) and National Science Foundation grant applications (Lane, 1997). Moreover, creativity has been described as the most important economic resource of the 21st century (Florida, 2002). Yet the same broad spectrum that brings researchers together to study creativity across multiple disciplines has had some potentially negative effects. The exact question of *what is creativity* is often

ignored or answered in too many different ways. For example, Plucker, Beghetto, and Dow (2004) selected 90 different articles with the word “creativity” in the title (60 from the two top creativity journals, and 30 from peer-reviewed business, education, and psychology journals). Of these papers, only 38% explicitly defined what creativity was. Further, basic questions about creativity’s nature remain under debate. Is creativity a key part of positive psychology, or is it related to mental illness and other negative health outcomes? How does creativity relate to other, related constructs, such as personality and motivation? Can everyone be creative?

In this paper, we offer a preliminary, conceptual model to help frame these questions and more clearly articulate the nature of creativity. Currently, most investigations of creativity tend to take one of two directions. The first direction is a focus on eminent creativity. The goals are often to learn about creative genius and discuss which creative works may last forever (e.g., Simonton, 1994). Creative greatness may be studied by analyzing the lives of well-known creators, or interviewing renowned individuals, or by studying people who excel at high levels on creativity measures. These types of studies and theories are typically referred to as studying *Big-C* creativity. The other predominant thrust of work in the field looks more at everyday creativity (Richards, 1990), such as those creative activities in which the average person may participate each day (e.g., creatively arranging family photos in a scrapbook; combining left over Italian and Chinese food to make a tasty, new fusion of the two cuisines; or coming up with a creative solution to a complex scheduling problem at work). Most studies that use college students or children as participants focus on everyday creativity. The theories and studies along this line of thinking is usually said to focus on *little-c* creativity.

Dichotomies of this sort are found in many other fields. Historians, for example, sometimes concentrate on eminent historical figures, such as Taylor Branch (1988) did in his Pulitzer-Prize winning civil rights history, *Parting the Waters*, which is largely focused on Martin Luther King, Jr. Other writers, such as John Dittmer (1994) in *Local People*, which won the Bancroft Prize in American History, examine the same historical phenomena (as those taking the eminent individual approach) by focusing on important, but less well known, everyday people involved in grass-roots movements.

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On one hand, Big-C/little-c distinctions are helpful for understanding and appreciating the remarkable and lasting contributions made by mavericks in some domain while also recognizing the more incremental (but still important) contributions made by everyday people. It is certainly preferable to have this distinction (as opposed to grouping all studies of creativity together without acknowledging these differences). Still, even with Big-little distinctions, the more nuanced levels of creativity remain. For instance, elsewhere we (Beghetto & Kaufman, 2007) have argued that the Big-C/little-c distinction used in creativity research has impeded studies aimed at examining the more intrapersonal (and developmental) nature of creativity. In an effort to address this limitation, we developed a new category of creativity called *mini-c creativity*.

The mini-c construct (discussed in more detail later) highlights the personal (Runco, 1996; Vygotsky, 1967/2004) and developmental (Cohen, 1989) aspects of creativity. The inclusion of mini-c creativity in our model is aimed at addressing the problem of lumping noneminent forms of creativity into the little-c category. For example, the traditional Big-C/little-c dichotomy would classify into little-c both the eighth grade art student (who learned a new and personally meaningful use for a particular shadowing technique, albeit one that may already be well-known in the art world) with the more accomplished amateur artist (who has won a local competition for her unique and adaptive shadowing techniques that build on traditional uses of the technique). The construct of mini-c is useful for recognizing and distinguishing between the genesis of creative expression (mini-c) and the more readily recognizable expressions of creativity (little-c).

Similarly, as will be discussed later, the gap between Big-C and little-c creativity often is obscured in conceptions of creativity that rely on the Big-C/little-c distinction. Consequently, highly accomplished (but not yet eminent) forms of creative expression are (mis)categorized into the little-c (or even Big-C) category. For instance, the accomplished jazz musician who makes a living playing jazz (but clearly is no John Coltrane) might be put into same category as the high school jazz student who plays (passable) jazz in school concerts and the occasional birthday party, wedding, or family gathering. We believe that a further distinction needs to be made to account for what we call professional creativity (or Pro-c). A model of creativity is needed that takes into consideration the divisions, gradations, and gaps between Big and little-c.

Our aim in this paper is to propose a model of creativity that highlights important distinctions among the various levels of creative magnitude (from mini-c to Big-C) and, in turn, provides researchers (from various disciplinary backgrounds) with a way to situate their research in a framework that more clearly defines the level of creative magnitude (and creativity development) as well as creates opportunities for new directions in creativity research. Specifically, we will outline the Four C's of Creativity, in which we add to the idea of Big-C and little-c by reviewing a proposed construct (mini-c) and introducing a new type of c (Pro-c). In presenting this model, we will articulate four ways that creativity has and should be conceptualized. Finally, we will discuss how the Four C's of Creativity model may clarify the reasons for studying and measuring creativity.

## Eminent Accomplishments: Big-C Approaches

Big-C creativity consists of clear-cut, eminent creative contributions. Simonton's works on creative genius (e.g., 1994, 2004) are an example of studying Big-C creativity. Typical creators who might be studied are eminent classical and opera composers whose works have lasted centuries (e.g., Simonton, 1977, 1998). A qualification for study might be the winning of a prestigious award or being included in an encyclopedia. Examples of Big-C creativity might be winners of the Pulitzer Prize in fiction (such as Robert Olen Butler, Michael Chabon, Oscar Hijuelos, Toni Morrison, and Anne Tyler) or people who have entries in the Encyclopedia Britannica longer than 100 sentences (such as Winston Churchill, Albert Einstein, Sigmund Freud, Franklin Roosevelt, Leo Tolstoy, and Queen Victoria).

Many theories have focused on the concepts of Big-C, such as Csikszentmihalyi's (1999) Systems Model of Creativity. Creativity is presented as an interaction between the domain, the field, and the person. A domain could be as broad as music; it could be as specific as writing showtunes. The field is defined as the "gatekeepers," such as teachers, editors, and critics. The third component is the person—the one who creates an idea or theory or piece of art that the field accepts and the domain incorporates.

There are many other theories, ideas, and studies revolving around Big-C. One example is Gardner's (1993) concept of the creator's Faustian bargain with the devil, for example, in which a creator is willing to sacrifice everything in their life for the use of their creative gifts, such as Einstein's isolation, Freud's ascetic existence, or Stravinsky's combativeness. Another method is Gruber's case studies of great individuals (i.e., Gruber's 1981 classic study of Charles Darwin), in which he takes the point of view of the Big-C individual and shows how the creator evolved into a great creative thinker.

Another example would be Simonton's extensive research on the relationship between age and achievement (see Simonton, 1997, for a review). His work suggests that creative output at the Big-C level begins in one's 20's, ascends to an optimum at some point near age 40, and then gradually approaches zero output. A breakdown of the arts shows the same form of the curve, but with a much sharper drop-off rate (Simonton, 1994). Simonton also looked at the first, best, and last contributions of scientists from a variety of scientific disciplines (1991a). Big-C Scientists tend to make their first contribution to the field in their 30's, and made their best contribution in their 40's. The age of initial contribution for science may differ from the arts due to the age when creators start building their expertise base. Artists may be more likely to start when they are younger than scientists, which would have an effect on the age in which the first contribution to a field is made (Simonton, 1991b).

## Everyday Innovation: Little-c Approaches

The other predominant approach to creativity is more focused on everyday activities, such as those creative actions in which the nonexpert may participate each day (e.g., Richards, Kinney, Benet, & Merzel, 1988). The theories and studies along this line of thinking usually are said to focus on little-c. Areas of research that focus on little-c creativity often are aimed at illustrating how

creative potential is widely distributed (see Runco & Richards, 1998; Kaufman & Baer, 2006; Sternberg, Grigorenko, & Singer, 2004, for reviews). Some examples of this type of research include investigations of layperson perceptions of creativity. Layperson theories of creativity tend to de-emphasize analytical abilities, which are usually associated more with IQ tests, and emphasize such characteristics as unconventionality, inquisitiveness, imagination, and freedom (Sternberg, 1985). Eastern conceptions, much more than Westerners, value the characteristic of “goodness,” including “moral goodness,” “contribution to the society,” as well as the “connections between old and new knowledge” (Niu & Sternberg, 2002; Rudowicz & Yue, 2000). According to standard Chinese traditions, a great person must not only satisfy his or her own needs as a human being but must also be devoted to other people and the interests of the society as a whole (Niu & Sternberg, 2006).

There are also several creativity theories that seem grounded in little-c, even if they do not discuss it in these terms. One example is Amabile’s (1996) componential model of creativity, in which she argued that three variables were needed for creativity to occur: domain-relevant skills, creativity-relevant skills, and task motivation. Again, although her model would certainly apply to Big-C creativity, it seems more aimed at everyday, little-c creativity. Domain-relevant skills include knowledge, technical skills, and specialized talent. If you’re going to be a creative nuclear scientist, you’d better know the difference between fission and fusion. Creativity-relevant skills are personal factors that are associated with creativity. One example is tolerance for ambiguity—can you handle not knowing how a project might turn out, or not knowing your plans for a weekend? Other creativity-relevant skills include self-discipline and being willing to take risks. Amabile (1996) argues that those who are driven more by enjoyment and passion tend to be more creative than those motivated by money, praise, or grades.

Finally, consider the definition of creativity proposed by Plucker et al. (2004): “Creativity is the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context” (p. 90). At the Big-C level, the twin components of novel and useful are automatically assumed to be present. An analysis of creative writing that studies Allen Ginsberg, Pablo Neruda, Gertrude Stein, Langston Hughes, Vaclav Havel, and Maya Angelou does not need to begin by asserting that their work was new or useful. Rather, the larger question rests on how these creators have impacted the field of literature and influenced generations of young writers.

The standard definition is most appropriate for little-c creativity. If a friend shared a painting with you, he or she would not expect you to begin your critique by comparing it to Van Gogh or Monet. Rather, you would be expected to explain whether you found it to be unique and aesthetically pleasing (with in the context of what you know about that particular style of painting and your friend’s current level of artistic accomplishment).

To summarize, the little-c category has been useful for addressing common misconceptions about creativity (Plucker et al., 2004). For instance, too much of a focus on Big-C leads to the ideas that only certain people can be creative, the only creativity that matters is that of the Big-C kind, or that creativity involves negative forms of deviance (e.g., drug use, mental illness). Moreover, the category

of little-c helps underscore the important (and, at times, essential) role that creativity plays in everyday life (Richards, 2007) and points to the importance of identifying and nurturing creativity in everyday settings such as schools and classrooms (Beghetto & Plucker, 2006), the workplace (Agars, Baer, & Kaufman, 2005; Agars, Kaufman, & Locke, 2008; Bakker, Boersma, & Oreel, 2006), and the home and social settings (Baer & Kaufman, 2005; Cropley, 2006).

### Transformative Learning: mini-c Creativity

Although recent conceptual and empirical work on little-c creativity has focused on expanding the awareness and acceptance of everyday conceptions of creativity, many ambiguities remain. As we have discussed, people who are very creative but not at the Big-C level are considered to be at the little-c level. People who score high on the Torrance tests might also be considered high on little-c, just as those people who produce works judged as more creative than their peer groups. Yet where does that leave the creative insights and interpretations involved in the learning?

Unfortunately, the creative insights experienced by students as they learn a new concept or make a new metaphor is overlooked in the world of little-c. This is why we proposed a new category, a “little-c” for the little-c category. This category, which we called mini-c (Beghetto & Kaufman, 2007), was designed to encompass the creativity inherent in the learning process.

Mini-c is defined as the *novel and personally meaningful interpretation of experiences, actions, and events* (Beghetto & Kaufman, 2007). This concept follows Runco’s (1996, 2004) description of “personal creativity;” it is also similar to Niu and Sternberg’s (2006) notion of “individual creativity,” as well as developmental conceptions of creativity (Beghetto & Plucker, 2006; Cohen, 1989; Sawyer et al., 2003; Vygotsky, 1967/2004). Central to the definition of mini-c creativity is the dynamic, interpretive process of constructing personal knowledge and understanding within a particular sociocultural context.

This view of creativity is in alignment with the Vygotskian conception of cognitive and creative development, which posits that all individuals have the creative potential that starts with an “internalization or appropriation of cultural tools and social interaction. . . not just copying but rather a transformation or reorganization of incoming information and mental structures based on the individual’s characteristics and existing knowledge” (Moran & John-Steiner, 2003, p. 63).

The need for the mini-c category becomes clear when we consider the standards used to judge the creative insights of elementary or high school students. Most teachers are aware that none of their students likely are in the Big-C category—how many students are genuine George Gershwin or Marie Curies? Yet attempting to use the little-c category to classify students’ creative insights can also be too restrictive—resulting in such insights being dismissed, discouraged, and overlooked (as opposed to recognized and nurtured). For instance, a fourth-grade student learning about the planets may have unique and personally meaningful insights as to why Pluto should or should not be considered a planet. If the little-c category is the only alternative to Big-C, this student’s creative insights might be lumped in with those of an astronomy graduate student, or even a professional astronomer who is discussing the topic during a segment on the *Discovery*



*Channel*. In this situation, the fourth-grade student is held, even implicitly, to unfair standards. Even when compared among peers, the creative insights of students who currently lack the experience or knowledge necessary to fully express their ideas, may be overlooked in favor of the few students who can more effectively communicate their ideas. Although effectively communicating one's ideas is an important aspect of creative development (Sternberg & Lubart, 1996), judging creative potential by this criterion, at too early a stage, unnecessarily limits who is considered creative. Consequently, the creative potential of the many can get overshadowed by the creative accomplishments of the few (see also Runco, 2004).

Including the category of mini-c in our model of creativity helps protect against the neglect and loss of students' creative potential by highlighting the importance of recognizing the creativity inherent in students' unique and personally meaningful insights and interpretations as they learn new subject matter. Moreover, mini-c stresses that mental constructions that have not (yet) been expressed in a tangible way can still be considered highly creative. Indeed, as Vygotsky (1967/2004) noted nearly half a century ago, "any human act that gives rise to something new is referred to as a creative act, regardless of whether what is created is a physical object or some mental or emotional construct that lives within the person who created it and is known only to him" (pp. 7, emphasis added). Thus, the category of mini-c creativity helps to broaden current conceptions of creativity by recognizing that intrapersonal insights and interpretations, which often live only within the person who created them, are still considered creative acts.

Of course, this does not mean that mini-c creativity is never expressed. In fact, all one has to do is spend a bit of time observing the creative insights expressed by young children in their daily activities of learning and play. For instance, one of our colleagues related an instance in which her then 4-year-old niece told her that she wanted to be a "mushroom princess" when she grew up. As our colleague explained, not only is this somewhat adorable, it also is an example of mini-c creativity (ever heard of a mushroom princess before?). Our colleague's niece had the mini-c insight of combining two things she valued: mushrooms (probably because her mother is a mycologist who studies mushrooms) and princesses. Such everyday expressions of creativity often are overlooked (or at least underplayed) in scholarly treatments of creativity. By acknowledging these expressions as creative (at the mini-c level), we feel that researchers will be in a better position to understanding the genesis and development of creativity.

In sum, including mini-c in conceptions of creativity helps bring a level of specificity necessary to ensure that the creative potential of children is nurtured (rather than overlooked). Indeed, traditional little-c conceptions are not only too general but place too great an emphasis on creative expression (rather than creative interpretation and ideation). As such, mini-c highlights the intrapersonal, and more process focused aspects of creativity. Moreover, these "beginner's mind" aspects of creativity (e.g., openness to new experiences, active observation, and willingness to be surprised and explore the unknown) seem to be characteristic of all creators (Richards, 2007). As such, mini-c creativity is not just for kids. Rather, it represents the initial, creative interpretations that all creators have and which later may manifest into recognizable (and in some instances, historically celebrated) creations.

### Professional Expertise: Pro-c Creativity

In the previous section we discussed how the inclusion of mini-c in the traditional little-c and Big-C dichotomy helps to resolve the issue of little-c being too general a concept to account for the genesis and development of creativity. Still, the issue remains that there is not an appropriate category for individuals who are professional creators, but have not reached eminent status. For example, although the little-c category is useful for the everyday creativity of the home cook who can creatively combine ingredients to develop unique and tasty meals and the Big-C category is appropriate for chefs who have revolutionized the profession (e.g., James Beard, Marie-Antoine Carême, Ruth Graves Wakefield), what about the professional chef who makes a living developing creative entrées (clearly surpassing the creativity of the innovative home cook) but has not yet attained (or may never attain) Big-C status?

As we have already discussed, Big-C creativity often requires a degree of time. It may take decades to truly ascertain the actual impact. Creativity that seems revolutionary may turn out to simply be a footnote to history. Moreover, geniuses are rarely lauded as geniuses in their own time, and the vagaries of fame and fortune may result in a supposed Big-C creator being long forgotten after his death. Indeed, most theoretical conceptions of Big-C nearly require a posthumous evaluation. As a result, the concept of Big-C is less helpful in real-world, practical situations.

One exemplifier can be found in Csikszentmihalyi's Systems Model (1999), in which, as discussed, the domain, field, and person work interactively. A creator may be hailed as a creative genius during his or her time. But if the gatekeepers who comprise the field—the professors, the editors, the critics, the historians—decide after 100 years that the creator's work was not at the level of genius, and the domain has long forgotten the creator's work, then we can no longer treat such a creator as Big-C.

In fact, history is replete with now-obscure artists, inventors, scientists, and movements that were once seen as the future of a field. Consider Jean-Louis-Ernest Meissonier, the French painter whose work was presented to Napoleon III and displayed in prominent exhibitions. Founder of the Salon style of painting, with its great attention to detail, he represented an alternate approach to the work of such impressionists as Manet (King, 2006). Meissonier's work is still known today (indeed, a quick Google search turns up 191,000 hits), yet Manet has become legendary (in comparison, Manet's name gets nearly 5 million hits). Examples of once prominent but later obscure creations abound across disciplines—consider the "science" of phrenology, "hot pants" from designer Mary Quant, and the early Oscar winner *Cavalcade* (which won Best Picture and two other Oscars, and is currently unavailable on DVD). As Smith (in press) wrote, "Absent history, it is difficult to differentiate a freight train from a pendulum." Despite our best guesses about what will be considered eminently creative across time, it is often hard to distinguish fashions and fads from permanent contributions.

The flipside to the forgotten innovators, of course, are the unappreciated geniuses, people like Franz Kafka, Nicolas Copernicus, and Emily Dickinson, whose creativity was not truly understood or appreciated until after their death. It is interesting, however, to note that most posthumous evaluations are comparable to the ones received during one's lifetime; Simonton (1998) studied

496 operas and compared how they were initially received versus how often they are performed today. What he found was that, in general, operas that opened to good reviews and solid runs are the operas that are most commonly performed today.

Regardless, the need for posthumous evaluations and historical contexts creates a great problem in research: It is nearly impossible to conduct a study of living people in Big-C. There are certainly people who would seem to qualify (Bob Dylan, Bill Gates, Oprah Winfrey, Steven Spielberg, Stephen Hawking, Margret Atwood), but it would still be a guess. The element of posterity in most conceptions of Big-C is too strong. A theatergoer in the 1930s, for example, would have been able to see a variety of Pulitzer Prize-winning plays, such as *You Can't Take it With You*, *Men in White*, *Our Town*, and *Alison's House*. The first and third of these have become standards, performed more than 70 years hence by school and community theaters across the country. The second and fourth have been mostly forgotten by history. Yet by the day's standard, they were all considered outstanding. We simply cannot be certain which works are "merely" of the day or are for all time.

It is these types of scenarios that have led us to therefore propose an additional category, which we call Pro-c. Pro-c represents the developmental and effortful progression beyond little-c (but that has not yet attained Big-C status). Anyone who attains professional-level expertise in any creative area is likely to have attained Pro-c status. Not all working professionals in creative fields will necessarily reach Pro-c (a professional actor, e.g., may make a good living on soap operas but may not necessarily be Pro-c level creative in his or her craft). Similarly, some people may reach Pro-c level without being able to necessarily quit day jobs; some areas of creative expression may not provide enough monetary sustenance to allow financial freedom from other responsibilities. Yet many "amateur" artists are being creative at the Pro-c level, even if it is not their primary means of support.

The concept of Pro-c is consistent with the expertise acquisition approach of creativity (Ericsson, 1996; Ericsson, Roring, & Nandagopal, 2007). This approach suggests that prominent creators require 10 years of preparation in a domain of expertise to reach world-class expert-level status. Studies by Bloom (1985) and Hayes (1989) indicated that a decade of intensive preparation is necessary to become an international performer in a broader range of domains including chess, sports, and the arts and sciences. Gardner's (1993) analysis of seven eminent creators led him to argue that the 10 years are not necessarily spent simply learning and following standard protocol, but rather actively experimenting and exploring. There is also evidence that it may take even longer than 10 years of active acquisition. For example, Kaufman and Kaufman (2007) analyzed contemporary fiction writers, and found that there was a further time lag (also approximately 10 years) between an author's first publication and a peak publication. This finding is consistent with Simonton's (2000) work with classical composers, which suggests that although it does take about 10 years to learn the mechanics of a field, it may take further time to reach a level of eminence depending on the domain. Some domains that focus more on consistent strong performance (such as chess, sports, and medicine) may only need 10 years, whereas domains that require a variety of styles and ranges may take longer (Martindale, 1990).

The level that takes (at least) 10 years to reach is not the level of Big-C. This level, which requires (usually formal) training and

some specific achievement (such as a published article or performed play or exhibited painting), can be reached by hundreds and hundreds of people in a given domain. You can spend hours in PsycInfo reading perfectly good and important articles written by psychologists who would not come close to reaching Big-C creativity. The Big-C/little-c not only shortchanges burgeoning creators; it also fails to truly acknowledge a solid, professional creative contribution. In much the same way that little-c standards are too demanding for mini-c level creators, so too are they not demanding enough for Pro-c contributions. Consider Marcus, a (fictional) writer who has published four novels that have been reasonably well-received; perhaps one novel was given a regional prize. If we stick to little-c versus Big-C distinctions, where do we place Marcus? Sticking Marcus into the little-c category diminishes everything he has earned. Marcus is placed in a category next to novices taking a creative-writing class and someone who may write stories for fun but has never tried to publish them. Yet placing Marcus in the Big-C category is premature. Whether Marcus's work will be remembered, read, and enjoyed years after his death is beyond his control. Marcus has attained a level of creative acumen in a professional field, and should be compared with similar-stage writers. Comparing him with Hemingway, Poe, and Twain does him no favors; neither does placing him with those who have yet to prove themselves. The Pro-c category offers accomplished creative individuals their own category.

An example of an existing theory that would seem to fit into the Pro-c category is the Propulsion Theory of Creative Contributions (Sternberg, Kaufman, & Pretz, 2002), which focuses on how a creative act can change an entire field. The first four contributions all stay within the framework of an existing paradigm. Perhaps the most basic type of contribution that someone can make is replication. Replication tries to keep things status quo—to reproduce past work. An example might be a remake of an older movie, such as the *Incredible Hulk* movie, which tells the same story of Ang Lee's *Hulk* (not to mention the multiple TV shows and comic books). The second type of contribution, redefinition, takes a new look at the domain. A redefinitive contribution does not necessarily try to push forward, but rather tries to present a different perspective (e.g., Andy Warhol presenting a painting of a soup can as "art"). A third contribution, and perhaps the type of contribution that achieves the most immediate success, is called forward incrementation. This type of contribution pushes forward the domain just a little. Maybe the creator makes a slight change in what already exists. These additions usually are not groundbreaking—it takes the domain in the same direction it was heading (e.g., genre novelists who add a new component, such as Kathy Reichs making her heroine be a forensic anthropologist instead of the usual detective or lawyer). The final contribution that stays within the existing definitions of a domain is the advance forward incrementation. This contribution pushes the domain ahead two steps instead of one—and the creator often suffers for it. This type of creative product includes people who were a little before their time (e.g., many Stephen Sondheim musicals, which are often only recognized as being brilliant many years after their original productions).

The final four types of creative contributions represent attempts to reject and replace the current paradigm. Redirection represents an attempt to redirect the domain to head in a new direction (e.g., when Mattel began marketing toys directly to children, instead of

their parents). If most of these contribution types represent “forward” thinking, Reconstruction/Redirection looks backward. This contribution is an attempt to move the field back to where it once was (a reconstruction of the past) so that it may move forward from this point—in a different direction (e.g., some conservative politicians who want to move forward in politics without the foreign and domestic policies established in the last several decades). Perhaps the most radical of all of the creative contributions is reinitiation. In reinitiation, the creator tries to move the field to a new (as-yet-unreached) starting point and then progress from there (e.g., Lavoisier inventing a radical, new type of chemistry). Finally, the last contribution is integration, in which two diverse domains are merged to create a new idea (e.g., George Lucas combining samurai movies and science fiction to create *Star Wars*).

### The Four C Model

We see the Four C Model as representing a developmental trajectory of creativity in a person’s life. We are not suggesting that the model represents a “lock-step” developmental progression in which Big-C creators necessarily pass through each category (or “stage”) on their journey to becoming an eminent creator. Indeed, there are numerous examples of Big-C creators who, after developing the necessary domain relevant skills, spent very little time or even skipped the Pro-c level of creative accomplishment (e.g., Einstein was not a professional physicist, but rather working in the Swiss Patent Office, when he made some of his most profound, Big-C contributions to physics). Instead, the model offers a framework for conceptualizing and classifying various levels of creative expression and points to potential paths of creative maturation. For instance, early in life, a typical creator might be beginning to play with his or her creativity and exploring *mini-c* as he or she discovers new things. Although we do not see any specific age restrictions, most people will first experience *mini-c* early in life. *mini-c* can be encouraged by teachers, parents, and mentors to help creativity grow. There are several discussions of the best way to foster a creativity-nurturing environment. Harrington, Block, and Block (1987), for example, show that rearing-practices based on Carl Rogers’ work (such as encouraging curiosity and exploration, letting children make decisions, and respecting children’s opinions) lead to increased later creative potential. A person can continue to get *mini-c* inspirations and ideas across his or her lifetime as different domains and possible areas for creativity are explored.

After repeated attempts and encouragements, the creator might then reach the realm of *little-c*. Some people may happily remain at the *little-c* level for their entire lives; others may advance in some areas and remain at the *little-c* in other areas (e.g., an accomplished chef who has advanced to the Pro-c level of cooking may enjoy a *little-c* level of writing poetry or landscaping his garden). As part of this process of enjoying creativity in everyday life, the creator may stumble upon the domain that he or she feels an initial pull of passion. With years of acquired expertise and advanced schooling, the creator may move onto the stage of Pro-c. Although he or she will still have *mini-c* insights, the creator has now achieved professional-level status and is capable of working on problems, projects, and ideas that affect the field as a whole. The creator may continue to create at the Pro-c level throughout

her or his entire life, with specific peaks occurring at different ages based on the domain (e.g., Simonton, 1997). After many years have come and gone, the creator may achieve a lasting Big-C contribution to a field (e.g., the Nobel Prize) or the creator may have passed away, and history will make the final judgment as to whether he or she has entered the pantheon of Big-C or is long-forgotten.

It is important to note that *little-c*, in our model, is no longer purely synonymous with “everyday creativity.” The idea of everyday creativity can extend from *mini-c* to *little-c* throughout Pro-c. It is only Big-C that remains “eminent creativity,” although some Pro-c individuals may certainly also be eminent. There have been few investigations that examine the distinction between Pro-c and Big-C. Simonton, the premiere creativity Big-C researcher, has not examined this question; he instead has approached Big-C creativity as being on a continuum (Dean K. Simonton, personal communication, September 30, 2007). The few studies that have examined this question have done so in the context of other questions, such as the relationship between creativity and genius (Kaufman, 2001; Ludwig, 1995).

Our model reflects our belief that nearly all aspects of creativity can be experienced by nearly everyone (see, e.g., Richards et al., 1988). On an everyday basis, someone could try a brand new thing (such as fly fishing or making homemade ice cream or starting a video blog) and experience the new and personally meaningful experience of *mini-c*. Similarly, someone could continue to enjoy *little-c* creativity by trying to find a new way home from school or work, or playing a new song on the guitar, or acting in a local production of a musical. Many people will also experience everyday creativity at the Pro-c level. It is only the final stage, Big-C, a typically posthumous distinction, that is reserved for the elite few.

This full progression from *mini-c* to Big-C is quite rare; however, it is often illustrated in the developmental trajectory of the creative life. Consider, for example, the life of Helen Keller. After a severe childhood illness (perhaps scarlet fever), she was rendered deaf and blind. She overcame these initial setbacks in such a profound way that Binet would point to Keller as an example of how Galton’s theory of intelligence must be wrong. Galton argued that intelligence could be measured through sensitivity to physical stimuli, and Binet cited Keller as someone who was extraordinarily intelligent, yet would score very low on Galton’s psychophysical tests (Sternberg, Kaufman, & Grigorenko, 2008).

Keller’s period of *mini-c* creativity is actually quite well known to most readers due to the success of the play and movie *The Miracle Worker* (Gibson, 1960). Anne Sullivan, a teacher from the Perkins Institute for the Blind, taught Keller signs for everything in her world. As Keller discovered, for example, that the sign traced into her palm corresponded with the water that splashing on her hand, she was in the throes of *mini-c* creativity. Activities that may not normally have qualified as being part of the creative process in a young girl became creative for Keller, as she learned to name all of the parts of her world. Her insight that the concept of “water” could have a name attached represented a new and especially meaningful interpretation of events. There was no end product (although Keller would eventually produce many important books, papers, and speeches), yet the process itself represented a creativity activity.

Keller progressed into *little-c* as she continued her education. She became the first deaf and blind individual to graduate from

college (Radcliffe), and she wrote her autobiography at 23, *The Story of My Life* (Keller, 1905). At this point, she had reached little-c as a scholar and activist. Her book was remarkable more for its story than how it was told; her accomplishments at this point in her life could just as easily be ascribed to Sullivan's brilliant teaching than to Keller's unique performance. If she had done nothing else of note (and, indeed, many people are not aware of her life beyond *The Miracle Worker*), she would be a footnote to history.

Yet Keller became a fierce political activist. Some of her work was to benefit those with her same conditions; she founded Helen Keller International to help prevent blindness and generally advocated on behalf of those with impairments. She traveled to hospitals and helped raise money for these causes. Her activism was much broader than most people know, however, and she fought on behalf of many people she thought were also less fortunate (Nielsen, 2004). She was an ardent pacifist, fought for women's rights, joined the International Workers of the World, and became a radical socialist/anarchist (espousing similar views as her friend and contemporary Mark Twain). She was deeply spiritual and converted to Swedenborgian, a sect of Christianity (Hermann, 1999). It was this lifetime of activism that brought her continued acclaim and controversy, and it was through her fervent campaigning for the rights of others that she reached the level of Pro-c.

The point at which Keller reached Big-C is harder to pinpoint, in part because it is difficult to determine the exact moment at which *anyone* has reached Big-C. Famous and respected throughout her lifetime, she was certainly a candidate in her old age. Biographies and (especially) *The Miracle Worker* made her story universally known. Ironically, she remains best known for her

mini-c achievements as a student, although certainly her accomplishments beyond her childhood were rooted in these early discoveries.

### Nuances of the Model

We present in Figure 1 the complete model, which includes some transitional periods and end destinations. As we have discussed, everyone begins in mini-c. A rare few may make the jump to Pro-c; most, however, will experience one of two transitional periods. Some will undergo a *formal apprenticeship* that will lead to Pro-c, usually taking approximately 10 years (as discussed earlier), consistent with the literature on expertise. Today, such apprenticeships are often done through academic institutions. An alternate path is the transitional period of tinkering—playing with one's creativity in a domain and improving through such experimentation, even without a structured mentorship.

Once someone has reached the little-c level, we see at least two transitional periods. One such transition is to Pro-c, often through an *informal apprenticeship* (working with an older, more experienced colleague or mentor). Another possibility is an end destination of *reflection*. Not all people have the desire or inclination to try to take a creative activity to a professional level. Many individuals may use their creativity to express themselves, sort out emotions, or explore ideas and life experiences. We believe that creativity for its own sake is a worthy end goal, regardless of how a creative product may be reviewed or received by a larger population.

For people at the Pro-c level, we also see two alternate paths. Some individuals will remain creative and fertile for their entire

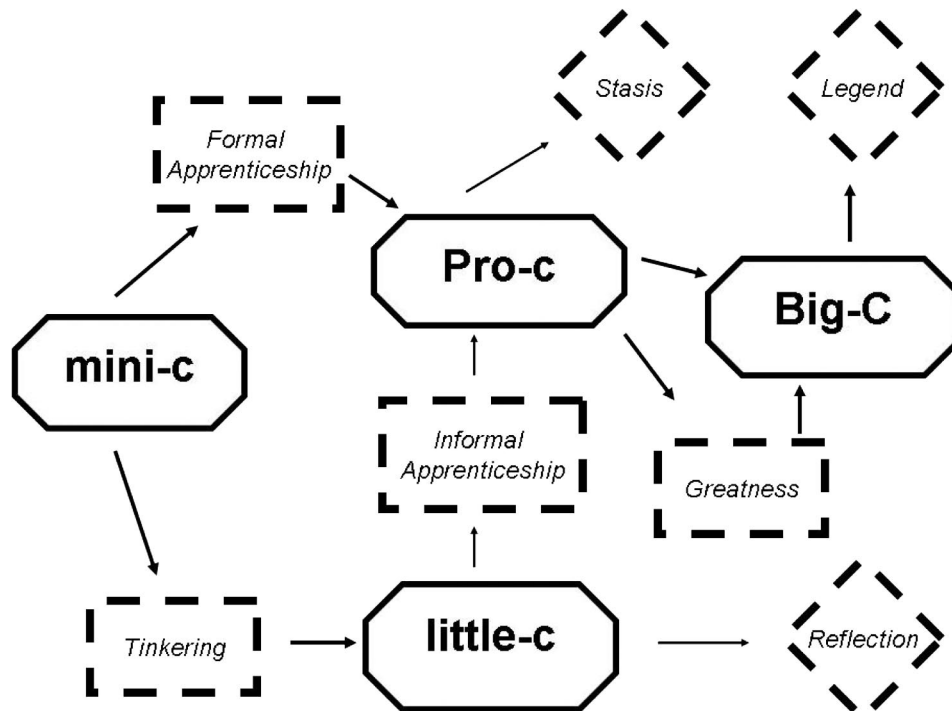


Figure 1. The Complete Four-C Model.



professional lives. Those who are especially creative may reach a pinnacle—indeed, the highest peak for a living creator in our view—at *greatness*. Those who have reached a level of greatness may be subsequently considered by future generations to have reached the level of Big-C. Other Pro-c creators may settle into creative *stasis* and finish out their professional career without making any additional significant contributions. In the academic field, for example, there are some professors who reach tenure and keep achieving and striving for new and different ideas and studies—but there are other professors who may reach tenure and, in effect, mentally retire. Having been assured of a regular job, such people may stop being a productive creator and enter an end destination of stasis.

Finally, we see a final gradation of Big-C, an upper echelon that we call an end destination of becoming a *legend*. At such a supranormal level of achievement, a person has become an emblem of their field and has likely crossed over so that nearly everyone knows about his or her achievements. Consider, for example, the field of physics. A list of Big-C physicists would include Ampère, Gauss, Faraday, Joule, Bohr, and Heisenberg. Yet we would argue that these physicists, although clearly eminently creative, are not at the legend category that might include Newton and Einstein.

#### What Is the Advantage of the Four C Model?

We recognize that adding two additional distinctions (mini-c and Pro-c) to traditional conceptions of creativity adds a level of complexity to the field of creativity studies. At the same time, we argue that the additional complexity that comes with the Four C Model is necessary for continued maturation of the field of creativity studies. Indeed, the inclusions of mini-c and Pro-c in our model points to several avenues in need of deeper exploration that will help advance the field (e.g., What is the best way to measure creativity?) and possibly even shed new light on lingering debates (e.g., Is creativity domain specific or domain general?). We outline possibilities for future research exploration in Table 1 and below.

For example, the question of how to best measure creativity can be answered according to the *c* being measured. The primary purpose for assessment at the mini-c level would be to support

creative ideation and nurture student creativity (Kaufman & Beghetto, in press). At this level, self-assessments and microgenetic methods seem to make the most sense. Self-assessments are useful for at least two reasons. First, they have the benefit of requiring students to reflect upon and consider their own creativity. Second, they may help educators and parents identify students who have emerging creative potential and interests in various domains as well as identify students who may feel as though they have little or no creative ability. In this way, parents and educators will be in a better position to support and nurture students developing creativity.

Microgenetic methods would enable researchers to study and develop a better understanding of the genesis and development of students' and novices' creative thinking. Microgenetic methods often combine the use of observations (typically video-taped) with other methods (e.g., participants' immediate retrospective explanations of their thoughts and behaviors) to capture and analyze the process of discovery and subsequent microlevel changes in thinking, reasoning, and problem solving (see Siegler, 2002, 2006 for an overview).

At the little-c level, because the focus moves from the intrapersonal creative interpretations of mini-c to creative expression (Beghetto, 2007a), additional assessments beyond self-ratings may be most useful. Self-assessments (including creative behavior checklists) may still be useful. But other measurements may be used for identification of creative talents and subsequent placement and guidance. Such measurements include parent/teacher/supervisors ratings of creativity, psychometric tests (such as the Torrance tests), and the Consensual Assessment Technique in which products are rated by appropriate experts (Amabile, 1996).

The Torrance tests (1974, 2008) were designed to help with gifted student identification and placement. These tests measure divergent thinking abilities in general areas (verbal and figural) without requiring any level of expertise in a specific domain. The norms are calibrated for younger individuals (i.e., students). The Consensual Assessment Technique has been used successfully evaluate the creativity of poems or art created by everyday people or students (e.g., Amabile, 1982, 1983, 1996; Baer, Kaufman, & Gentile, 2004; Kaufman, Baer, Cole, & Sexton, in press; Kaufman, Lee, Baer, & Lee, 2007; Kaufman, Plucker, & Baer, 2008).

Table 1  
*Four C's of Creativity Matched up to Issues in the Field*

	mini-c	little-c	Pro-c	Big-C
Best assessment?	Self-assessments microgenetic methods	Teacher/parents/peer ratings psychometric tests (e.g., Torrance tests,) consensual assessment	Consensual assessment citations/peer opinions prizes/honors	Major prizes/honors historiometric measures
Domain-specific or general?	Likely both	Likely both	Mostly domain- specific	Domain-specific
Best motivation?	Probably intrinsic	Probably intrinsic	Both contribute	Both contribute
Relation to mental illness?	Probably none	Believed, but likely very little	Evidence suggests links, dependent on domain	Some evidence to suggest links
Example of researchers	Mark Runco	Ruth Richards	Greg Feist	Dean Simonton



By the Pro-c level, the reasons for assessing creativity have changed. No longer is the central focus nurturance, guidance, or placement; instead, creativity is typically studied at the Pro-c level to evaluate a professional's accomplishments or to gain insight into the nature of creativity itself. The Consensual Assessment Technique may still be used; indeed, part of the tenure process in some universities is to send out a professor's best work and have it evaluated by appropriate experts. Creativity would likely (and hopefully) be one of the many factors considered in such evaluations. In addition, citations (Nemeth & Goncalo, 2005), prizes and honors (e.g., Kaufman, 2001), and peer opinions (e.g., Hall & MacKinnon, 1969) may be used to determine creativity across different domains.

Within the Consensual Assessment Technique, the question of which experts to use may be addressed by the Four C model. Traditionally, Pro-c level experts are used (i.e., actual poets will assess poetry; Amabile, 1996). Big-C experts are almost never used because of the difficulty in obtaining such ratings; however, an analysis of Beethoven's self-critiques indicates he did a reasonably accurate job (Kozbelt, 2007).

Other studies have shown that Pro-c level experts across domains (i.e., psychologists, writers, and teachers) tend to agree about what is creative and what is not (Baer et al., 2004). In addition, Kaufman, Gentile, and Baer (2005) found that Pro-c experts agreed at a high level with gifted novices (i.e., people transitioning from mini-c to little-c), although Kaufman et al. (in press) found that Pro-c experts did not agree with novices.

The four C's of creativity can also weigh in on the domain-specific versus domain-general debate in creativity. For instance, if you are a creative scientist can you also be a creative artist? The Four C's of Creativity model helps situate such questions in a more specific and developmental framework. For instance, the model helps illustrate how the likelihood of domain generality (i.e., the ability to be creative across multiple domains) becomes less like as one moves from mini-c through little-c and Pro-c and onto Big-C. This concept is consistent with the Amusement Park Theoretical Model (Baer & Kaufman, 2005; Kaufman & Baer, 2004, 2006), which begins with initial requirements (things that are true for *any* type of creative act) and moves down to microdomains (distinctions that may be found between writing short stories and writing plays, e.g.). These same initial requirements—a basic level of intelligence and motivation and a nurturing environment—are, obviously, also the cornerstone requirements of mini-c. As a person advances through a career and lifetime, creative activity becomes more and more specialized and differentiated by the domain. It is also very difficult to reach Pro-c (or, especially, Big-C) level creativity in more than one domain. Many people, however, might reach mini-c or little-c creativity in a wide number of areas.

However, it is interesting to note that many of the studies that have argued for domain specificity (e.g., Baer, 1991, 1994; Han, 2003; Runco, 1989) have been conducted on children. One possibility is that creativity at the mini-c level occurs when the individual initiates the process. In other words, a child being asked to write poems or stories may not interpret the event from a mini-c perspective, but instead may simply approach the task as something that needs to be done. The concept of mini-c may be tied to a child feeling intrinsic motivation for the task and positive feedback on creative ability from valued others (e.g., teachers, parents, mentors). For instance, there is a wide literature that argues for the connection between intrinsic motivation

and creativity (see Amabile, 1996). Moreover, Beghetto (2006) found that middle and secondary students' reports of teachers providing positive feedback on their creativity was the strongest unique predictor of students' beliefs in their own creativity.

Another possibility may simply be that the actual relationship between the development of creative abilities and the domain specificity versus generality of creativity is more complicated than a simple linear relationship. However much we may predict a relationship to be shaped in one way or another, the actual data may argue that there are too many different factors at play. It is clearly possible and likely that much creativity at the mini-c level is domain-specific.

Similar debates exist on the question of the relationship of creativity to both motivation and mental illness. Some argue that creativity is best served by intrinsic motivation (i.e., performing an activity out of inherent interest or enjoyment), and that being motivated by extrinsic factors such as money or rewards can sometimes harm creativity (Amabile, 1996; Amabile & Gitomer, 1984; Amabile, Hennessey, & Grossman, 1986; Amabile, Hill, Hennessey, & Tighe, 1994; Beghetto, 2005). Other researchers have countered that the dangers of extrinsic motivation are overrated and that much of the debate is surrounding methodological issues (Eisenberger & Shanock, 2003). Rewarding creative performance, they argue, increases both intrinsic motivation and creativity; rewarding conventional performance decreases both intrinsic motivation and creativity.

We believe that at the Pro-c (and Big-C) level, extrinsic and intrinsic motivation both help shape and prod creative activity. At the mini-c and little-c levels, the need for intrinsic motivation is more pressing. Intrinsic motivation is more pressing at the mini-c and little-c level because an individual's interest and commitment in the particular creative endeavor (e.g., chess, science, cooking) is still emerging and external rewards may be more salient than and, in turn, swamp their intrinsic interest (Beghetto, 2005). For example, consider a young child (Sophia) who has an interest in insects. Her parents recognize this interest and rather than focus on cultivating her intrinsic interest (and natural curiosity) by providing more opportunities to learn about insects, they attempt to motivate her by establishing contingencies for spending time learning about interest (e.g., "If you spend an hour reading about insects today, we will take you out for ice-cream later," or "We have enrolled you in an insect trivia bowl and we want you to study more about insects so you can win!"). Such external motivators put the already interested child at risk of replacing her natural curiosity about insects with the more salient external rewards of ice cream and winning competitions. Once the rewards disappear, so too might Sophia's interest in insects. Imagine how many potential extrinsic motivators are present in taking piano lessons, for example. Parents might tell a child that he needs to practice a certain number of hours a day, there might be possible public reactions to playing a piece in a concert, or a teacher might offer a gold star or candy for a lesson gone well.

A comparable analysis exists for creativity and mental illness. Are the two constructs linked? At the Big-C, there exists some evidence that highly creative individuals are more prone to mental illness than those who are less creative (Ludwig, 1995; Kaufman, 2001; see, however, opposing views, i.e., Rothenberg, 1995; Schlesinger, 2003). There are also some investigations of creativity at the Pro-c level, especially in the creative writing domain, that

suggests a possible connection (e.g., Andreasen, 1987; Nettle, 2006).

Yet at the mini-c and little-c level, there is likely little or no connection. Indeed, Richards (1993a, 1993b, 1999, 2007) argues, most of the studies on creativity and mental illness are conducted on highly eminent creators, thereby having much less of an implication for the average person. Those studies that have looked at both Big-C and little-c creativity have often found that any link with mental illness is much stronger at the Big-C level than the little-c level (i.e., Richards, 2007; Richards et al., 1988). Such negative associations with creativity—even if aimed at a different level of creativity—may nonetheless haunt creative individuals at all levels (Beghetto & Plucker, 2006; Plucker et al., 2004). Teachers, for example, have been found to devalue creative students, in part because they associate creativity with nonconformity, impulsivity, and disruptive behavior (e.g., Beghetto, 2007b; Cropley, 1992; Dawson, 1997; Scott, 1999; Westby & Dawson, 1995).

### Conclusion

As creativity research becomes tied to more and more areas of psychology, it is important to have a specific understanding and categorization of what it means to be creative. Yet creativity is a growing field that has moved beyond basic categorizations. There is too much new and exciting research being conducted that does not fall squarely into little-c or Big-C. By focusing too narrowly on traditional (little-c, Big-C) distinctions of creativity, we run the dual risk of overlooking the creative potential children, on one hand, and minimizing professional-level creative productions of expert creators on the other. We argue that the Four C model allows us to consider creative ability, interest, and pursuits at an appropriate level of specificity. Moreover, it presents a framework in which previous theories, conceptions, and research on creativity can be situated and, at the same time, points to aspects of creativity that are in need of further clarification and investigation. We hope that such a model is helpful in shaping future creativity research and can support the further maturation of the field of creativity.

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