Allowing Your Creativity to Flourish

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"Creativity lies at the heart of the scientific process … true progress requires an act of discovery."

-Langley & Jones, 1988

Today's educational institutions are arguably not providing an atmosphere that fosters creativity. We are currently in the midst of a trend in which the criteria for academic success seem to be getting more and more narrow (e.g., the standardized testing movement sweeping over primary education institutions, the growing research-for-publication orientation in graduate programs). It is ironic, then, that in universities across the nation, qualities such as "innovativeness," "originality," and "creativity" are viewed as valuable characteristics for psychological-science students and faculty alike (Sternberg & Lubart, 1996). Unfortunately, for graduate students who are on the journey toward a faculty position, the external demands of meeting deadlines and consistently producing a flow of publishable work can quash the powerful intrinsic motivators that lead to creative output (Amabile, 1996).

Popular ideas surrounding the construct of creativity generally isolate creativity to the arts (e.g., painting, dance, culinary), and being "creative" is often not a characteristic attributed to academic scholars. However, the literature defines creativity as "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*" (Plucker, Beghetto, & Dow, 2004; italics original). Simply put, creativity is engaging in an activity that results in something new and of practical use, and thus creativity is clearly applicable to psychological-science research. Further, creativity is thought to be an ability that can be expressed by any individual in any domain (Finke et. al, 1992; Sternberg & Lubart, 1996; Weisberg, 1995), and the realization of creative potential is believed to be a result of complex interactions between forces of nature and nurture (Simonton, 2000). In sum, research supports the view that creative potential exists in everyone, and there are steps that one can take to foster and promote one's creativity, including a psychological-science graduate school program. Here are five ways graduate students can develop their creativity while keeping up with the pace of graduateschool life.

What Makes You Curious? Invest the Time and Energy into Developing Robust Research Questions

"To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science."

-Einstein & Infeld, 1938

Creative products begin with creative questions. In a lecture titled *Originality*, Norman Mackworth (1964) argued that finding worthwhile problems to solve lies at the heart of creative thinking, and he challenged scientific researchers to "define the unexpected problems." These initial question-generating

steps are critical to the creative process because they set the stage for the problem-solving efforts that follow (Anderson, 1993). When embarking on a research project, you should ask yourself the following questions about your research question: Has my question already been answered? and if not, why hasn't it been answered? What makes my research question a question that is worthwhile to pursue? The outcome of this problem-formulation stage will shape the nature of the study and also serve as the point of reference for you as you refine your research process.

Reject the Genius View: Become Well-Versed in Your Topic

Developing a robust theoretical rationale for pursuing a research study takes time. A common stereotype surrounding creativity is the "genius view," which is based on the belief that creative thought processes and acts are carried out by exceptional individuals who are granted unexplainable sparks of insight (e.g., Friedrich August von Kekule, who claimed to have discovered the ring structure of benzene while daydreaming; Sternberg & Lubart, 1996; Weisberg, 1995). Recent advances in creativity research, including studies of expertise (e.g., Ericsson, 1996), problem solving (e.g., Anderson, 1993), and creative cognition (Finke, Ward, & Smith, 1992; Weisberg, 1995) suggest otherwise. Contemporary creativity researchers propose that creative endeavors follow the same principles and processes of everyday cognitive activities (Finke et al., 1992; Weisberg, 1995). They argue that rather than a spark of insight, these "Aha!" moments are rooted in past experiences and pre-existing schemes that have been accumulated, practiced, and developed over time (Ericsson, 1996; Weisberg, 1995). A thorough knowledge base in a specific domain acquired through committed, deliberate practice is the foundation from which creative ideas will flourish.

Make Time for Your Hobbies

Creative individuals are not characterized by the presence of a single dichotomous "creative" characteristic; rather, they embody a broad spectrum of dimensions and interests (e.g., introversion and extraversion, mathematics and music; Csikszentmihalyi, 1999). Research shows that creative scientists tend to alternate between leisure activities that support the development of new creations while also practicing within their fields of expertise. Oscillating between activities that provide different mediums in which to evaluate, organize, and combine new ideas is believed to contribute to the creativity of scientists who make significant contributions in their fields (Root-Bernstein, Bernstein, & Garnier, 1995). Furthermore, cognitive flexibility associated with applying the creative process across disciplines has been shown to reap benefits for an individual's overall creative capacity (Root-Bernstein et al., 1995). These findings suggest that it is important to achieve a balance between the traditional duties of graduate school and activities outside of school. Hobbies, community service, and leisure activities that graduate students often brush off as "stuff I don't have time for" may actually complement, rather than impede, creative productivity in graduate school.

Branch Out: Collaborate With Others Who Share Your Drive but Do Not Have Identical Research Interests

Creativity is often referred to as "thinking outside of the box," which arguably requires the creative individual to also live outside of the box! Being too deeply entrenched in the knowledge and practices of a single field can lead to functional fixedness (Subotnik, Olszeewski-Kubilius, & Worrell, 2011) and prevent you from thinking of alternative (and possibly more creative) approaches to problems. Graduate

students should take the initiative to build relationships with students and faculty from other programs, departments, and colleges. National professional conferences, as well as on-campus forums and research presentations, are great opportunities for meeting peers and mentors from related fields. In addition, graduate students should read outside of their field; for example, they could take the time to read a wide range of articles from the latest issue of *Psychological Science*. Unexpected sources of inspiration from which remote associations are developed are more likely to occur when you have a broad range of information and multiple conceptual frameworks to draw from (Mednick, 1962). Collaborating with individuals who have different perspectives, knowledge bases, and approaches to learning will support the generation and synthesis of novel ideas in your graduate work.

Maintain Your Motivation: Keep in Mind Why You Chose to Pursue Psychological Research and Embrace the Creative Tensions

The creative process involves solving ambiguous problems, and having the motivation to overcome these periods of uncertainty is crucial to making substantial creative contributions (Sternberg & Lubart, 1996; Simonton, 2000). Eminent creative achievements come from individuals who are motivated and compelled by underlying goals that have broader impacts on the world (Amabile, 1996; Csikszentmihalyi, 1999; Subotnik et al., 2011). It is the passion and commitment toward a greater cause that push graduate students through the countless hours spent in the lab completing tasks that are often far removed from the overarching goals of the research project. As social scientists, it is important to remind ourselves of the responsibility to not only conduct and publish research but also boldly step out into uncharted territory with novel problems that have yet to be tested. As psychological researchers, we need to keep in mind the ultimate goal of contributing to the body of existing knowledge in a creative way to move our field forward.