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Toward a Psychology of Consumer Creativity

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Understanding creativity has been one of the most vexing challenges facing psychologists over the past 50 years. Michelangelo's sculpture of *David*, Einstein's Theory of Relativity, and Mozart's piano concertos inspire awe as to their creativity. But more mundanely, creativity is also evident in the toil of an individual working to customize their pickup truck, or the clever way a mother uses hair spray to remove an ink stain. These examples are so disparate, what connects them? What defines something as creative? Creativity is difficult to make sense of, but essential to human functioning.

Creativity is ubiquitous in consumer behavior. In everything from vehicles and homes to clothing and a mundane fix for a stain, creativity permeates the consumption realm. Yet few attempts have been made to translate basic observation into theoretical treatise, and even fewer attempts have been made to empirically document the role of creativity in the consumer behavior literature. The purpose of this chapter is to outline a psychology of consumer creativity. Our discussion will integrate considerations of creativity from the perspectives of the product, the process, the person, and the environment, and will consider the implications of each within the consumption realm. The topic of creativity remains an open frontier in consumer psychology.

CONCEPTUAL BACKGROUND

Creativity is often defined as an outcome (a work, a product, an idea) that is both novel and appropriate to the given context or circumstance from which it arises. As basic as this definition appears, a modern understanding of creativity has been long in coming, and at various points emphasis has been on the creative person, the creative process, and the creative environment. To appreciate the modern conceptualization of creativity and how its various facets interrelate, it is useful to trace a brief history of creativity research.

Some of the earliest descriptions of creativity equated it with genius and a gift of divine providence. By the late 18th century a great deal of effort had been expended trying to decipher the source and nature of creative genius. This interest in creativity coincided with a time of great debate over the indemnity of individual freedom versus the need for social strictures and the rule of law. Even casual observation confirmed that creative individuals often flout convention and disdain rules, which are personality characteristics that would later become hallmarks of the creative person. The question was how to encourage creativity while maintaining a semblance of order. If the Renaissance demonstrated one thing, it was that creativity could not flourish in repressive societies. The inherent tension between creative expression and social prescription would ultimately culminate in the doctrine of individualism, if not the French Revolution itself (see Albert & Runco, 1999).

The debate about creativity intensified with the onset of the Industrial Revolution. Intellectuals of the day hastened to point out that individuals were increasingly being subjugated to rote tasks and undifferentiated, sprawling urban areas that stripped all manner of creativity from daily life. It is notable that these early considerations of creativity made little attempt to distinguish between its individual and social aspects, seeing them as parts of an indivisible whole. As the discussions of creativity progressed, however, the social aspects of creativity were largely lost. For the most part, the modern study of creativity has been a study of the internal workings of the individual, stripped of social context. When today's postmodern researchers describe consumers' reclamation of creativity from a mass-produced world, there is a tendency to view these accounts as paradigmatically incompatible with psychological perspectives of creativity that focus on knowledge, aptitude, motivation, and other individual aspects. This was not always the case, and a number of prominent psychologists have recently commented on the need to put more of the social back into the psychology of creativity (Csikszentmihalyi, 1999; Hennessey, 2003).

The treatment of creativity as a formal topic of scientific investigation is a 20th century development. The first half the 20th century can be characterized as the psychodynamic period of creativity research (Sternberg & Lubart, 1999). Consistent with Freud's popular views of the time, the psychodynamic perspective held creativity to be the byproduct of a struggle to reconcile unconscious drives with conscious inhibitions. Great paintings, epic literature, monumental structures, all were displaced attempts to quell this inveterate conflict. Interestingly, and despite the fact that this psychodynamic tension should apply to anyone, creativity continued to be largely viewed as a unique ability possessed by a gifted few (the notion that it was somehow divinely imparted did, however, fall into decline). The psychodynamic period was characterized by case studies of eminent individuals in order to try and glimpse the wellspring of creative inspiration.¹

Paul Guilford's (1950) Presidential Address to the *American Psychological Association* represented a watershed moment in creativity research. In his speech, Guilford asserted the incontrovertible importance of creativity to psychology (and all aspects of human functioning) and beseeched the field to do better in investigating this crucial phenomenon. Though it would be many years before the creativity research revolution Guilford envisioned would be realized, there is no doubt his speech gave creativity research a major boost. Many consider Guilford's speech to be the defining moment that brought creativity research into its modern age.

Guilford's call for more rigorous research on creativity coincided with a time of rapid developments in psychological measurement. Thus, the 1950s and 1960s can be broadly characterized as the psychometric period of creativity research (Plucker & Renzulli, 1999; Sternberg & Lubart, 1999). During this time a number of creative batteries were developed, perhaps the best known of which were the *Torrance Tests of Creative Thinking* (1966). The development of pencil-and-paper tests that could be administered to a wide swath of the population brought the study of creativity from the domain of rarified genius to the realm of ordinary individuals. Increasingly, creativity

came to be seen as the product of ordinary cognitive processes as opposed to some exceptional or mystical gift (Ward, Smith, & Finke, 1999). Viewing creativity as a normal cognitive process made it accessible to mainstream methods of cognitive science (Hershman & Leib, 1988). Coincidentally, the psychometric period saw the development of other psychological tests, particularly intelligence tests, so it is not surprising that considerable effort went into investigating the empirical connection between creativity and intelligence. What were unexpected were the results. Though some level of intelligence is necessary for creativity, it proved of surprisingly limited explanatory power (Albert & Runco, 1999). As a result, those scholars who had equated creativity with intelligence were forced to cast a wider nomological net.

Analogical reasoning and metaphorical thinking emerged as possible critical links to creative insight, and the 1970s and 1980s would witness a number of important discussions on the role of figurative language in creative thought (see e.g., Barron, 1988; Ward, Smith, & Finke, 1999 also provide an excellent overview of this cognitive perspective on creativity). During this time period social psychologists began to consider motivational aspects of creativity, finding intrinsic motivation to be particularly crucial (see, e.g., Amabile, 1983).

As the study of creativity branched into different areas, not surprisingly the literature became fragmented. Social psychologists focused on motivation and personality traits, cognitive psychologists on the process of creative thought, educational psychologists on the efficacy of creative education programs, and so forth. The field of psychology lacked a unifying perspective and research was accused of being atheoretical and descriptive. Moreover, despite important progress, creativity still remained an underdeveloped topic in psychology.

Sternberg and Lubart (1999) suggest that part of the reason for creativity's continued obscurity was attributable to the rise of the experiment as psychology's preeminent methodology. This presents the obvious challenge of studying a phenomenon that is fluid and emergent using a methodology predicated on structure and control. Within the domain of consumer psychology, creativity was basically *persona non grata* to this point, save for a few pioneering researchers (Hirschman, 1980; Price & Ridgeway, 1982).

The 1990s witnessed the creative revolution Guilford envisioned. In 1988, the first academic journal dedicated to empirical research on creativity was launched, the *Creativity Research Journal*. More than a dozen edited books on creativity were also issued in this general time period (see, e.g., Boden, 1996; Dartnall, 2002; Glover, Ronning, & Reynolds, 1989; Houtz, 2003; Isaksen et al., 1993; Runco, 1997, 2003; Smith, Ward, & Finke, 1995; Smith, Ward, & Vaid, 1997; Shaw & Runco, 1994; Sternberg, 1988a, 1999a; Sternberg, Grigorenko, & Singer, 2004). What was once an obscure topic in psychology became a required chapter (if not a dedicated book) in nearly any compendium of psychological research, including research on problem solving (Lubart & Mouchiroud, 2003), motivation (Hennessey, 2000), group dynamics (Paulus & Nijstad, 2003), artificial intelligence (McDonough, 2002), and positive psychology (Nakamura & Csikszentmihalyi, 2003), and now consumer psychology.

This "golden age" (Plucker & Renzulli, 1999) of creativity research produced valuable advances in the experimental procedures used to study creativity, and some of the most influential studies to date have been of the experimental variety (see Runco & Sakamoto, 1999, for a review). Ironically, advances in the experimental procedures used to study creativity have highlighted the value of other methodologies, particularly when used in tandem with experiments.

Perhaps the most important development in the creativity revolution has been the development of confluence models of creativity which unify creativity's diverse aspects (see, e.g., Csikszentmihalyi, 1999; Woodman & Schoenfeldt, 1990). The confluence perspective holds that creativity is a product of multiple, simultaneous, often interactive influences. In other words, to truly understand

how creativity comes about, one must consider not only cognitive abilities such as intelligence and analogical reasoning, but also personality characteristics such as tolerance for ambiguity, risk taking, and novelty seeking, motivational factors such as intrinsic interest and involvement, as well as the role of the environment (at both the situational and sociocultural levels).

Though researchers still tend to focus on one area of creativity (e.g., creative cognition), they acknowledge their findings to be part of a broader theoretical framework (Ward et al., 1999). Moreover, some studies have begun to incorporate variables from multiple domains in order to gauge relative effects on creativity in a given context. For example, Burroughs and Mick (2004) examined the interactive effects of time (an environmental constraint) with locus of control (a personality variable) and with situational involvement (a motivational variable) on creative outcomes. Though the value of a confluence perspective may seem somewhat self evident, it is important to keep in mind that for most of its history the study of creativity was a search for the "magic bullet" or all-encompassing mechanism to explain it (Mumford, 2003).

The potential for applying a confluence perspective to research on creativity in consumer behavior is high. Consumption is a social phenomenon exemplified by strong personal, situational, and cultural forces, often acting in unison. Both motivational and ability factors are crucial to a wide variety of consumption activities. Consumer behavior also ranges from immediate and localized problem solving to enduring and complex social exchange. It is difficult to envision a better contemporary setting for studying the spectrum of creative behaviors than consumption. This is not an idle opportunity, as researchers have repeatedly pointed out the lack of studies of creativity in real-world settings (see e.g., Lubart, 1994).

The creativity revolution has started to make its way into consumer psychology. There have been several recent special sessions on creativity at national consumer research conferences (see, e.g., Burroughs & Moreau, 2004; Burroughs & Otnes, 2001), some of which have included leading creativity scholars from other fields. Even more encouraging, articles explicitly dedicated to the topic of creativity have begun to appear in the leading marketing and consumer research journals (see, e.g., Burroughs & Mick, 2004; Dahl & Moreau, 2002; Goldenberg, Mazursky, & Solomon, 1999; Moreau & Dahl, 2005). The rest of this chapter will be dedicated to building a confluence model of consumer creativity and highlighting opportunities for further research in this area. We begin with creativity's epicenter, the creative product.

AN INTEGRATIVE FRAMEWORK OF CONSUMER CREATIVITY

The Creative Product

MacKinnon (1978, p. 187) argued that, "the starting point, indeed the bedrock of all studies of creativity, is an analysis of creative products." By product, MacKinnon meant some type of creative *outcome*. Thus, while researchers may focus on the creative individual or the creative process, it always comes back to the outcome produced. However, determining what constitutes a creative product is itself challenging.

Guilford (1964) equated creativity with problem-solving. A creative outcome is one that provides a unique solution to a practical problem, and a huge portion of research on creativity has been conducted under the auspices of problem solving. However, many creative acts, such as painting, do not solve any specific problem. This led researchers to specify the dimensions of creativity more broadly (and develop techniques for assessing these dimensions).

The Novelty and Functionality Dimensions of Creativity It is universally accepted that, to be creative, an outcome must be novel. Novelty goes to the heart of what sets a creative outcome apart

from any other. Novelty is usually gauged in terms the extent to which the outcome departs from what is typical or conventional in a given situation, problem, or context. In consumer behavior, novelty can be seen in the application of a product to a purpose other than that for which it was originally intended, the alteration of a product to enhance its performance or appearance, or the combination of two or more products in a new way, perhaps to achieve functional synergies. This broaches the second dimension of creativity, functionality. Being novel simply by being bizarre is not creative (Lubart, 1994). To be creative, an outcome must also serve some useful purpose. In other words, the change must be constructive.

While the functionality of an outcome is relatively easy to determine in the context of problem solving, this notion is less applicable to expressive and artistic forms of creativity. An artistic product can be functional, but this is clearly not what sets it apart as creative.

The Aesthetic Dimension When acts of creativity are enacted for more artistic and expressive purposes, creativity's second dimension is more closely associated with aesthetics. Here creativity is derived from an outcome that is not only unusual, but exhibits a certain beauty, elegance, or attractiveness. Because researchers have historically tended to focus on one domain of creativity (problem solving/scientific) or the other (artistic), the question of what to label this second dimension has not been at issue. However, many acts of creative consumption contain both functional and aesthetic aspects. Changes in the appearance of a product can, and often do, arise from practical considerations, while a very practical problem can be solved in an elegant way. This led Burroughs and Mick (2004) to propose the possibility of a three-dimensional conceptualization of creativity, where the most creative acts of consumption are high in novelty, functionality, and aesthetics.

Two examples help illustrate the usefulness of moving to a three-dimensional conceptualization of creative consumption. The examples come from consumer interviews conducted by Burroughs (1998). The first example highlights how creativity driven by a practical need can also have an aesthetic quality. The second example highlights how an act of consumer creativity that is aesthetically motivated can still revolve around a practical problem.

Example one involves a retiree who lives in New Jersey but winters in Florida. An ever-present concern of such individuals is that if the heat in their northern home fails while they are away, the pipes may freeze and burst. A product specifically designed to address this problem is the *Winter Watchman*. The device is very similar to a light timer, but works on temperature. If the temperature in the house ever falls below a preset limit (e.g., 50 degrees), the *Watchman* senses this and activates an electrical receptacle embedded in the unit. Users are instructed to plug a lamp into the *Watchman*, place the lamp in a window, and tell a neighbor that if they ever see this light go on to call the local utility company immediately because the heat has failed. The obvious limitation of this product is that it relies on the vigilance of a neighbor. What our informant did was plug his answering machine into the *Watchman* instead. Then he would call home once a day. As long as the answering machine did not pick up, he knew the heat was functioning normally and he was not charged for the call. If, however, the answering machine ever did pick up, he knew he had a problem. This bit of ingenuity allowed our retiree to remotely monitor his home, solving a common problem in a practical yet elegant way.

The second example revolves around household furnishings and is predicated on the very practical problem of a lack of money. It happened that the interviewee needed a new coffee table but could not afford one. So, she removed the legs from her current table, went to the hardware store and purchased copper tubing and threaded dowels, and then attached the tubing to the table in place of the wooden legs. This simple substitution modernized the look of her décor with minimal investment.

Numerous other examples of creative consumption with a more aesthetic bent can be found in the consumer behavior literature (e.g., Holt, 1997; Kates, 2002; Thompson & Haytko, 1997).

The Consensual Assessment Technique for Creative Products Even settling the issue of creativity's dimensions still leaves open the issue of assessment. How is one to determine the extent to which an outcome is "novel," "functional," or "aesthetic"? For example, the paintings of Monet were initially rejected by the Parisian art establishment as heretical. Today, of course, they are recognized as creative masterpieces. And this problem is not limited to art. The brilliant scientist Thomas Young (who gave us the wave theory of light) was so far ahead of his time that, "a mass of his most important thoughts remained buried and forgotten in the *Transactions of the Royal Society* until a later generation by slow degrees arrived at the rediscoveries, and came to appreciate the force of his arguments and the accuracy of his conclusions" (Helmholtz, 1873, as appeared in Martindale, 2001, p. 343). Thus it is creativity's paradox that something may be so novel, and so ahead of its time, as to be beyond immediate comprehension.

Fortunately, such extreme instances of creativity are rare (particularly in consumer behavior) and Amabile (1982) has developed a very useful technique for assessing creativity in most situations. Her *Consensual Assessment Technique* is predicated on two basic premises. First, the dimensions of creativity are relative and reside on a continuum. Take, for instance, the issue of novelty. Any outcome is at least unique to its own time and circumstance, but is also based in part on that which came before it. Watson and Crick's double-helix model of DNA is sometimes perceived as miraculously inspired when, in fact, it is partly predicated on the work of Linus Pauling, who had not long before proposed the structure of the protein alpha-keratin to be helical (Weisburg, 1999). Similarly, Picasso's paintings, *Les demoiselles d'Avignon* and *Guernica*, were based on initial sketches that built upon earlier works by both himself and other artists (Dasgupta, 2004; Weisburg, 1999). Therefore, it is not a question of novel versus not novel, but rather how novel. Creativity's other two dimensions are similarly a matter of degree.

The second premise of the *Consensual Assessment Technique* is that even if the dimensions of creativity are almost impossible to establish in an absolute sense, individuals usually have little difficulty recognizing and evaluating creativity when they see it. Thus, the creativity of an outcome can be ascertained through consensus of independent judges. Individuals implicitly factor in issues such as relative distinctiveness and social context (e.g., evaluating a child's art vs. that of a trained painter) in making their creative evaluations. The consensual assessment approach has been combined with psychometric scales that tap the specific dimensions of creative outcomes (see, e.g., O'Quin & Besemer, 1989) to arrive at a final creative determination.

Opportunities for Studying Creative Products in Consumer Psychology To date, no research has attempted to create a typology of the creative changes consumers make to products. However, research by Goldenberg et al. (1999) documented how changes in product form over time often follow certain templates, which can be useful for predicting future product innovations. A template specifies certain generalized relationships that allow individuals to export a logical sequence of changes in one product and apply them to different product categories. For example, a consumer's attribute dependency template between color and temperature (i.e., red equals hot) can be applied to a wide variety of otherwise unrelated product concepts including washing machines, pizza delivery services, infant bottle warmers, and so forth. As such, templates help efficiently guide the new product creation process.

It is also worth noting that manufacturers are increasingly reliant on consumers as a source of creative new product ideas, as well as to serve as co-producers of products already commercially

available. Home Depot, Ikea, and Michaels are all highly successful marketing franchises that rely heavily on consumer creativity as a key component of their commercial success. Consumers' growing appetite for do-it-yourself projects around the home and in their leisure time opens a plethora of research opportunities in the area of understanding consumers' frustrations, elations, and overall satisfaction with the creative use of products. Such expanded understanding is critical not only to a broadened perspective on consumer behavior, but also as a way of designing more consumer-centered products. It is somewhat contrary to prevailing wisdom, but some consumers seem to derive great satisfaction from having a portion of the marketing burden shifted to them (e.g., product assembly, product alteration) as opposed to just having marketers provide ready-made solutions in final form. It is clear that these consumers gain a sense of efficacy and pleasure from such creative interaction with products.

Additionally, researchers need to gain a better understanding of the antecedents of creative consumption outcomes. These might include further investigations of the role of time (Burroughs & Mick, 2004, Moreau & Dahl, 2005), analogical reasoning (Dahl & Moreau, 2002), and consumer knowledge, issues we will take up in greater detail later in the chapter.

The Creative Process

How do creative products come about? In its most basic terms, the creative process involves the retrieval and novel combination of fragments of knowledge from disparate locations in memory, such that it constructively addresses a given issue (Smith, 1995). The creative process is thought to involve four stages: exploration, fixation, incubation, and insight (Ward et al., 1999). The basic cognitive processes studied extensively in psychology (e.g., access, retrieval, analogical reasoning, and knowledge transfer) describe mental activities that occur at each of these stages (Ward et al., 1999). It should be noted that some researchers add a stage to either end of the the creative process. They include a preparatory stage, in which a foundation for creativity is laid before specific deliberative effort is expended, and/or an evaluation stage, in which a creative insight is further scrutinized, refined, or expanded (Martindale, 1999).

Exploration In response to a specific problem or creative task, individuals enter an exploratory phase in which they search for known solutions or access inputs relevant for constructing an appropriate response. During this phase, the formation of associations is open ended, though usually guided by existing knowledge structures, environmental cues and primes, and external constraints (Ward et al., 1999). The process of combining ideas is typically an incremental one that begins with examination of closely related conceptual linkages and moves concentrically outward (though highly creative individuals often jump to more divergent associations). Perkins (1997) discusses this process as a search through the "possibility space" of solutions, acknowledging that different mental typographies can make solutions (or their relevant inputs) either very accessible or extremely hard to find. As various new mental linkages are formed, discarded, and expanded, pre-inventive structures emerge (Ward et al., 1999). Pre-inventive structures are symbolic patterns, exemplars, mental models, or unique verbal combinations that are precursors to creative thought.

Fixation An interim stage of the creative process is fixation. Given the natural progression of the exploratory phase, it is unusual that someone immediately comes to a remote, decisive insight. As often as not, cognitive roadblocks impede progress. This is because individuals begin with a bias towards existing knowledge structures and known solutions to similar problems that they are reluctant to abandon when they fail. The brain is hardwired for efficiency, to quickly apply

existing solutions to like problems (hence the reason that the creative thought process is mentally taxing). Ward (1994) calls this tendency one of "following the path-of-least-resistance" (the POLR strategy).

Breaking free of existing mental frames is a struggle and, even when successful, creative insight may still remain beyond reach. As ever-more remote conceptual combinations are explored, some pathways will appear promising, but illusory. Sensing a breakthrough is close, the individual presses even harder down the errant path, struggling to make the proverbial square peg fit the round hole (Smith, 1995). Ironically, the closer the inadequate solution to an adequate one, the more likely it is to block successful creative insight. The individual becomes fixated.

This stage of the creative process is informed by a very important realization; in many instances, the framing of the problem itself is responsible for the fixation. Thus, creative insight is often not only about "problem solving," but also realigning the representation of the problem itself or seeing the problem in an entirely new way. This process is referred to as "problem finding" (Segal, 2004).

Contextual factors such as incidental environmental cues may also complicate the creative task at this stage by biasing the individuals toward a particular mindset (Smith, 1995). For example, Dahl and Moreau (2002) found that subjects who were asked to design a new product to facilitate eating while driving, came up with less original ideas if they were first shown a sketch of a prototypical design concept. It appears that the mere exposure to such a preformed concept was sufficient to inhibit individuals' from freely generating new ideas. Because such environmental influences are often beyond conscious awareness, their influence can be difficult to recognize.

Incubation After a period of fixation, the activated mental models that impede creative progress will begin to destabilize. Though new environmental influences or conscious effort can sometimes hasten their demise, a major factor is often simply time. The individual becomes exhausted and loses focus. Interestingly, this allows the creative process to again move forward. A withdrawal of attention away from the problem allows activated models to decompose and new linkages to form (Segal, 2004). This period of destabilization and reorientation is known as the incubation stage of creativity. Freed of inhibiting mental modes produced from past experience or early promise, the creative breakthrough again becomes possible (Smith, 1995).

Insight The final phase of the creative process is insight. Because a period of incubation is typically necessary in order to nurture creative insight, creative breakthroughs often occur after a problem is no longer being actively considered. At a preconscious level, the mind continues to mull over the problem and abruptly thrusts the solution through to conscious awareness. These moments represent some of the most emotionally charged in the human experience. It is one of the remarkable capabilities of the mind to encounter new information and, without deliberate effort, connect this information back to previously activated problems and issues in new ways.

Opportunities for Studying the Creative Process in Consumer Psychology To our knowledge, no research in consumer behavior has attempted to document, start-to-finish, the creative thought processes individuals go through as they engage in consumption tasks. While the creative cognition approach holds that the same mental processes are involved in everything from eminent creative accomplishment to mundane problem solving, it remains to be seen if some processing strategies are more effective at devising creative solutions to consumption problems than others, and if these strategies vary by consumption instance (e.g., consumer problem solving versus more socioculturally rooted acts of consumption). Moreau and Dahl (2005) did conduct several studies in which subjects were charged with designing a new type of toy using a predetermined set of

shapes or components. They then examined how specific contingencies and external influences affected participants' tendencies to deviate from the POLR; however, their research did not examine the distinct stages of the creative process described above. Given that creativity involves a great deal of trial and error, it would be valuable to document subjects' thought processes and strategies as they work through consumption problems.

Additionally, it is well known that consumers often alter their dress, domicile, or vehicle as part of cultural discourse. Creative changes build upon prior changes made by others (see, e.g., Kates, 2002; Thompson & Haytko, 1997). However, while this research acknowledges the crucial role of creativity in social discourse, it does not generally concern itself with the more internal aspects of the process, opting instead to try and understand the social arrangements structured by creative acts. Since the basic creative processes described above in the context of problem solving are also most certainly active during more expressive acts of creative consumption, it would be interesting to examine how and at which stages various sociocultural cues enter the creative process. How do social exchanges contribute to issues such as fixation and insight?

Finally, since no consumer research has tried to dissect the creative process, there is little understanding how cognitive activities at each stage might differentially impact the dimensions of creativity. Perhaps the exploratory stage has the largest influence on the novelty dimension but contributes little to the functionality of the solution. Conversely, functionality would seem likely to be determined during the incubation and insight stages of the creative process. These assertions are clearly speculative at this point and worthy of further theoretical and empirical work.

The Creative Person

Factors within the individual will affect the creative process. These factors fall into three categories: ability factors, motivational factors, and affective states. In considering ability factors, three are critical: intelligence, analogical reasoning (metaphoric thinking), and knowledge.

Ability Factors

Intelligence As briefly touched upon earlier, a great deal of scholarly effort has been expended trying to understand the connection between intelligence and creativity. Is creativity a unique ability, different from intelligence? Is creativity a type of intelligence? Does intelligence inform creativity? These questions have been at the forefront of research in this area.

Early research often presumed that creativity and intelligence were synonymous, or at least highly correlated. The rationale is that if creativity involves the formation of new cognitive connections via the manipulation of knowledge structures, then those with the highest IQs should be most effective at this mentally intensive task. One of the earliest empirical investigations of creativity in a consumer context focused on intelligence. Hirschman (1983) found a moderate correlation ($r = .37, p < .01$) between intelligence and creativity among a group of consumers. Hirschman's findings are largely consistent with other researchers working in the area at the time. In general, the correlation between intelligence and creativity ranges from weak to moderate, depending on how each construct is assessed (see Sternberg, 1999b, Sternberg & O'Hara, 1999). There also appears to be a threshold effect. Some minimum level of intelligence is necessary for creativity, after which they become largely unrelated (an IQ of around 115 is the cutoff, though it is much higher in some sciences; Schubert, 1972; Sternberg, 1999b). Sternberg even goes on to suggest intelligence could interfere with creativity if high IQ individuals are so praised for their intellect that they fail to work at developing the creative potential within.

A number of more complex theories of the relationship between creativity and intelligence have been proposed. These theories can be classified as those that treat creativity as a subcomponent of intelligence and those that treat intelligence as a subcomponent of creativity (Sternberg, 1999b).

Two prominent theories that view creativity as a subset of intelligence are Guilford's *Structure-of-Intellect Model* (SOI) and Gardner's *Multiple Intelligences Theory* (MIT). According to the SOI model, three basic dimensions of intelligence form a conceptual cube: *operations* such as convergent thinking, memory, and divergent thinking; *content* such as visual images, symbols, and semantic meanings; and *products* such as units, transformations, and implications (Guilford, 1985). By crossing these three facets, 120 specific intelligence factors are possible (which Guilford later expanded to 150; Bachelor & Michael, 1997). Thus, Guilford did not believe in a general intelligence factor, but rather diverse forms based on these dimensions. Among the varied factors, Guilford believed divergent production to be most crucial to creativity. Divergent production involves the broad search for information and the generation of multiple, novel answers to problems. Guilford further believed cognitive orientations such as sensitivity, fluency, flexibility, and originality to be important to creative thinking. Guilford's ideas provided the basis for his own *Unusual Uses Test*, as well as the *Torrence Tests of Creative Thinking*. Recent empirical evidence suggests Guilford's dimensions of intelligence do not factor out as he intended, and the *Unusual Uses Test* often fails to converge with other creativity assessments (Sternberg, 1999b).

Like Guilford's theory, Gardner's *Multiple-Intelligences Theory* suggests people can be intelligent in a variety of ways (Gardner, 1983, Feldman with Gardner, 2003). Specifically, Gardner conceived of eight different types of intelligence (or separate areas of cognitive functioning), including linguistic, logical-mathematical, spatial, kinesthetic, musical, interpersonal, intrapersonal, and naturalist. Today, most intelligence tests are actually multiple tests directed at these various areas (e.g., verbal ability, visual-spatial reasoning, etc.). In studying eminent creative individuals, Gardner found one characteristic they shared was that, even though their creative contributions tended to be in one area (such as music), they usually excelled in more than one type of intelligence. Highly creative individuals are able to productively combine the different types of intelligences synergistically. Interestingly, Gardner noted that while eminent creative individuals tend to excel in more than one type of intelligence, they were often notably deficient in others (e.g., a brilliant mathematician who lacks basic social skills).

In contrast to the views of Guilford and Gardner, Sternberg views intelligence as a subcomponent of creativity. Sternberg's initial ideas were outlined in his *Triarchic Model of Intelligence*, a model he later folded into his *Investment Theory of Creativity*. Sternberg considers intelligence to be one of six sociocognitive elements that converge to produce creative outcomes (the others being, knowledge, thinking styles, personality, motivation and the environment). We discuss the *Triarchic Model* here, and take up *Investment Theory* in a subsequent section.

According to the *Triarchic Model of Intelligence*, three aspects of intelligence are central to creativity: synthetic abilities, analytic abilities, and practical abilities (Sternberg, 1988b, 1999b; Sternberg & Lubart 2003). Synthetic abilities reflect the ability to integrate information and are predicated on two broad components: a metacomponent and a knowledge-acquisition component. A metacomponent is a, "higher-order executive process used in planning, monitoring, and evaluating task performance" (Sternberg, 1999b, p. 84). It helps individuals recognize problems more quickly but also creatively redefine these problems in new ways that make them more soluble. Sternberg devised a way to assess an individual's ability to redefine problems in new ways. Modeled on Nelson Goodman's new riddle of induction, participants are taught a novel concept, such as the notion of grue (green until 2050, blue thereafter) or bleen (blue until 2050, green thereafter), and then made to utilize this concept. Not only did creative thinkers appear more facile in adapting

to these concepts but, more important, were more flexible in their ability to switch back and forth between conceptual systems (i.e., grue and bleen versus blue and green). The metacomponential aspect of intelligence also guides the formulation of a strategy for solving a problem once redefined (Sternberg & Lubart, 2003).

The other half of synthesis is the knowledge-acquisition function. Specifically, creative individuals use their intelligence to selectively:

a) *encode* information (i.e., distinguish relevant from irrelevant information). Sternberg offers as a famous example Alexander Fleming's discovery of penicillin. Fleming was doing a laboratory experiment on the growth of bacteria when one of his Petri dishes got infiltrated by mold which killed the subjects. Sternberg notes that when their experiments go awry most scientists, "curse their luck, label the experiment a 'pilot experiment' and keep doing pilot experiments until they get the thing to work, at which point they label it a real experiment." (Sternberg & Lubart, 2003, p. 165)

b) *combine* information (i.e., integrate disparate pieces of information into a unified whole that may not be apparent by its component parts). Sternberg offers Charles Darwin's *Theory of Evolution* as a famous example. The constituent pieces of Darwin's theory were drawn from information readily available to anyone in the scientific community of the time. Darwin's contribution was to combine these pieces into a unified account of how life evolves on Earth. (Sternberg & Lubart, 2003, p. 166)

c) *compare* information (i.e., recognize how information from the past can be brought to bear on a present problem). Selective comparisons usually involve analogical thinking in the sense that the person recognizes how an experience from the past is analogous to the present situation. Sternberg offers Niels Bohr's model of the atom as an example of comparative insight. Bohr recognized that the solar system could provide a visual metaphor for the structure of the atom. (Sternberg, 1999b, pp. 84-5)

The second aspect of intelligence crucial to creativity, according to the *Triarchic Model*, is analytic ability. Analytic ability refers to the ability to critically evaluate information, including the merits and limitations of one's own ideas. Analytic abilities would appear particularly useful during the exploratory stage of the creative process (in determining which paths or ideas are best to pursue) as well as the evaluation stage. The third pillar of Sternberg's *Triarchic Model of Intelligence* is the ability to practically apply one's skills in everyday contexts. Because creative ideas are, by definition, out of the ordinary, a certain level of salesmanship is necessary for creativity. One must be able to show others the value of one's ideas, new ways of thinking, or novel products. This practical aspect of the *Triarchic Model* starts to take it beyond a purely intellect-based account of creativity, and into the social realm.

Opportunities for Studying Intelligence and Creativity in Consumer Psychology It can be pointed out that intelligence is a neglected area in consumer research in general (Alba, 2000). One question is whether different types or aspects of intelligence differentially relate to varied forms of creative consumption. Gardner's *Multiple Intelligences Theory* seems particularly applicable here. Given that expressive acts of creative consumption are socioculturally based, it might be suggested that higher social intelligence should be related to more expressive acts of creative consumption or more strongly related to the aesthetic dimension of creative consumption. However, staying true to Gardner's thesis would suggest some additional form(s) of intelligence would also be necessary, though it is not immediately clear which form(s) these may be. Conversely, do consumers who exhibit high creative problem solving abilities (presumably due to strong logical-mathematical and spatial abilities) struggle in consumer settings predicated on social interaction? Gardner's MIT

would seem to suggest that consumers who would be quite creative in one context may not be in another.

Analogical Reasoning/Metaphoric Thinking Perhaps no construct elicits more intrigue and trepidation in creativity research circles than metaphorical thinking and analogical reasoning. If creativity has an all-important mechanism, this is widely believed to be it (Hummel & Holyoak, 2002). Creativity involves making new internal cognitive connections and representations of the external world, and this goes to the heart of metaphor. We previously alluded to the importance of metaphors and analogies to creativity, and a greater appreciation for their potential role can be gained by returning to the insight stage of the creative process. When the mind transcends the conceptual void and connects two disparate ideas in a flash of insight, this connection is nearly always metaphorically described, be it Einstein's "trains" for the theory of relativity, Kekulé's "snakes" for the structure of benzene, or Watson and Crick's "staircase" to describe DNA.

If metaphors were merely a vehicle for expressing creative discoveries derived by other cognitive means, this would not be impressive. But metaphors are much more fundamental. They are, quite directly, the way creative insights are formed. They are creativity's glue. Einstein said he could only envision his theory of relativity through metaphors, after which he considered the complex formulas associated with this theory rather pedestrian. Other eminent creative individuals similarly describe their reliance on metaphors in order to derive and comprehend their own creative insights (see Driestadt, 1968; Martindale, 2001).

To illustrate the essential nature of metaphors in creative thought, it is necessary to consider how things would differ if thoughts could only be literal. This requires a brief digression into lower order animals. Carpenter ants burrow their nests into decaying or weakened wood, a response that is rote, automatic, and almost certainly lacking in any semantic understanding of the concept of wood. Carpenter ants are only capable of interacting with wood in one way. At this point, figurative understanding is unnecessary and creativity impossible. Humans, on the other hand, have a more fluid conception of wood. Metaphors and analogies allow humans to see wood as furniture, a weapon, a home, fuel, or most anything else. Our ability to process information figuratively allows us to compare and transform the conception of wood in relation to other things. At this point, a whole host of creativity opportunities opens up and, indeed, humans have used wood in an imponderable variety of ways.

So how does the mind utilize metaphors in the creative process? This is obviously a difficult question to answer, but perhaps the most compelling answer comes from neural-network theory and the notion of semantic schemas (Hummel & Holyoak, 2002, Martindale, 1995). According to neural network theory, concepts are arranged in memory in associative hierarchies. Concepts that share a steep associative gradient have a strong level of connectedness, whereas those more weakly or distally related have a flatter associative gradient. To make a creative connection, the mind must move out along the associative plane, mapping distal concepts to proximate ones such that there is a correspondence between the two ideas. Metaphors are the mechanism of this connection. They bridge the conceptual divide to reveal a connectedness that was before unrecognized. The greater the divide between source and target concept, the more novel and creative the resulting insight (Hummel & Holyoak, 2002).

As previously noted, the act of focusing intensively on a problem (i.e., fixation) appears to inhibit its creative resolution, at least initially. From the perspective of neural-network theory, as attention becomes focused concepts that share a steep associative gradient (i.e., are closely related) become more strongly activated, whereas those that are more weakly connected (more diffusely associated) become blocked, a phenomenon known as lateral inhibition (Martindale, 1995). The brain focuses

on those conceptual connections closely linked to the focal problem or issue. As attention wanes, the connection among associative links begins to weaken and diffuse. The associative network becomes characterized by a relatively wider set of partially activated nodes (i.e., the associations connect farther back into long-term memory and transcend a wider array of semantic concepts); this signals entry into the incubation stage of the creative process.

Thus far the discussion has focused on state level aspects of associative networks and the role of metaphor and analogy in producing creative insights (i.e., anyone is capable of making a creative connection). But to understand creativity one must also consider trait aspects of how different individuals form and maintain these networks. Most individuals have a propensity to operate from a relatively limited set of concepts that share steep associative gradients. Thus, they do not tend to exhibit a great deal of creativity (Martindale, 1995). Conversely, some individuals are more inclined to utilize flatter associative networks (i.e. maintain many linkages weakly activated).² As such, they are more likely fan out across the conceptual plane and make the metaphorical connections that result in creative insight. This is not to say such individuals lack the ability for intensive focus, but their propensity towards working from broad associative network structures makes them less prone to fixation-related blockages.

Empirical data have been collected on both enduring and situational aspects of neural network theory, metaphorical thinking, and creativity. On the latter issue, anything that increases states of arousal tends to decrease creativity (Martindale, 1990). Arousal is associated with intensity of focus and a constricting of the associative network. Related empirical research finds that creative individuals are able to maintain lower and more diffuse levels of arousal when completing creativity-related tasks than individuals who are less creative (Martindale, 1990). However, Csikszentmihalyi's (1996) *Flow* theory of creativity stands somewhat in contrast to Martindale's findings. *Flow* theory describes how individuals become so immersed in creative endeavors that they actually lose connection with the outside world. The mind becomes fused with the task. So, how to reconcile Martindale's and Csikszentmihalyi's observations? Part of the explanation may lie in an individual's affective state at the time. Individuals who become frustrated with a lack of progress (i.e., negative affective state) are likely to bear down even further and be less creative. By contrast, individuals in a flow condition are experiencing a state of positive psychological rhythm, which may allow them to move their focus about as necessary to leverage distal connection and directed effort. It is also known that highly passive, lethargic states (highly decentralized cortical activation) are not conducive to creativity either.

Other research has examined the guiding role of metaphors and analogies in creative problem solving. Among the better known of these studies is Gick and Holyoak's (1980) investigation of remote analogies and creativity. Gick and Holyoak demonstrated that the provision of certain metaphors can increase the association gradient between otherwise distal concepts leading to more creative solutions to problems. In one study, subjects were told that a patient has an inoperable stomach tumor and direct radiation will destroy too much healthy tissue. They were then asked to come up with creative ways to save the patient. Subjects who first read a story about a general attacking a fort by having his army converge on it from multiple sides were more likely to propose irradiating the tumor with small doses of radiation from multiple angles.³ Similarly, if subjects first read about the general discovering a hidden supply route into the fort and sending his army through it, they were more likely to propose inserting a tube down the esophagus and sending radiation through the tube.

Though Gick and Holyoak's (1980) findings came in a laboratory setting, the environment is replete with stimuli that could incidentally cue creative solutions to consumption problems. For example, in another consumer interview conducted by the first author, an informant recounted

the time he had a problem flying his kite on a windy day because the kite string kept becoming entangled. His solution was to attach a fishing swivel between the string and the kite (a fishing swivel is a piece of hardware that allows a hooked fish to turn and thrash without twisting the fishing line). The fact that this bit of insight came to him in a park on the shores of Lake Michigan with fishermen milling about appears beyond chance.

In addition to manipulating metaphors in different situations, metaphorical thinking has also been approached as an individual differences variable in creativity research. Burroughs and Mick (2004) developed the *Metaphoric Thinking Ability-Sentence Completion* task (MTA-SC), to test an individuals' propensity and ability to think metaphorically. Individuals are given sentence stems of abstract concepts (e.g., "Helping someone is...") and asked to complete the sentence in such a way as to "capture the essence of each concept as succinctly as possible." Individuals who completed the test using more immediate, literal associations (e.g., "Helping someone gives you a good feeling.") demonstrated less creativity on a subsequent problem-solving task than individuals who completed the sentences using more remote, metaphorical associations (e.g., "Helping someone is to make a deposit in the bank of Karma."). The problem-solving task confronted subjects with a pair of scuffed shoes just prior to a social engagement, in which they discover they are also out of shoe polish. High MTA individuals appeared to recognize color, consistency, and parallel use analogies with other substances that could serve as a substitute for polish and came up with more creative solutions as a result. For example, one high MTA individual combined eye mascara with petroleum jelly to produce an impromptu polish that would restore both color and luster to the shoes.

Knowledge A third major factor that affects an individual's ability to be creative is knowledge. On one level, knowledge is an axiom in the creative process. If creativity involves the formation of new conceptual linkages, then a corpus of knowledge concepts is, by definition, required. However, the exact role and nature of knowledge in the creative process has been a topic of debate, with some scholars arguing greater knowledge universally benefits creativity and others advocating that knowledge plays a much more limited role or can even be detrimental. These varied perspectives are reflected in the foundational and the tension views of creativity, respectively (Weisberg, 1999).

The tension view holds that because creativity must fundamentally represent an outcome that goes beyond existing knowledge, a tension exists between what is known and what we can discover. At some point, creativity necessarily involves breaking free of past ways of thinking and viewing the world, and in this respect existing knowledge represents an impediment to creativity.

An extreme derivative of the tension view is what has come to be known as evolutionary epistemology (Dasgupta, 2004). Initially proposed by Campbell (1960), and later expanded by Simonton (1999), this perspective advances that creative outcomes are quasi-random products of a nearly blind process, with little, if any, connection to the past (i.e., existing knowledge) (Hausman, 1984). In other words, a process of essentially free and random associations will occasionally produce extraordinary results. In making his initial case for the evolutionary view of creativity, Campbell (1960) pointed out that a monkey randomly pecking keys will eventually type *Hamlet*. The fact that the insight stage of creativity is often removed from conscious deliberation does support an element of randomness to the process.

Though the evolutionary epistemology of knowledge creation has attracted some powerful adherents, including philosophy of science giant Karl Popper, it has also had its share of critics. Two specific rebuttals are worth mentioning. In a 1986 project, Richard Dawkins took up Campbell's challenge that even a monkey could eventually write *Hamlet*. He wrote a computer program to randomly generate letters targeted to a single line of the play, "Methinks it is like a weasel." He found the chances of a monkey randomly producing just this one statement to be $1/28$.²⁷ At this rate

the monkey would, quite literally, evolve into a human faster than it would randomly reproduce the entire play by Shakespeare. By contrast, if each random trial that came successively closer to the end target were retained moving forward (a condition that would clearly implicate a knowledge component in the creative process), the line from *Hamlet* will be reproduced in only 10 to 50 generations.

The other critique of evolutionary epistemology is supplied by Dasgupta (2004) in his historical analysis of Picasso and his painting of *Guernica*. Picasso's chaotic style of painting makes him a popular subject when it comes to the argument that creativity is a stochastic process (Picasso himself recounted how his vision for a painting almost seemed to come in a fit). And yet Dasgupta's careful reconstruction of the chronology of the painting of *Guernica* would suggest it was anything but random. A series of precursory sketches (linked to his own works as well as those of other artists) betray a highly deliberative process that unfolded over a period of weeks if not longer. Creative insights may appear to come in an instant, but are nurtured over a protracted period and it is difficult to deny the role of prior knowledge and experience.

For this reason, most adherents of the tension view adopt a more tempered perspective on the role of knowledge in the creative process. These individuals subscribe to what is known as the inverted-U hypothesis of knowledge and creativity. This hypothesis maintains that some basic level of knowledge and understanding is necessary for creativity, but beyond this point knowledge starts to work against the creative process by encouraging entrenched ways of thinking. Deep knowledge of an area lends a certain comfort and dependency on particular models and modes of thinking that the individual may be reluctant to abandon (Frensch & Sternberg, 1989). The inverted-U helps explain why relative novices occasionally produce extraordinary creative breakthroughs in a given area. These novices are not wedded to traditional viewpoints and dominant paradigms of thought. Empirical support for the inverted-U hypothesis was supplied by Simonton (1984). He studied more than 300 individuals of eminent creative importance from the 15th to 19th centuries (e.g., Mozart, Galileo, Rembrandt) and found the highest levels of creative eminence to be associated with only moderate levels of formal education.

Yet even a tempered version of the tension view has its opponents. Weisburg (1999), for example, is quick to point out that while relative novices may occasionally produce eminent creative works, it is their very rarity that makes them so noteworthy. In studying eminent creative contributions across a wide variety of disciplines, including literature, the visual arts, science, and music, Weisburg consistently finds that the vast bulk of eminent creative contributions come from individuals with substantial time in task. Because creative contributions build upon prior creative work, Weisburg argues, an individual needs time to develop sufficient foundation in an area before a creative contribution can be made.

In further building his case for the foundational perspective, Weisburg (1999) comments on Simonton's (1984) historical eminence study. Weisburg aptly points out that formal education is not equivalent to knowledge, and that educational standards varied widely across the period Simonton studied. Moreover, during this time many individuals were self taught. For example, Thomas Jefferson, one of Simonton's subjects, was a statesman, philosopher, architect, horticulturist, naturalist, author, and inventor. Yet he had little or no formal training in any of these areas. This is an important distinction because most creative individuals exhibit not only depth of knowledge in a given area, but breadth of knowledge across many areas—an obvious asset when attempting to draw together concepts from disparate conceptual planes. Not surprisingly, it is adherents to the foundational view of knowledge and creativity that add a preparatory stage to the creative process.

An emerging view takes a hybrid approach to the knowledge-creativity question. Gruber's *Evolving Systems Approach* (ESA) is one account that draws elements from both the evolutionary

and foundational perspectives (see Gruber and Wallace 2001). ESA grew out of Gruber's prolonged interest in the creative works of Charles Darwin and Jean Piaget. ESA notes that, at a minimum the environment in which the individual finds themselves in is, to some degree, random (the fact individuals cannot produce creative works at will further supports that the process is not entirely deterministic). And yet, Gruber's studies strongly indicate that it is remiss to simply treat creative breakthroughs as random occurrences. Creative individuals go through an evolution in their thinking about an issue in which their knowledge (and the system of metaphors used to develop this knowledge) is expanded and revised. Gruber and Wallace (2001, p. 346) even suggest the moment of insight in creativity may be overstated:

The common *idée fixe* is that a single, sudden transformative illumination is the essence of creativity. But Gruber's immersion in Darwin's notebooks demonstrates that Darwin had many insights, perhaps hundreds. Having the experience of insight does not inevitably represent a break with the past, but rather may reflect the fluctuating but steady state of a cognitive system at work. Needless to say, some insights are wrong, others reflect ideas previously encountered and then forgotten, and some very occasionally reveal the romantic revelations that are the grist for the mill of storybook psychology. Thus, Darwin's celebrated insight on Malthus had many forerunners and foreshadowings.⁴

In sum, it appears knowledge is necessary for, but no guarantee of, creative insight.

Opportunities for Studying Knowledge and Creativity in Consumer Psychology A number of studies in consumer behavior have incorporated knowledge considerations into research on creativity, and additional opportunities exist. For example, Burroughs and Mick (2004) found formal education to be negatively related to creativity on an everyday problem solving task. On the one hand, this finding would seem to support the tension view of creativity (i.e., that knowledge can be detrimental). On the other hand, it is possible a lack of formal education forced these individuals to learn to be resourceful. In other words, their lack of schooled knowledge was more than offset by the knowledge they accumulated through life experiences. Clearly, further research is needed before any definitive assertions can be made.

As another possible avenue of further investigation in this area, Alba and Hutchinson (1987) proposed that product category structure is more veridical, complex, and less stereotyped in consumers who possess high levels of knowledge about a product category than novices. Alba and Hutchinson also suggested that greater knowledge allows more abstract levels of comprehension in products, facilitating comparison of dissimilar product types. To the extent these two assertions are true, they would support that use innovativeness—the creative application of products to uses for which they were not initially intended—should benefit from higher levels of product knowledge (i.e., a position consistent with the foundational view).

Alba and Hutchinson (1987) go on to suggest that individuals with high levels of product knowledge engage in selective encoding of new information. To the extent selective encoding helps the consumer move more quickly to a state of convergent thinking (i.e., the selective focus on those cognitive connections most relevant solving a problem), this would also be consistent with the foundational view and benefit creativity.⁵ In other words, consumers who are experts may be more creative not only because they have more information available to them, but because they are better able to determine which information is most useful.

On the other hand, if high levels of product knowledge lead consumers to engage in selective encoding of new information, this could potentially work against creativity by limiting the amount of additional information available for novel conceptual combination (a position more consistent with the tension view). In any case, more work is needed in identifying the conditions under which knowledge enhances consumer creativity and those in which it inhibits it.

Motivational Factors

While ability factors provide the mechanism of creativity, they alone are not sufficient to guarantee a creative outcome. The personality of the individual is also important, particularly as it relates to their motivation. Two motivational constructs relevant to creativity are risk taking and intrinsic motivation.

Risk Taking Risk taking and the closely related issues of novelty seeking and tolerance for ambiguity are integral to creativity. To be creative, individuals must be willing to step outside their comfort zone and to undertake initiatives where the outcome is uncertain and potentially erroneous. Also, because the creative process usually involves a period of conceptual abyss, an individual must be able to endure ambiguity in order to see the process through. In fact, not only must the individual be able to tolerate risk and ambiguity, they must exhibit a certain affinity for it. Creative individuals break their own path (Sternberg & Lubart, 1995) and research by Bagozzi and Foxall (1996) confirms this to be as true of consumer behavior as any area. Specifically, Bagozzi and Foxall found consumer innovators like to go their own way, exhibit a disdain for rule governance, and flout convention. They also found consumer innovators were willing to propose many solutions to a problem, even if impracticable. Given the relatively dispersed associative networks associated with creative thinking, a certain level of inefficiency and ambiguity is an inherent part of the creative process.

Among the more systematic theories to address the risk taking aspect of creativity is Sternberg and Lubart's (1996) *Investment Theory of Creativity*. Sternberg and Lubart employ a finance metaphor to highlight the characteristics of successful creative individuals:

1. Successful financial investors have to be willing to take risks, and ready to act contrary to the behavior of other investors. Creative individuals must take risks, even at the prospect of going against the crowd.
2. A key to successful investing is to buy low and sell high. Creative individuals must invest themselves in ideas that are currently out of favor but that have great potential for influence at a later point.
3. Successful investors must adopt a long-term horizon and be willing to weather periods of tumult and uncertainty in the marketplace. Creative individuals must persevere through periods of ambiguity and uncertainty in order to see their undertaking through to its ultimate success.

However, Sternberg and Lubart add that creative individuals also differ from financial investors in some key respects. Namely, creative individuals must not only buy into ideas that are out of favor, but shoulder the added burden of having to "sell" the worth of these ideas to others. For this reason, verbal ability is also an important component of *Investment Theory*.

Intrinsic Motivation Early perspectives on creativity adapted a psychodynamic perspective which held that creativity resulted from the inherent tension between unconscious desires and conscious constraints, a somewhat dark view of motivation. However, the tenability of this position is challenged by the undeniable observation that humans often pursue and persevere in creative endeavors out of sheer enjoyment (Nakamura & Csikszentmihalyi, 2003). This aspect of creativity is captured in the concept of intrinsic motivation.

The role of intrinsic motivation in creativity can be traced back to studies of children and the seminal work of White (1959). Play is critical to early childhood development and studies unequiv-

ocally point to the value of play in the creative process (see, e.g., Howard-Jones, Taylor, & Sutton, 2002; Russ, 2003; Trevas, Matsouka, & Zachopoulou, 2003). Because it is essential to development, children are capable of engaging in sustained periods of creative play, a capacity that carries into adulthood.

Probably no scholar has studied the relationship between intrinsic motivation and creativity more extensively than Teresa Amabile. Like most contemporary creativity researchers, Amabile takes a confluence view of creativity, but her central focus has always been intrinsic motivation (Amabile, 1996). Over the span of 25 years, Amabile has conducted empirical research on the role of intrinsic motivation in creativity across education, the arts, and the workplace (see Collins & Amabile, 1999, for a summary of this program of research). The general finding from this research is that intrinsic motivation is an essential and positive contributor to creative performance.

However, the nature and role of intrinsic motivation in the creative process has been pulled into a broader debate on the interaction between intrinsic motivation and extrinsic influences on performance (see Hennessey, 2000, for a review). A fairly robust finding in the creativity literature is that extrinsic factors (including rewards) can undermine creativity by reducing intrinsic motivation. External rewards divert attention away from inherent interest in the task and toward the unrelated reward (Deci & Ryan, 1985). Hennessey (2000) expands this position and offers that the interaction of intrinsic and extrinsic factors can be explained by the well-known discount principle in psychology. When humans perform a task that could be driven by both internal and external motives, individuals tend to discount internal motives in favor of external ones. For example, if a child is at home coloring and asked why she is coloring, she will usually respond that it is because she likes to color. However, if this same question is posed to a child while at school, she will often respond that she is coloring because she will get a good participant sticker. Since enjoyment must ultimately come from within, the result is de-motivation and diminished creativity.

However, there appear to be boundary conditions on the negative role of extrinsic factors on creative outcomes. A number of studies have found that under certain conditions extrinsic rewards can even be beneficial (Collins & Amabile, 1999; Shalley & Perrry-Smith, 2001). Noteworthy among these were the "immunization" studies conducted by Hennessey and colleagues (e.g., Hennessey, Amabile, & Martinage, 1989; Hennessey & Zbikowski, 1993). They wondered if it might be possible to immunize individuals against the adverse effects of extrinsic influences on intrinsic motivation. What they found was that when subjects were specifically trained to focus on the aspects of a task they found intrinsically interesting, the provision of an extrinsic reward had no adverse effect on creative performance. In fact, the provision of the reward had an additive effect by reinforcing the positive reasons the individual engaged in the task to begin with. By contrast, when the presence of an extrinsic factor is interpreted as a competing reason for undertaking an activity, it undermines intrinsic interest in the manner described earlier. Thus, it appears an individual's interpretations as to the reasons they are engaged in a task plays an important role in how extrinsic factors influence creative performance.

Opportunities for Studying Motivation and Creativity in Consumer Psychology Given that both extrinsic factors and intrinsic interest are present in many consumer settings, this may provide a good venue for researching the influence of motivation on creativity. One distinction that has been made in past consumer research is between mundane problem solving and more expressive or artistic forms of consumer creativity. From our observations, individuals solve many routine consumption problems simply to get on with the business of life. In these externally driven situations, we would expect intrinsic motivation to be relatively unimportant. With almost no intrinsic motivation to be undermined, extrinsic motivators should directly and positively impact creative

problem solving. By contrast, in endeavors where the individual seeks out opportunities to engage in creative acts of consumption (e.g., fashion), intrinsic motivation will be high and extrinsic factors would seem likely to impinge on task enjoyment and creativity in a manner similar to other areas of creativity. Of course, individuals' interpretations as to the reasons for the presence of an extrinsic factor would represent an important moderator.

Another interesting research avenue would be to investigate if intrinsic and extrinsic factors differentially affect the various dimensions of creativity. Perhaps extrinsic factors encourage novel thinking, but not necessarily any more effective thinking, while intrinsic motivation helps sustain the individual through to achieving the most effective solution.

A final research possibility would be to introduce other personality variables into the intrinsic/extrinsic equation. Creativity researchers have called for the inclusion of additional personality variables in the study of intrinsic motivation, but this call has gone largely unheeded.⁶ Perhaps individuals high in self-monitoring exhibit more positive creative responses to extrinsic reinforcements than individuals low in self-monitoring because high self-monitors are attracted to this type of stimulus. Again, the nature of consumption (transcending both mundane and enduring social activities) would provide an interesting context to investigate an issue such as this.

Affect

A fairly robust finding in the creativity literature is that positive moods foster creative thinking. Studies have found that individuals in a good mood perform better on a number of creativity tests including Dunker's candle problem and Mednick's remote associates test (Isen, 1999). Why do positive moods lead to more creative thinking? The answer, it is believed, is because positive associations are more fluid, diverse, extensive, and interconnected than neutral or negative associations (Isen, 1999). Additionally, positive moods appear to predispose individuals toward over-inclusion and loose conceptual boundaries (Bowden, 1994). In short, they expand the associative network.

Interestingly, Lubart and Getz (1997) propose that positive moods and affect may also enhance creativity vis-à-vis metaphorical thought processing. They note that certain emotions are idiosyncratic and tied to specific past experiences (e.g., emotions tied to a wedding or vacation). Metaphors connect these emotional "endocepts" to episodic memory as well as other endocepts in the cognitive system. The process begins when some element in the environment is analogous to a prior experience, metaphorically transporting the individual back to an earlier time and place. In other words, because emotions can only be understood metaphorically, metaphors are generated to tie these events together. This spreading emotional activation causes two temporally distal experiences to appear related, setting up fertile conditions for creativity. Thus, metaphors not only link distal semantic concepts, but also emotional ones. In partial support of their theory, Lubart and Getz had students describe the emotions associated with an elevator. One student found elevators to be "cold," which elicited thoughts of caged animals in a zoo. This metaphorical connection prompted the suggestion that elevators be equipped with softer furnishings and displays to make them appear less cage-like.⁷

There may also be a physiological basis for affect's association with creativity. Ashby, Isen, and Turken (1997) note that positive mood states involve the release of the neurotransmitter dopamine, a chemical that has been correlated with cognitive flexibility in humans. This may not only have cognitive benefits for creativity, but behavioral ones as well. Kahn and Isen (1993) found individuals who are in a good mood are more likely to engage in variety seeking behavior. Thus, not only might a good mood benefit immediate problem solving through increased cognitive flexibility, it might also help build an individual's repertoire of experiences for future creative problem solving.

Some recent research qualifies the mood-creativity relation. Weisberg (1994) suggests that positive mood states may result in increased creative productivity, but not necessarily increased creative quality. Additionally, Kaufman and Vosburg (2002) found that while positive moods facilitated early-stage idea production, neutral and negative moods were actually more strongly associated with late-stage creative production (when time constraints begin to set in). During late-stage creative production, individuals in a negative mood exhibited the relatively flat association gradients characteristic of creativity, whereas individuals in positive moods exhibited steeper, non-creative response gradients. This led Kaufman to later suggest that the influence of mood may depend on what stage of the creative process one is in (Kaufman, 2003). Finally, research by George and Zhou (2002) suggests that extrinsic motivators may moderate the mood—creativity relation. They found that a negative mood actually enhanced creativity when perceived recognition and extrinsic rewards were high.

The Creative Environment

The role of the environment has received only limited consideration in creativity research, with discussions often directed at the macro-social level (e.g., the characteristics of society that produce an atmosphere of creativity such as tolerance for others, safeguards for freedom of expression, and so forth; see, e.g., Csikszentmihalyi, 1999). When more proximate aspects of the environment have been the focus of research, the following general conclusions have emerged. The environment plays a critically important role in determining creative acts, particularly in the case of more mundane consumer problem solving. Elements of the environment can compel creativity by constraining resources normally available for routine problem solving such as a lack of time (Burroughs & Mick, 2004) or materials (Moreau & Dahl, 2005). Though there is a tendency among consumer researchers to presume that the resources and products necessary for consumption are available, many (perhaps even most) instances of consumer behavior are constrained. Stores close, products are out of stock, and money is tight. The consumer must navigate a difficult consumption environment and creativity helps make this possible.

As the focus moves from mundane and immediate problem solving to more social and expressive forms of creative consumption, it appears that the role of the environment diminishes and individual characteristics, particularly intrinsic motivation, become increasingly important drivers of creative behavior. The environment is still important, but instead of reacting to the environment, consumers now seek out situations and places in which to exhibit creativity.

The Creative Experience

An earlier section considered how affect influences creative outcomes. However, it is just as important to consider how acting creatively influences emotional and psychological outcomes. Creativity is incredibly important to self-construction and positive affect. Yet, the consumer psychology literature has almost nothing to say about how creatively interacting with products enhances the consumption experience, including an individual's overall level of satisfaction (for an exception see Burroughs and Mick (2004) who found that acting creatively elevated positive affect and satisfaction with the consumption experience). The satisfaction and sense of efficacy individuals derive from acting creatively is likely to be a powerful driver of future consumption behaviors.

We also know individuals enter into creative "flow" states in conjunction with some consumption activities (particularly those that are experiential or playful in nature; Mathwick and Rigdon, 2004), but we have little understanding of what produces these flow states or how the consumption process may be altered as a result (Kowal & Fortier, 1999). Given that consumers undertake many

consumption activities of their own volition, researchers need to do more to understand when and how creativity may impel consumers to seek out certain consumption opportunities or engage the consumption process in particular ways.

FURTHER DISCUSSION

Opportunities to research creativity in consumer psychology extend beyond the topics covered here and entire areas of consumer research can be opened up to the issue of creativity. As but a few brief examples, consider the topics of shopping, gift giving, and rhetoric. At a recent conference, Guiry and Lutz (2001) presented research to suggest that consumers can be highly creative in their approach to shopping, utilizing their creative skills to find the best deals, most efficiently cover the retail space, and maximize their enjoyment of the shopping experience. They suggest some consumers may even define themselves, in part, based on their creative shopping prowess.

In another conference presentation, Otnes, Kacen, and Lowrey (2001) focused on the role of creativity in Christmas gift giving. In addition to external constraints such as budgets, Otnes et al. suggest that creativity in gift giving may be motivated by internal constraints, such as a felt need to do something special for the recipient besides just giving a store-bought item. It is not a great stretch to suggest that gifts that include a creative touch produce more powerful interpersonal connections than those that are simply purchased. Once again, however, context and interpretation are likely to come into play. If the gift recipient interprets the creativity on the part of the giver as a way to avoid spending money instead of as a genuine personal gesture, the relationship may actually be weakened. We have little understanding of creativity's impact on the interpersonal dynamics of gift exchange.

Finally, a series of studies by McQuarrie and Mick (e.g., 1999, 2003) on advertising rhetoric documented the powerful role of figurative language in ad processing. Specifically, they found that advertisements that use figurative language (e.g., rhyme, antithesis, metaphor, puns) are more likely to elicit attention, produce greater message elaboration, be more memorable, and result in more favorable reactions, than ads that are primarily literal. It is quite possible that creativity represents an important link that helps explain this phenomenon. Gruber and Wallace (2001) outlined how figurative language plays an important role in the creative process (see, e.g., Gruber & Wallace, 2001), and this includes not only metaphor, but other tropes as well, including irony and hyperbole. Rhetorical figures force a message recipient to create a conceptual connection as opposed to having the connection literally provided to him or her. It is this creative connection that makes two otherwise disparate concepts ironic, humorous, or entertaining. In this sense, rhetorical figures force the recipient to be a co-producer of message meaning. It is not surprising then to find that the individual elaborates more or finds the message to be more interesting and memorable. Considerations of creativity may offer an interesting opportunity to extend McQuarrie and Mick's work.

New Product Development

We previously alluded to the fact that consumer creativity may have marketing benefits, particularly in the area of new product development. This is an area of such potential import that it merits its own consideration. No issue in new product development (NPD) is more critical than consumer acceptance. Most new product failures are ultimately a failure to adequately understand and meet the needs of some customer base. It is therefore somewhat perplexing that consumer creativity has received limited attention as a possible source of new product ideas (for exceptions see Dahl & Moreau, 2002; Prahalad & Ramaswamy, 2000; von Hippel, Thomke, & Sonnack, 1999).

However, rather than speculate on why consumer creativity is not sourced more heavily in the new product development process and make normative suggestions for increasing consumer involvement in NPD, we take a slightly different tact. We consider some of the major challenges facing the new product development process and relate these to issues discussed earlier in conjunction with consumer creativity. Hopefully, this discussion will provide new vantage points on the role and application of consumer creativity to the new product development process.

Lead Users Von Hippel (1986) discusses the importance of lead users in the product development process. Lead users are consumers who face a need ahead of the mainstream market, and in so doing, they often create their own solutions. These instances of creative consumption regularly occur well before there is any commercial product available to address the given need (e.g., the secretary, tired of retyping entire pages, would ultimately be the one to come up with idea for liquid paper). For this reason, lead users are often an invaluable source of new product ideas and improvements. But beyond their first-hand knowledge, are there other reasons lead users are so valuable to NPD?

Their value may also stem from the exploration and incubation stages of the creative process. Recall that individuals must often struggle with multiple potential approaches to a problem or issue, and that a period of apparent idle time often precedes creative insight. The very nature of lead users puts them in a position to benefit the most from the way the creative process unfolds. When lead users encounter a problem with a particular product, they are likely to struggle with it repeatedly over multiple instances and settings. As with any creative breakthrough, the moment of insight is likely to reflect a prolonged period of exposure to the product and its problems. Conversely, individuals who have only occasional contact with a product (including, perhaps, product developers) are going to be less cognizant of a product's deficiencies and frustrations, and the ways the product could be improved.

Another interesting issue related to lead users revolves around the question of intrinsic motivation. We have previously reviewed the benefits of intrinsic motivation to the creative process, but it is interesting to consider this issue in the context of lead users. Lead users' contact with a given product often occurs through their jobs. Individuals hold jobs for any number of reasons, with some people deriving great personal satisfaction from their work and others seeing a job as little more than a paycheck. This range of work orientations is likely to have a pronounced effect on the creativity of lead users. Individuals who interact with products because they must in order to do their job are likely to be less creative than individuals whose interaction with products is derived from an inherent interest in their work. While a great deal of research effort has been expended in marketing and management to understand the impact work orientations on job performance, these findings have not been extended to the issue of creativity, lead users, or new product development.

Affect New product development (and the workplace more generally) may provide an interesting context to examine the role of affect on creativity. We previously discussed the benefits of positive affect for the creative process. In support of this premise, Amabile and Conti (1999) describe how positive workplace environments foster creativity, whereas workplace creativity declines during periods of downsizing. But many creative innovations are as driven by tension and apprehension as by interest and enjoyment (sometimes at the same time). This raises the interesting question as to when stress (a negative affective state) is actually conducive to creativity. Amabile et al. (1996) suggested that an individual's interpretation of pressures may impact their creative responses. When stressors are interpreted as challenges they tend to enhance creativity while those that are interpreted as excess burdens tend to impede it (Amabile et al., found support for the former condition

but not the latter one). Aside from this research, the issue of how negative affective states impact workplace creativity, particularly in the creation of new products, remains largely unexamined.

Metaphor The potential of incorporating metaphor into new product design is not something most researchers consider. Most new product design processes begin by asking how a product functions rather than why consumers use them. Yet, what a product symbolizes is often more important than what it actually does, and there are opportunities to incorporate metaphorical considerations into design concepts (see Mick, Burroughs, Hetzel, & Brannen, 2004). Producers of successful new products not only incorporate performance considerations into their designs, they also consider what the product will symbolize to others. All aspects of a product (lines, shapes, colors, textures, materials) create the metaphorical basis of a product's meaning and, by extension, a metaphor of its user. Products tell a story of how its owner is unique, or how he or she fits in. For this reason, the moment a product enters the marketplace its form is not static. Consumers change it, add to it, and combine it with other products to create new personal and social meanings. This transformative process has been documented in the areas of antiquities (Holt, 1997), gay subculture (Kates, 2002), and consumer rebellion (Hebdidge, 1977). Though marketers may be primarily responsible for the initial meanings in a product, consumers appropriate these meanings, change them, and force marketers to respond with new product offerings and meanings. This entire interaction is metaphorical in nature. By adopting a model of the product as metaphor, designers put themselves in a unique position to design products in truly innovative ways.

Closing

Consumer creativity is a complex process that reflects a confluence of factors. At its most elemental level, creativity combines remote concepts in new and appropriate ways. The creative process encompasses a series of stages where metaphorical thinking fuses semantic concepts during a period of incubation (diffused neural network activation) that results in novel insights in the marketplace. Individuals higher in certain types of intelligence are able to activate more concepts in the neural network, and those with higher levels of knowledge have a wider repertoire of concepts and domains to draw from in formulating creative responses. Moreover, the creative process will be moderated by other aspects of the individual consumer including the propensity for risk, the level of intrinsic motivation, and affective states. Overlaid on all this, the environment will compel and facilitate (or discourage and preclude) specific types of creative responses.

The topic of creativity is essential yet neglected in consumer psychology. We have tried to provide an integrative review of creativity's most central elements, and identify opportunities to extend this research into the realm of consumer behavior. We feel we have only scratched the surface and that creativity remains a truly open frontier. Perhaps 10 years hence this volume will be updated. It will be interesting at that point to see whether creativity has become an essential part of mainstream consumer psychology, or remains an area of unrealized promise.

NOTES

1. While useful to separate the study of creativity into different eras, the evolution of creativity research is hardly linear. Psychodynamic studies of creativity that characterized the early 20th century continued well beyond their halcyon days, even becoming popular again in the 1970s (and case study method originally associated with the psychodynamic perspective is still an important methodology in creativity research). The same can be said of other eras. For example, studies of intelligence and creativity

- popular during the psychometric period of the 1950s and 1960s were actually undertaken as early as the 1920s, and psychometric approaches also remain an important subcomponent of creativity research to this day.
2. Interestingly, individuals afflicted with psychoses (e.g., schizophrenia and related disorders) as well as borderline psychotics exhibit a flattening and widening of the associative gradient. Their thinking becomes over-inclusive and they have difficulty deciphering rational boundaries. Psychotic individuals also appear to produce a disproportionate number of extraordinary creative insights. For a more academic treatment of psychosis and creativity see Eysenck (1997).
 3. The inoperable tumor described above is a variant of Dunker's (1945) radiation problem and is widely used in research on creativity and metaphor.
 4. Weisberg and Alba (1981) similarly suggest that the moment of "insight" may be overemphasized in creativity research. In their work on creative problem solving, they find that, as often as not, people simply, "apply their knowledge to new problems, and if their knowledge is not directly useful, they try to produce something new that will solve the problem through a straightforward extension of what they know" (p. 189). In other words, through an arduous process the person either works out a creative solution to their problem or fails in the attempt. However, from a phenomenological perspective at least, the moment of insight remains a powerful component of the creative experience and one that is not easily dismissed.
 5. Though not as frequently discussed as its divergent counterpart, convergent thinking is just as important to the creative process. Individuals must be able to identify and eliminate superfluous information if they are to be creatively productive (Runco, 2003).
 6. Cheek and Stahl (1986) did find introverts to be particularly susceptible to the negative effects of external evaluation on creative performance.
 7. Within the marketing and consumer behavior literature the *Zaltman Metaphor Elicitation Technique* (ZMET) appears to tap into very similar cognitive structures as those uncovered by Lubart and Getz. The ZMET technique is predicated on the understanding that consumers' desires often reside below the surface of consciousness and cannot always be verbally expressed. Researchers can, however, tap into these hidden emotional states through metaphors (Zaltman, 2003).

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