

THE IMPACT OF CREATIVITY ON THE EVALUATION OF ENTRY-LEVEL
INTERIOR DESIGN PORTFOLIOS:
EXAMINING THE RELATIONSHIPS AMONG CREATIVE NOVELTY,
RESOLUTION, AND STYLE

By

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Abstract of Thesis Presented to the Graduate School
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This study explored the impact of creativity in entry-level interior design portfolios where the creative product attributes of novelty, resolution, and style were examined relative to the creativity and hiring potential of design portfolios. Twenty-one designers individually assessed 12 portfolios from graduating seniors in an accredited interior design program. A locally developed evaluation instrument was used to measure five dimensions: novelty, resolution, style, creativity, and hiring potential. Designers also responded to qualitative questions aimed at revealing individual views of creativity and entry-level interior design portfolios.

The study was investigated in three stages. First, designers watched a programmed slide show of the 12 portfolios to get an overall impression of the portfolio group. Designers then viewed and evaluated the 12 portfolios independently using an evaluation

instrument. Lastly, designers answered questions regarding creativity, entry-level design portfolios, and their design background.

The quantitative findings which analyzed 248 data points and the qualitative findings of 12 designers' opinions, support novelty, resolution, and style as attributes of a creative product. The five variables measured by the study—novelty, resolution, style, creativity, and hiring potential—were found to highly associated with one another. Further investigation revealed that creativity is influenced the most by novelty and then style; hiring potential is influenced the most by style, followed by resolution, and then creativity. In addition, designers perceive resolution to be the most important attribute of creativity, while style, resolution, and novelty are considered important factors for hiring potential. Style appears to be the overall organizing attribute for novelty and resolution of a portfolio.

CHAPTER 1 INTRODUCTION

A creative compilation of personal and collaborative efforts produced throughout a period of time, the design portfolio can combine many design projects into a unifying testament of one's ability (Newstetter & Khan, 1997). For many design professions, the use of portfolios is a way of communicating talents, skills, and potential growth of entry-level professionals as well as experienced persons in the business. The design fields, including architecture, interior design and graphic design, acknowledge the portfolio as a necessary instrument allowing designers of all experience levels to showcase their work (Castiglione, 1996).

Performance-based assessments such as portfolios are developed with the purpose of better understanding students' competencies and skills: "Performance assessments provide a systematic way of evaluating those reasoning and skill outcomes that cannot be adequately measured by the typical objective or essay test" (Gronlund, 1998, p. 138). More commonly used in education now (Castiglione, 1996), performance assessments are advocated by educational researchers, and thought to be a better approach to measuring highly complex skills (Arter, 1999; Eisner, 1999; Wiggins, 1989; Wiley & Haertel, 1996; and Spalding, 2000). The interior design portfolio, a special case of performance assessment, is a useful tool for assessing both what students have retained from their educational experiences, as well as their potential for future success—two qualities that prospective design firms, professors, and teaching facilities alike consider integral for entry-level designers.

Purpose

Design portfolios, professional design projects, and competition entries seeking design awards are just a few applications within interior design that are subject to assessments of creativity (Christiaans, 2002). Since interior design is highly visual, being creative is a dominant factor in this field as much as it is in other design-based professions. Graduating students entering the design field not only understand the paucity of entry-level design positions and the competitive nature of design and designers, but also the role their portfolio has in securing future employment. Since creativity is considered a major element when defining the quality of a designer, many graduating students or students seeking internships are uncertain on how to display their design talents and skills through their portfolio in the most unique and appropriate way. Hoping to stand out among their peers, these students strive for direction on what is going to make them more desirable than a peer seeking the same position.

The purpose of this study is to determine what design professionals consider creative in entry-level interior design portfolios. These judgments will be measured using a quantitative portfolio assessment and an open-ended, qualitative inquiry. A 5-point Likert scale will be used to assess 12 portfolios on thirteen creative product characteristics. Five major variables will emerge from the 13 items that include novelty, resolution, style, creativity, and hiring potential. The results will likely reveal that the three creative product dimensions—novelty, resolution, and style—will be weighed differently for creativity and hiring potential. In addition, creativity will be defined differently amongst design professionals, but similarly in regard to the aspects of creativity that are deemed the most valuable.

Significance

In both art and design, creativity is believed to be the most important criteria for quality of performance (Christiaans, 2002). While research has been done on creativity in last decade, little highlights the systematic assessment of creativity in interior design. Creativity research centers on Mooney's (1963) four "P's" of creativity. The four facets of creativity represent the creative person, the creative process, the creative product, and the creative press (environment). Research has been done to analyze these four facets together, a combination of the facets, and to assess each facet individually. The creative product alone is the basis for this study. A creative product, defined by most researchers, is some combination of novel and appropriate (Jackson & Messick 1956; Amabile, 1982; Torrance, 1988). By assessing products for creativity, researchers have made considerable theoretical efforts "to identify precisely what attributes of the product contribute to its creativity" (Besemer & O'Quin, 1986, p. 115).

An in-depth investigation of a product in the art and design field, that being an entry-level interior design portfolio, will significantly affect creativity research, design education, and interior design students. First, exploring creativity of design portfolios, an area that has been researched very little, will considerably add to the body of knowledge surrounding creativity. Secondly, educators and teaching facilities can also gain applicable knowledge from this research. Understanding the aspects of interior design portfolios that are valued by professional designers will allow interior design educators to focus their teachings to maximize skills and content that may help students acquire a professional design position. Finally, interior design students will be introduced to the characteristics of creativity and educated on the value these characteristics hold for entry-

level portfolios. This knowledge will inevitably affect possible future careers in interior design.

Additionally, many studies have been completed in the last decade to illustrate what design practitioners prefer in terms of skills and attributes of recent graduates. Though these studies touch on very important aspects of the physical characteristics of the portfolio, such as format and substance, there is a lack of concern for the creative qualities that give each portfolio their unique character. One study conducted by Baker and Sondhi (1989) looked at the competencies and attributes needed by entry-level interior design graduates by surveying the top 200 interior design firms across the country. The study found that “large interior design firms are looking for entry-level personnel who critically think through design solutions based on design theories, communicates verbally and through graphic presentation, practice professional ethics, and present themselves as mature, enthusiastic, and well groomed” (p. 35). Although the professionals favored hiring graduates with a 4-year degree, sixty-eight percent of the responses said the portfolio was the primary basis of hiring decisions, followed by education. This illustrates not only the value that professional interior designers place on the portfolio, but also that the portfolio is the major ingredient that leads to entry-level employment.

These findings are similar to the results of a previous study conducted in 1983. Hernecheck, Rettig, and Sherman analyzed the viewpoints of 63 professional designers on the subject of competencies for interior design entry-level positions. Similar to the previous study, Hernecheck, Rettig, and Sherman found that the qualifications of the applicant were more of a concern to the professionals than whether the applicant’s

educational institution was accredited. These professionals place more emphasis on the “the individual’s capabilities as shown in the resume, portfolio, and personal presentation at the time of the interview” (1983, p. 12).

Research Questions

Through an empirical investigation, this study intends to measure how design professionals judge creativity in potential employees by assessing the portfolios of students from an accredited four-year interior design program. A quantitative scaled measurement will primarily be used, followed by a qualitative inquiry, to give substantial insight into the characteristics of successful, creative entry-level interior design portfolios. In order to understand creativity, this study tries to identify specifically, what design professionals perceive as creative in senior design student’s portfolio work.

By utilizing the Creative Product Analysis Matrix theory (Besemer and Treffinger, 1981), several dimensions of creativity have been identified to help quantify and measure the creative characteristics of interior design portfolios. The Creative Product Analysis Matrix theory was developed to create an in-depth observation of creative products by bringing attention to the more relevant qualities of the products (Besemer & Treffinger, 1981). These qualities, novelty, resolution, and style (Besemer, 2003), will be used to analyze interior design portfolios. Novelty refers to the newness of the product, resolution deals with how well the product functions, and style refers to the stylistic attributes of the product. Included as well are the dimensions of creativity and hiring potential. Creativity gives a measurable value to each portfolio and hiring potential is the student’s potential to be hired by the participant’s firm. This study relies on these five dimensions of entry-level interior design portfolios to help address the following research questions:

1. What is the relative importance of novelty, resolution, and style in entry-level interior design portfolios in predicting creativity?
2. What is the relative importance of novelty, resolution, style, and creativity in entry-level interior design portfolios in predicting hiring potential?
3. How do the open-ended designer perceptions of creativity and entry-level portfolios support the quantitative portfolio evaluations?

Delimitations

The University of Florida's graduating class of 2005 provided the entry-level interior design portfolios used in this study. Located in Gainesville, Florida, the University of Florida was the only university selected to participate. Participation from other universities would have been beyond the scope of a master's thesis, and in addition, provided more portfolios than necessary. The number of portfolios used was limited to 12. Any more would have been detrimental to the time constraints of the judges, all of which scheduled approximately two hours during their workday to participate in the study. Additional portfolios would have extended the time necessary to complete the study, possibly causing fatigue and other emotional responses, which could then affect their judgments of the portfolios.

Another delimitation of this study is that the 12 portfolios are comprised of a varying number of student interior design projects consisting of both individual and team projects. The projects illustrated varying amounts of information as well. In addition, since the 12 portfolios that made up the sample are from an all-female class, this study can only be generalized within the female population of undergraduate interior design students from interior design programs similar to the University of Florida's.

Assumptions

Equal Opportunity

The portfolios used in the study are comprised of a variety of work that was created throughout the student's tenure in the interior design program at the University of Florida. Portfolios exhibit varying amounts of educational material produced at UF from the beginning of the interior design program until the end. Since no transfer students were included in this study, students went through the same curriculum with the same professors. It is assumed that each student received similar instruction and attention, and that students had an equal opportunity for success for each interior design project and for their portfolios as well.

Creativity is Everywhere

Creativity is considered by researchers to be a normally distributed trait (Parnes, Noller & Biondi, 1977). While past ideas of the creative person had always been linked to highly distinguished people, often geniuses, more current research contends that everybody is creative, to some degree (Amabile, 1983; Csikszentmihalyi, 1996; Besemer & O'Quin, 1986). Moreover, many scholars maintain creative thinking can be developed and taught to students in some domain (Amabile, 1983; Nickerson, 1999). This idea supports the assumption that students educated to the highest level of undergraduate, interior design schooling have some degree of creative ability.

Unbiased Judgments

The professional interior designers and architects involved in the study make up the expert panel. These experts were selected because of their employment at highly recognized architecture and interior design firms located near the University of Florida in Jacksonville, Orlando, and Tampa. One can assume these distinguished firms have an

invested interest in research, gaining knowledge about design, and bettering the field of design. Since there are no comparisons being made to other institutions or universities, it is assumed that the expert panel of design judges representing highly recognized firms will act without bias when assessing the student portfolios.

Summary

Entry-level interior design portfolios are a vital aspect for entry-level interior designers gaining employment. By studying the creativity of entry-level interior design students' portfolios, a heightened understanding of creativity in research and design education will be acknowledged. Assessing these creative products will give additional insight into the professional practice of interior design and benefit entry-level designers. The purpose of this study is to find out what professional designers perceive to be creative in entry-level interior design portfolios. The five dimensions of novelty, resolution, style, overall creativity, and hiring potential of 12 portfolios will be assessed. An additional qualitative inquiry will clarify how design professionals define creativity. With the understanding of what professionals agree to be creative, entry-level interior designers will be able to exemplify their skills and potential with the use of a highly creative design portfolio.

CHAPTER 2 REVIEW OF LITERATURE

An in-depth study of senior interior design portfolios will measure various dimensions of creative production. The review of literature focuses on defining creativity and understanding creative products. Creative product measurement tools and theories are also discussed further. Additionally, two important instruments that are used in the methodology of this study are highlighted later in the literature review.

Creativity

Creativity is a complex, multifaceted phenomenon that defies an easy definition. Much of how creativity occurs is unseen, nonverbal, and some argue occurs during a conscious/unconscious psychodynamic state (Torrance, 1988; Sternberg & Lubart, 1999). Many theories and approaches have been developed by psychologists, scientists, and researchers to study the often unexplainable concept of creativity. As Boden (1994) put it, creativity:

is a puzzle, a paradox, some say a mystery. Inventors, scientists, and artists rarely know how their original ideas arise. They mention intuition, but cannot say how it works. Most psychologists cannot tell us much about it, either. What's more, many people assume that there will never be a scientific theory of creativity—for how could science explain fundamental novelties? [...] Why does creativity seem so mysterious? To be sure, artists and scientists typically have their creative ideas unexpectedly, with little if any conscious awareness of how they arose. But the same applies to much of our vision, language, and commonsense reasoning. Psychology includes many theories about unconscious processes. Creativity is mysterious for another reason: the very concept is seemingly paradoxical (p. 75).

Although creativity can be complicated, Kneller writes, “[It] is a unique and invaluable aspect of human behavior” (1965, p. iii). It is something that still mystifies as

well as fascinates the minds of the scholars who study the nature of creativity (Tardif & Sternberg, 1988).

The knowledge and understanding of creativity is always being redefined and further developed. In order to study this concept scientifically, there has to be some sort of definition to guide research. This section of the review of literature will be utilized to discuss some of the definitions of creativity, and will also elaborate on creative products and how they are assessed.

What is Creativity?

Creativity is defined differently amongst researchers and scientists, and is conceptualized differently for every field (Amabile, 1996). The collection of views and perspectives for identifying creativity has led to a variety of definitions. However, a commonality between these sometimes-differing views is that creativity is both novel and usually appropriate (Torrance, 1988; Jackson & Messick, 1956; Amabile, 1982). For instance, in order for something to be considered original, the frequency of the response should be statistically unusual, and the response should be suitable for the problem (Barron, 1955).

Several different approaches for the assessment of creativity have been identified. According to Mooney (1963), there are four notably different perspectives to the creativity problem. Creativity is believed to be: (1) the individual personality traits that produce new ideas, the *creative person*; (2) the process of conceiving new ideas, the *creative process*; (3) the result or product of the creative process, the *creative product*; and/or (4) the environments that allow new ideas to evolve, the *creative press* (Mooney, 1963; Taylor, 1988; Alves, et. al, 2005). Each of these aspects has differing methods and criteria for identifying creative talent, but often times are used in varying combinations:

“All of these four approaches have been found to some degree as an approach or set of approaches used by investigators in their projects and/or programs of research” (Taylor, 1988).

In Boden’s (1994; 2001) view, creativity is the novel combination of old ideas. There is a certain amount of surprise involved that is a result of the improbability of the combination—the more improbable, the more surprising. Combinations that are valuable and creative not only have to be new but interesting as well and relevant to a given situation (Boden, 1994; 2001; Kneller, 1965).

Boden (1994; 2001) highlights two main theories that previous literature suggested was involved with novel ideas: (1) those that are new to the person’s previous ways of thinking, and (2) those that are completely new and have never existed before. Kneller (1965) was a strong proponent of the first theory, maintaining that creativity is an idea, artifact, or form of behavior that is discovered and expressed and is new to that individual. He believes that although novelty is a “rearrangement of existing knowledge, it still is an addition to knowledge” (1965, p. 4). Additionally, Thurstone (1952) and Stewart (1950) regard newness as a condition of creativity and believe that as long as something is new to the individual that created it, then it is creative, even if the something has previously been done.

On the contrary, Stein (1953) believed the second theory to be true: that novelty meant that the creative product has never existed before in the same form. He also believed that the product needed to be accepted as useful and satisfying in the time of history in which it appears. Suggesting meanings of creativity may shift over time, Stein

(1953) implied that what may be viewed as creative at one time in one society may not be in another.

These differing views of creativity have led to a variety of definitions, all seeking to solve the problem of establishing a criterion by which to assess creativity. Researchers gain understanding of creativity by studying the person, the product, the process, and the environment in which creativity occurs. Presenting literature specifically on the creative product will put forth comprehensive research that is important for the present study.

Creative Products

In the past 15 to 20 years, psychometric approaches to measuring creativity have advanced past the traditional cognitive and personality perspectives and have diversified to include a broader range of approaches (Plucker & Renzulli, 1999). The methods can be understood through the four facets of creativity discussed earlier. Current psychometric methods have been used to measure personality characteristics of creative individuals (*creative person*) (MacKinnon, 1978; Barron & Harrington, 1981), to improve measures of generating new ideas (*creative process*) (Runco, 1991; Runco & Mraz, 1992), to measure the creativity of products (*creative product*) (Besemer & O'Quinn, 1986; Reis & Renzulli, 1991; Lobert & Dologite, 1994)), and to explore environmental issues that are related to creativity (*creative press*) (Amabile, 1979, Hennessey & Amabile, 1988). Studies in the past have investigated creativity utilizing these methods individually and combinations of methods.

Analyzing creative products has been said to be “the starting point, indeed the bedrock of all studies of creativity” (MacKinnon, 1987, p. 120). MacKinnon argues that regardless of whether one chooses to study the creative person, the creative process, or the creative environment, one must still define creativity in terms of the creative product.

For instance, the creative product is a result of the creative process or processes, performed by the creative person, in a creative situation or environment. In addition, MacKinnon (1975) says that until research on creative products is more firmly encouraged and established, creativity research would continually be looking for answers to the criterion problem. Other researchers agree on the significance of the creative product (Taylor & Sandler, 1972; Treffinger & Poggio, 1972; Ward & Cox, 1974), and furthermore, feel that analyzing creative products responds to and makes up for the inconsistencies inherent in divergent thinking tests and rating scales (Runco, 1989).

Brogden and Sprecher (1964) contended that by analyzing the creative product, the study of creativity would close the gap on the criterion problem. They proposed a traditional definition for creative products:

A product may be a physical object—an article or patent—or it may be a theoretical system. [...] It may be an equation or a new technique. [...] It is not uniquely bound up with the life of an individual (p. 160).

In other definitions, researchers have tried to incorporate criteria necessary for a product to be considered creative. Newell, Shaw and Simon (1963) suggested that a creative product satisfy one or more of the following conditions:

- a product that has novelty and value either for the thinker or the culture;
- a product that is unconventional in the sense that it requires modification or rejection of previously accepted ideas;
- a product resulting from high motivation and persistence, either over a considerable span of time or at a high intensity;
- a product resulting from the formulation of a problem which was initially vague and ill-defined (p. 780).

Similarly, Jackson and Messick (1965) attempted to define the criteria essential for a creative product. They proposed that a creative product must satisfy four criterions,

which are explained in order with respect to the progression of complexity, and are dependent on the ones that precede it. To ensure a products' creativity, Jackson and Messick (1965) argue that the following must be true:

- a product must be both unusual and appropriate in relation to its norms, fitting the context of its response or situation, and evoke surprise and satisfaction to the viewer; these two criteria are used conjointly rather than independently.
- a product must transform and overcome conventional constraints, creating new forms; and be stimulating.
- a product must possess “condensation”—requiring continued contemplation, or savoring—where apparent simplicity and complexity are unified.

Jackson and Messick (1965) were also sensitive to the expected emotional or aesthetic responses transmitted by the product to the viewers. They felt it was important to not only look at the “responsive” qualities of the creative product (i.e. unusualness, appropriateness, transformation, and condensation), but also to discuss them in relative terms (1965).

Amabile's (1982) consensual or operational definition of creativity is widely used for subjective, contextually-bound assessments of products. She states that:

A product or response is creative to the extent that the appropriate observers independently agree it is creative. Appropriate observers are those familiar with the domain in which the product was created or the response articulated. Thus, creativity can be regarded as the quality of products or responses judged to be creative by appropriate observers, and it can be regarded as the process by which something so judged is produced (1982, p. 1001).

Amabile (1983) argues that it is impossible to utilize objective criteria alone for analyzing and identifying products as creative. For example, the beauty of something or someone is decided based on judgments of others—where defined characteristics of beauty may or may not be applied. Therefore, Amabile (1983) suggested that in order to

identify something as creative, there must be some type of subjective assessment included in the methodology.

There are benefits to pairing objective dimensions of creativity with subjective assessments of experts. Sobel and Rothenberg (1980) solicited two internationally acclaimed artists to rate sketches on three dimensions. In this study, the raters were informed of the protocol by which to assess the sketches. The researchers defined creativity in terms of originality and value, and explained the criteria to assess for:

- Originality of sketches: the sketch presents a fresh, new or novel design, structure, image, or conception;
- Value of sketch: the artistic worth of the sketch, determined by factors such as effectiveness, visual interest or visual power, coherence or unity, intelligibility, emotional impact, “says” or “conveys” something;
- Overall creative potential of the art product: degree to which the product is both original and of value (Sobel and Rothenberg, 1980, p. 957).

Similarly, Getzels & Csikszentmihalyi (1976) evaluated works of art by incorporating four different groups of judges—two expert and two nonexpert groups. These judges were asked to use their own subjective views while rating the drawings on the three dimensions of originality, craftsmanship, and overall aesthetic value.

Assessment of Creative Products

The analysis of products has long been seen as the forerunner of assessment methods for identifying creativity (MacKinnon, 1978). The types of investigations employed throughout literature run the gamut. Simple, straightforward rating scales have been utilized while complex assessment techniques have been used to record value through the use of expert judges. Some studies employ a single criterion such as originality (Simonton, 1980), while others use multiple criteria like creativity, technical quality, attractiveness, interest, expressiveness, integrating capacity, and goodness of

example (Christiaans, 2002). Exploring both ideas, Ward and Cox (1974) compared the use of a single criterion versus multiple criteria for the assessment of creativity to examine if sex and socioeconomic status were associated with the evaluated creativeness of a product. A radio contest was held where “listeners were invited to submit humorous and original little green things” (p. 202). In two studies, judges evaluated these products using the criteria: originality, infrequency, attractiveness, humor, complexity, and effort (Ward & Cox, 1974). In the first study, using only the criterion of originality, the authors found “a significant association between social status measures and originality for entrants whose products represented some investments of effort” (p. 210). The second study utilized all the criteria as a subset to originality and reported that humor, infrequency, and amount of effort were the best predictors of originality. Ward and Cox’s efforts proved effective for supporting the idea of using several dimensions to predict creativity.

Several instruments for assessing creative products have been developed by researchers that are based on theoretical models. Researchers have taken different approaches to establishing these models but with a similar goal—solving the criterion problem. In the examples reviewed below, Taylor’s (1975) theoretical model introduces seven criteria that can be used to evaluate the degree of “effective creativeness” of a product. This framework guided Besemer and Treffinger (1981) to introduce a theoretical matrix that discusses the attributes of a creative product. Additionally, Amabile (1983) introduces criteria for subjective assessment through the use of expert judges.

In 1975, Taylor formally presented the *Creative Product Inventory* for assessing creativity of products. This theoretical model evaluated products using seven criteria: “*generation*, the extent to which it generates or produces new ideas; *reformulation*, the extent to which the product introduces significant change or modification in oneself or others; *originality*, the degree of the product’s usefulness, uncommonness, or statistical infrequency; *relevancy*, the extent to which the product satisfactorily provides a solution to a problem; *hedonics*, the valence or degree of attraction the product commands; *complexity*, the degree of range, depth, scope, or intricacy of the information contained in the product; and *condensation*, the degree to which the product simplifies, unifies, and integrates” (Taylor, 1975, p. 314, 316).

Creative Product Analysis Matrix

The review of literature on creative products and the characteristics or attributes presented in previous creativity studies encouraged Besemer & Treffinger (1981) to synthesize and organize the literature into the Creative Product Analysis Matrix (CPAM). This theoretical framework hypothesized that the three related categories created were the “fundamental dimensions, the independent variables of creativeness manifested in creative products” (Besemer & Treffinger, 1981, p. 163). Besemer (1998) also argues that the model can be used for any type of ‘artifact’ of the creative process including works of art and new product ideas. The three creative product attributes included (1) novelty, (2) resolution, and (3) elaboration and synthesis. *Novelty* refers to the newness of the product in terms of concepts, techniques, methods, and materials used to make the product. The *resolution* of a product indicated the correctness of the solution to the problem at hand, and *elaboration and synthesis* deals with the stylistic attributes of the product (Besemer & Treffinger, 1981; Besemer and O’Quin, 1986; 1999; Besemer,

1998). These three characteristics are further broken down into facets. Early literature on the CPAM framework illustrates 14 facets; however, the model currently demonstrates 9 facets that are: “for *novelty*, originality and surprise; for *resolution*, logical, useful, valuable, and understandable; and for *elaboration and synthesis*, organic, well-crafted, and elegant (Besemer & O’Quin, 1999, p. 287). Besemer (2003) later referred to Elaboration and Synthesis simply as Style (Table 2-1).

Novelty	Resolution	Style
<p>The extent of newness of the product; in terms of the number and extent of new processes, new techniques, new measures, new concepts including; in terms of the newness of the product both in and out of the field.</p> <p>Surprise The product presents unexpected or unanticipated information to the user, listener, or viewer.</p> <p>Original The product is unusual or infrequently seen in a universe of products made by people with similar experience and training.</p>	<p>How well the product works, functions, and does what it is supposed to do. The degree to which the product fits or meets the needs of the problematic situation.</p> <p>Logical The product or solution follows the acceptable and understood rules for the discipline.</p> <p>Useful The product has clear, practical applications.</p> <p>Valuable The product is judged worthy because it fills a financial, physical, social, or psychological need.</p> <p>Understandable The product is presented in a communicative, self-disclosing way, which is “user-friendly.”</p>	<p>The degree to which the product combines unlike elements into a refined, developed, coherent whole, statement or unit.</p> <p>Organic The product has a sense of wholeness or completeness about it. All the parts “work well” together.</p> <p>Well-Crafted The product has been worked and reworked with care to develop it to its highest possible level for this point in time.</p> <p>Elegant The product shows a solution that is expressed in a refined, understated way.</p>

Table 2-1. Creative Product Analysis Matrix (Besemer & Treffinger, 1981, p. 164; Besemer, 2003)

A variety of creative products were assessed using the CPAM model. The testing instrument developed by Besemer and her colleagues was used to measure the creative attributes of products. Largely based on Taylor and Sandler’s (1972) *Creative Product Inventory*, the bipolar, adjective scale created was derived from the theoretical model and later termed the *Creative Product Semantic Scale* (CPSS). The scale measured the three characteristics of the CPAM model—novelty, resolution, and elaboration and synthesis—

by using several semantic pairs of adjectives (Besemer & O'Quin, 1986; 1987). The CPSS started with 110 adjectives using 4-point scale ratings; though, after many tests, the instrument was modified to 55 bipolar items with 7-point scale ratings.

The CPSS instrument that Besemer and her colleagues created has been used in its entire form in some studies, while others have chosen a shorter, modified version. Lobert and Dologite (1994) felt it was important to adapt the instrument to the specific domain and product being investigated. Following suggestions given by expert judges, four items were removed from the scale because they were either considered inappropriate for the domain or were repetitive, and two more items were added. Lobert and Dologite (1994) also thought it was necessary to capture the overall assessment in order to explore the correlations with the other scales. Thus, an overall creativity dimension was included in the scale as well.

Other studies have chosen to utilize only the CPAM. By using the matrix as a theoretical framework, researchers have been able create valuable instruments specific to their studies. One study utilized the CPAM to generate a 52-item survey for assessing products from the perspective of the consumer (Horn & Salvendy, 2006). Centrality, importance, and desire were recognized as significant predictors of consumer satisfaction and purchasing ability.

In another study, Cropley and Cropley (2000) wanted to see if engineering students would produce more creative ideas if they were taught creativity by way of class lectures. Products made by the engineering undergrads were evaluated using an instrument that combined certain ideas from the CPAM and the *Creative Product Inventory*. The product was subjectively judged on the dimensions of: “*effectiveness* (distance traveled), *novelty*

(originality and surprisingness), *elegance* (understandability and workmanlike finish), and *germinality* (usefulness, ability to open up new perspectives)” (pg. 211). An Overall Impression dimension was also included to encourage students to be as creative as possible. This fifth dimension was effective in illustrating whether effectiveness, novelty, elegance, and/or germinality were responsible for overall impression or perceived creativity of the product. In this study, novelty and germinality correlated significantly with overall impression, suggesting that the rater’s subjective assessment of the product was influenced by how original and useful the product was.

Consensual Assessment Technique

Supplementary to the consensual definition of creativity previously discussed, Amabile (1983) developed a theoretic framework for the assessment of creativity. She clarifies two essential elements that discuss the nature of the observer’s responses. This framework operates on the idea that: “A product or response will be judged as creative to the extent that:

1. it is both a novel and appropriate, useful, correct or valuable response to the task at hand, and
2. the task is heuristic rather than algorithmic” (Amabile, 1983, p. 33).

While incorporating the common approach of most product definitions where creativity occurs when there is novelty and appropriateness, Amabile’s framework takes into account the type of task involved. A heuristic task is one in which the “path to the solution” is not obvious and easily noticeable (1983). By contrast, an algorithmic task has a path that is clear-cut and simple.

Amabile (1982; 1983) developed an assessment method based on this theoretical framework. The consensual assessment technique relies heavily on the subjective

judgments of experts within the domain of the product under evaluation. There are several requirements for this method that should be mentioned: the judges involved in the assessment process should have some experience with the domain at hand; judges should make their assessments independently; judges should assess the product for other dimensions in addition to creativity; judges should rate products relative to one another on the specific dimensions in question; and each judge should examine the products randomly and in a different order (Amabile, 1983).

The most important criterion for this technique is that the expert's assessments be reliable. Amabile (1983) claims that, "by definition, inter-judge reliability is equivalent to construct validity. If appropriate judges independently agree that a given product is highly creative, then it can and must be accepted as such" (p. 39; Hennessey & Amabile, 1988). Amabile and her colleagues (Amabile, 1982; 1983; Hennessey & Amabile, 1988) have developed and tested this technique in several studies involving children and adults, utilizing poems, stories, and collages. A consistently high inter-rater reliability score has been reported for over thirty experimental studies (Amabile, 1982; 1983; Hennessey & Amabile, 1988). For example, one study asked female students in a psychology course to create a collage (Amabile, 1979). Fifteen artists evaluated the collages on 16 dimensions of judgment. The inter-judge reliability was .79, where reliability for 15 of the 16 dimensions was .70 or above, 12 of the 15 were over .80, and the median reliability was .84, illustrating significant inter-rater reliability.

Summary

The complex nature of creative is illustrated in a thorough review of literature. Though difficult to define, creativity is multifaceted and can be identified as the creative person, the creative process, the creative product, and/or the creative press (Mooney,

1963). Having the widely accepted characteristics of novelty and appropriateness, the creative product is recognized as “the starting point” of all creativity studies and examined in further detail. Specific types of creative product assessment methods were introduced including two that are relevant to the methodology of this study—the Creative Product Analysis Matrix (Besemer & Treffinger, 1981) and the Consensual Assessment Technique (Amabile, 1983). The Creative Product Analysis Matrix utilizes the criteria of novelty, resolution, and style to describe the creativity of a product, and the Consensual Assessment Technique is based on the assumption that creative products are independently judged by experts familiar to the domain of the product. Studies using both methods reported high reliability ratings.

CHAPTER 3 METHODOLOGY

Research Design

This exploratory study aims to measure how design professionals judge creativity of entry-level interior designers by examining senior interior design student portfolios from the University of Florida. The study integrated survey and interview research methods into a three-part investigation. First, professional interior designers watched an overview slideshow presentation of the selected portfolios. Next, designers viewed and evaluated each portfolio individually using a locally developed evaluation form. Finally, open-ended interview questions were asked to realize designer's perceptions of the creativity of entry-level portfolios. The descriptive and statistical analyses developed from the resulting data were acquired during the second and third phases. This triangulation of methods increases the confidence of the analysis (Denzin, 1984; Yin, 1984).

Setting

The University of Florida was selected to be part of this study because of its extensive history and notable design program and institutional standing. As a member of the Association of American Universities (AAU) since 1985, the University of Florida has been committed to advancing American universities through intensive research. Encouraged within the university, research is an integral part of all the schools and colleges on the University of Florida's campus. The Department of Interior Design is

especially dedicated to “promoting, developing, and advancing the interior design discipline through excellence in teaching, research, and service (Mission and Goals).

The interior design program at the University of Florida initially began in 1948 and was later established as a Department in the College of Architecture in 1982. Now rooted in the College of Design, Construction, and Planning, the Department of Interior Design offers students the opportunity to graduate with a Bachelor of Design in Interior Design degree from a CIDA accredited program. The Council for Interior Design Accreditation (CIDA) has been acknowledging interior design programs from North American colleges and universities for over 35 years. The University of Florida’s Department of Interior Design is currently one of CIDA’s 201 accredited design programs. The Council takes great pride in the accreditation process and standards required of programs seeking accreditation:

The Professional Standards set forth by the Council for Interior Design Accreditation are used to evaluate interior design programs that prepare students for entry-level interior design practice and position them for future professional growth. The Council is firmly committed to setting high standards for interior design education, challenging others to meet and exceed those standards and seeking ways to continuously elevate and evolve the standards, thus significantly contributing to the advanced professionalism of the interior design field (Professional Standards).

Since the University of Florida’s Interior Design program is accredited, it is assumed that the students graduating from this program are of the caliber of entry-level designers for the Interior Design profession.

Furthermore, the University of Florida has also been recognized by leading design firms as one of the nation’s top interior design schools (DesignIntelligence, 2005).

Printed annually, *America’s Best Architecture and Design Schools* is a guide for prospective students, acknowledging the top architecture, landscape architecture, interior

design, and industrial design programs throughout the nation. The University of Florida has appeared in this publication within the top 25 design schools five times since its first printing in 2001.

Pilot Study

Prior to the data collection, a pilot study was conducted that proved to be invaluable. Sommer and Sommer (2002) stress the importance of pre-testing study procedures and tools in order to identify any problems and omissions and to refine survey and interview questions. They believe that a pilot study does improve “the precision, reliability, and validity of the data collected in the actual study” (pg. 9).

Two interior design educators from the University of Florida were selected to pilot test the instrument and study procedure. These faculty members were chosen because they exemplify the characteristics of the participants in this study; they both have practiced interior design professionally, and have experience reviewing portfolios. With no time restrictions, the educators viewed the slide show, evaluated the portfolios in random order, and then responded to the eleven interview questions. The overall evaluation instrument and interview protocol were effective; however, one portfolio was eliminated and replaced by another, and the slideshow was modified to display each slide a few seconds longer with a clear, visual break in between student projects.

The slide show incorporated a randomly selected project from each of the 12 portfolios with a blank screen appearing between each project. The purpose of the slide show was to allow the viewer to have a chance to get an overall sense of all the portfolios in the sample. Initially it was set-up to play automatically and advance each slide after five seconds. After the pilot test was conducted, both designers noted how quickly the slides advanced, not permitting enough evaluation time to develop an impression of the

portfolios. Instead of the projects advancing after five seconds, the amount of time each slide was displayed on the screen was delayed to seven seconds. A colored slide, additionally included after each blank screen, color coordinated with the project following it and did not add or detract from the project itself. The blank slide provided the viewer a visual break while the colored slide prepared the viewer for the next project.

Once the pilot test was completed, each educator was asked to sort the 12 portfolios into groups indicating excellent, average, and poor creativity so that the sample of portfolios represented a range in quality. This approach of grouping or rating the portfolios relative to one another by expert judges follows the widely accepted Consensual Assessment Technique of creative products developed by Amabile (1982). The technique requires products in a domain to be judged in relation to each other by experts familiar to that domain and the judgments must be made independently. This technique was used by two design educators to sort the portfolios into the three quality related groups. The resulting groups differed by one portfolio; one educator classified a portfolio as being average, while the other viewed it as poor. It was also noted that the number of portfolios in the excellent group was small compared to the average and poor groupings. Therefore, the complete sample represented mostly average portfolios, and the poor group included more portfolios than the excellent group. As a result, the lowest scoring portfolio was replaced with an above average portfolio to balance the quality of the portfolios within the sample.

Sample

The interior design portfolios were the property of the University of Florida from the Department of Interior Design's graduating class of 2005. The sample of portfolios, representing about one-third of the graduating class ($n = 12$), was selected because they

were available in digital format. Each student's portfolio showcased what they perceived as their best work produced throughout their design studios in the interior design program. The 12 portfolios used in the sample represented a varying number of projects that illustrated mostly healthcare, corporate, retail, hospitality, and residential design, and portfolios include projects completed individually and with a group. The number of slides included in each portfolio ranged from 4 to 31 with a mean number of 17.75 slides.

The portfolios were submitted in varying digital formats that required use of many different computer programs in order to view the portfolios. Prior to the pilot test, the portfolios were formatted into individual Microsoft PowerPoint slide shows. The integrity and context of the portfolios were kept exactly the same as when they were originally submitted. By formatting the portfolios into a single layout, it allowed the portfolios to be viewed by a particular computer program which was more time efficient, and controlled for variances in the many programs capable of producing similar graphic renditions.

Participants

For this study, several design firms were selected based on specific criteria: firm size, services, clientele, accolades, and location. Each firm that was selected to participate was similar in size with 16 or more design employees in both medium and large sized firms. This study adopted the definition by Battaglini (2003) where a medium size firms employ 8 to 49 employees and large firms have 50 or more people on staff. (See Table 3-1). The twenty-one participants came from 4 medium firms and 6 large firms. The scope of services and target clientele are similar and include but are not limited to corporate, hospitality, retail, education, government, healthcare, justice, residential, and information design. Each firm has received outside awards or honors in

the architecture and design fields, such as annual awards, design competitions, awards of excellence, and design merit awards from both American Society of Interior Designers and American Institute of Architects. The firms are located in Jacksonville, Tampa, and Orlando, all of which offer a comprehensive and competitive design market in the Southeast Region of the United States. Jacksonville was home to 4 firms, Tampa had 6 firms involved, and 2 firms in Orlando participated. A total of 12 offices contributed to the study, but because two firms had office branches in two of the three locations, there were a total of 10 firms involved in the study (See Table 3-1).

Table 3-1. Firm profile

Location	Firm Name	Firm Size	Participants (n=21)
Jacksonville	<i>ASD</i>	Large	1
	<i>Gresham Smith and Partners</i>	Large	2
	Rink Design Partnership	Medium	2
	Rolland, DelValle & Bradley	Medium	2
Orlando	<i>HKS</i>	Large	1
	<i>Wimberly Allison Tong & Goo</i>	Large	1
Tampa	Alfonso Architects	Medium	2
	Elements Design	Medium	1
	<i>Gensler</i>	Large	5
	<i>Gresham Smith and Partners</i>	Large	2
	<i>Gould Evans Associates</i>	Large	1
	<i>HKS</i>	Large	1

Note: Firms listed in italics have been ranked in Top 100 Giants of 2006 by Interior Design Magazine (Davidsen & Leung, 2006).

The 10 firms utilized in the study were selected because of their high credentials in the field of design. Of the 10 firms involved in the study, the six large firms have been recognized and ranked by a national magazine based on their monetary growth. ASD, Gresham Smith and Partners, HKS, Wimberly Allison Tong and Goo, Gensler, and Gould Evans Associates have received recognition in Interior Design Magazine as the top

100 industry leaders of 2006 (Davidsen & Leung, 2006). The four remaining firms not ranked by this magazine and are medium sized firms; Rink Design Partnership, Rolland DelValle and Bradley, Alfonso Architects, and Elements Design are also recognized in the field as influential and innovative.

After selecting firms that met all the criteria, the designer's participation was requested. Designers were selected from each firm based on their position and responsibilities. In order to evaluate portfolios of interior design graduates seeking entry-level placement, it was important that the judges had experience in viewing and assessing portfolios of potential new hires. A letter was sent to each firm acknowledging a designer who was endorsed as a leader within the firm. The letter explained the purpose of the study and the amount of time anticipated for participation (See Appendix A). A follow-up telephone call was made to the designer three days later soliciting participation. After a verbal agreement, the designer was asked for a recommendation of another designer within the firm who had similar credentials and would be available to participate in the study. If the designer had a suggestion, in most cases a verbal connection was initiated by the designer. On occasion, the researcher contacted the accompanying designer. Of the thirty-six designers solicited over a period of six weeks, twenty-two designers agreed to represent the sample of judges that were responsible for assessing the 12 portfolios. Following further review of the participants' credentials, one designer with only one year working in the profession was eliminated from the participant sample.

There were a few occurrences in the data collection that contained missing information. During the individual portfolio evaluations, answers were left blank for

three participants. Two incidences appeared to be an oversight, while the third was attributed to problems accessing four of the 12 portfolios. Completing these four portfolios at a later time was not suitable for the participant. After discussing the matter with a statistician, it was determined that since the participant evaluated over 50% of the material, his information was valuable and it was not necessary to eliminate it from the research.

The total of 21 participants was made up of 9 males (43%) and 12 females (57%). The mean age was 42.6 years (n=20). The mean number of years the participants had been practicing interior design or architecture was 18.2 years. The participants reviewed an average of 20 portfolios per year for an average of 10 years (See Table 3-2).

Table 3-2. Participant design and portfolio review experience

Participants	Age (n=20)		Design Experience (n=21)		Reviewer (n=21)		Portfolio / yr (n=20)		Review Time (n=20)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Total	42.60	0.71	18.19	8.69	10.20	7.52	20.07	19.48	59.10	18.94

Reviewer = Number of years participant has reviewed entry-level portfolios
 Portfolio / yr = Number of entry-level portfolios participant reviews per year

The participants (n=21) selected ranged from principals, vice-presidents, associates, directors of interior divisions, senior managers, project managers, project designers, and interior designers or architects. The participants were categorized into four groups based on job position (Coleman, 2002). The following illustrates the four groups created:

- *Principle* (n=6)
- *Design Director*; includes vice-presidents, first level managers, and design managers (n=8)
- *Project Manager*; includes senior designers, senior project designer, and project designers (n=5)
- *Designer*; includes interior designers and architects (n=2)

Participant Procedure

Upon initiating the study procedure, all 21 participants were informed of the consent requirements and agreed to participate. It was made known that: the study did not anticipate any risks or benefits, participant identities were to remain confidential, participation was completely voluntary, and no penalty would be assessed for withdrawing from the study.

When a research study involves human subjects, the University of Florida requires approval from the Institutional Review Board (IRB) (Appendix B). To submit to the IRB, the necessary documents included a concise description of the study's purpose and participants, a summary of the intended methodology, and examples of the evaluation form, interview questions, and consent form. The board granted complete approval for the research study.

Instrument

Since both quantitative and qualitative methods were implemented in this study, two different types of instrumentation were developed by the researcher. The quantitative portion of the study required a tool that measured characteristics of a creative portfolio and allowed for numerical analysis (See Appendix C). The survey tool created for this study quantified specific attributes of creative products and entry-level portfolios. An evaluation form emerged that included five dimensions: novelty, resolution, style, creativity and hiring potential. The qualitative evaluation was captured with a questionnaire (See Appendix D). The five open-ended interview questions were designed to get focused responses to each participant's subjective views of creativity and entry-level portfolios. Six additional questions were utilized to determine background information and establish a profile of the sample firms.

The Creative Product Analysis Matrix (Besemer & Treffinger, 1981) framework was used to organize the attributes of creativity into three major characteristics. The nine attributes, along with two additional attributes for both creativity and hiring potential, became the thirteen points the evaluation form measured. The three conceptual dimensions that were identified—novelty, resolution, and style—related to analyzing the creativity of a product. Novelty refers to the newness of the product and can be characterized by originality and surprise; resolution deals with the usefulness, logicalness, value, and understandability of the product; and the style of the product attests to the physical attributes of the finished product and consists of an organic, well-crafted, and elegant design (Besemer & Treffinger, 1981; Besemer, 2003).

Overall creativity and hiring potential were included in the evaluation form. These additional attributes provided a way to connect the success of a portfolio to its genuine purpose. The creativity variable awarded a value to each portfolio based on its overall creativity. Though the Creative Product Analysis Matrix asserts that a product's creativity is a result of its values of novelty, resolution, and style, an overall value of the product's creativity is not accounted for. Incorporating this variable provided a way to compare the creativeness of each portfolio. In addition, the last variable of hiring potential was especially important considering that entry-level interior designers create portfolios in order to gain professional employment. Thus, it was necessary to identify the value professional interior designers place on the different aspects of entry-level interior design portfolios. Including these two variables provided additional information that was useful for determining how and which of the characteristics of creativity had the most influence.

Since the participants had not been informed beforehand of the criteria being evaluated and no concrete definition of creativity was mentioned, the questionnaire was utilized to seek out each of the participant's personal views on creativity in terms of interior design and entry-level portfolios. The final six of the eleven total questions captured pertinent background information on participant's personal experience and their firm's services and specialties.

Procedures

The data collection took place at each of the respective firms. The designers scheduled a two hour block of time to complete the study. A packet was created for each judge containing two compact discs (CD), 12 evaluation forms, and the list of interview questions. The procedure was broken into three parts. First, to get an overall impression of the portfolios as a group, judges watched a programmed slide show of the 12 portfolios. Second, judges viewed and evaluated the 12 portfolios based on the attributes of creativity. Third, the researcher asked each judge eleven questions regarding creativity, portfolios, and their design background.

Timed slide show

In order for the judges to evaluate the portfolios, it was necessary for them to get a glimpse of each one before individually assessing them. Amabile (1996) incorporates a similar method in her Consensual Assessment Technique where "the judges familiarize themselves with the products to be rated before they actually begin the rating task" (pg.75). Amabile suggests using a random sample of approximately 20% of the entire product or products when rating a product(s) could be tedious and time consuming. As a result of this concept, a CD was created that, when inserted into a computer, automatically started a timed Microsoft PowerPoint slide show illustrating one project

from each portfolio. Although each project was randomly selected from each of the individual portfolios, efforts were made to ensure that similar projects weren't viewed directly next to one another in the sequence. These projects allowed the judges to get a quick look at all of the portfolios before they evaluated each one individually.

Evaluations

For the second step of the procedure, five different CD's were made that contained the 12 files of the portfolios in question. The digital portfolios were formatted into individual Microsoft PowerPoint slide shows that began as soon as each file was set in motion. Randomly changing the order in which the portfolios appeared on the five CD's helped control for ordering effects that would confound the results. In addition, the five CD's were randomly issued to the twenty-one judges. Although the portfolios remained the same on each CD, two judges from the same firm never viewed the portfolios in the same order.

Since these slide shows were not programmed to advance automatically, each judge could control the portfolio and the time they spent evaluating. The twenty-one judges were asked to view and evaluate each one using the evaluation form. As soon as each judge received the CD of portfolios to assess, the time the first portfolio started was noted as well as the time when the judges finished evaluating the last one. This observation was recorded to see if there were unusual variances in the evaluation times between each judge.

Interviews

The final step in the procedure was comprised of interviews. As soon as the evaluations of the 12 portfolios were completed, the interviews commenced. The questions were structured and open-ended. A tape-recorder was used to document the

verbal responses of the judges. One participant asked to see the questions before answering so they could formulate comments. In other instances, the participant preferred to respond to the questions in writing. This was the case in 67% of the interviews. This was an unexpected option, but became helpful in situations where two or more designers were participating at the same time, the meeting time turned out to be inconvenient for the designer and the designer didn't have enough time to complete the entire process, or if a designer was out of town.

The questions were divided into two sections. The first section was an extension of the evaluation process. Five questions were asking questions regarding creativity and entry-level portfolios. The second section asked six questions involving the participant's background and history in the interior design profession.

The responses to the first set of questions on creativity and entry-level interior design portfolios had to be coded. Since the questions were open-ended, participants' responses varied. To be more reliable, the researcher and an interior design educator independently coded the answers. The responses were coded similarly for each question. For the first two questions that asked for the participant's definition of creativity and entry-level portfolios, the researcher and educator were able to organize the responses according to the creative product attributes. When designers mentioned one or more characteristics of one attribute, the answer was coded for both characteristics. If the same designer mentioned characteristics for one or more attributes, the answer was coded to include all attributes mentioned. In the third and fourth questions that introduced other factors besides creativity, categories representing those responses were included.

Limitations

There was one limitation this study couldn't control. Since the Creative Product Analysis Matrix (Besemer & Treffinger, 1981) guiding the study accredits a product's creativity to its values of novelty, resolution, and style, it does not provide an overall value of the product's creativity. Besemer and Treffinger (1981) indicate that novelty, resolution, and style define the creativity of an already creative product. However, in order to compare these attributes to the creativity of the design portfolio, another variable was included to give a value to each portfolio based on its creativity.

Summary

This study, which combined quantitative and qualitative methods, gathered information on creativity of entry-level interior design portfolios. Twelve interior design portfolios from the University of Florida were evaluated on several characteristics of creativity. Twenty-one participants were selected from high profile architecture and design firms that were noted as industry leaders. The designers not only had valuable experience in design, but more importantly had experience reviewing portfolios. The study procedure was accomplished in three parts; first, designers viewed a slide show that illustrated one randomly selected project from each portfolio, then, designers evaluated the 12 individual portfolios using a locally developed form, and finally, a questionnaire was completed to obtain the designers' subjective views of creativity and entry-level portfolios.

CHAPTER 4 FINDINGS

The purpose of this study is to gain a better understanding of what professional designers consider creative in entry-level interior design portfolios. Designers participating in the study overviewed selected portfolios, evaluated each portfolio individually, and responded to questions that explored their views of creativity in interior design and portfolio evaluation. A description of the 21 participants responsible for assessing the 12 portfolios along with a detailed account of the data analysis precedes the discussion of the research questions. This study utilized three research questions that examined the importance of novelty, resolution, and style in predicting creativity and hiring potential, and sought further elaboration on designers' perceptions of entry-level interior design portfolios. All statistical analyses reported in the study employ an alpha level of .05 to determine significance.

Participant Demographics

The sample of participants consisted of interior designers and architects from leading firms in Jacksonville, Orlando, and Tampa. Two of the ten firms had multiple offices involved in the study. For example, designers from Gresham Smith and Partners participated in Jacksonville and Tampa, and designers from HKS participated in Orlando and Tampa. The total of 12 offices contributed seven designers from Jacksonville, two from Orlando, and twelve from Tampa. The participating designers answered a series of demographic and employment experience questions including age, type of design work,

job position, design experience, number of years reviewing portfolios, and number of portfolios reviewed per year.

Participants (n = 21) ranged in age from 28 to 62, with a mean age of 42.60 and standard deviation of 8.65. Table 4-1 illustrates that 42.9% (n = 9) of the designers were male while 57.1% (n = 12) were female. The age range of the males (SD = 11.55) was much broader than that of the females (SD = 5.72).

Table 4-1. Participant demographics

Gender	n	%	Age (n = 20)	
			M	SD
Male	9	42.9	43.89	11.55
Female	12	57.1	41.55	5.72
Total	21	100.0	42.60	8.65

The specializations of design work from the designers' respective firms are illustrated in Figure 4-1. Both public and private sectors of design practice included healthcare, corporate, retail, education, government, hospitality, and residential. The greatest number of designers in the study practiced corporate design (n = 16), while the least number engaged in government design (n = 4). All 21 designers practiced in the public or commercial sector, with an additional six also working in the private or residential arena.

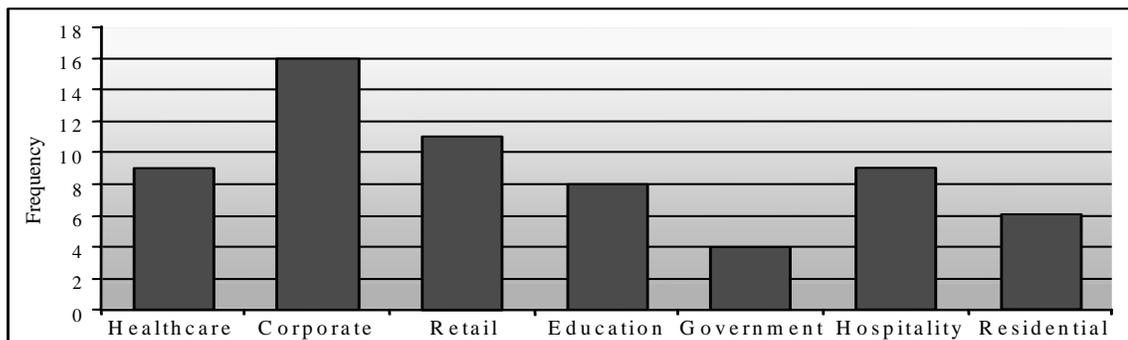


Figure 4-1. Design specializations of participating firms

Position titles of these designers included Principle, Vice-President, Associate, Director of Interior Division, Senior Manager, Project Manager, Project Designer, and Interior Designer or Architect. These responses were organized into four groups based on level of responsibility as: Principle, Design Director, Project Manager, and Designer (Coleman, 2002). Figure 4-2 represents the frequency of each group within the participant sample. Design Directors composed the largest portion with 38.1% (n = 8), followed by Principles with 28.6% (n = 6), Project Managers with 23.6% (n = 5), and Designers with 9.5% (n = 2).

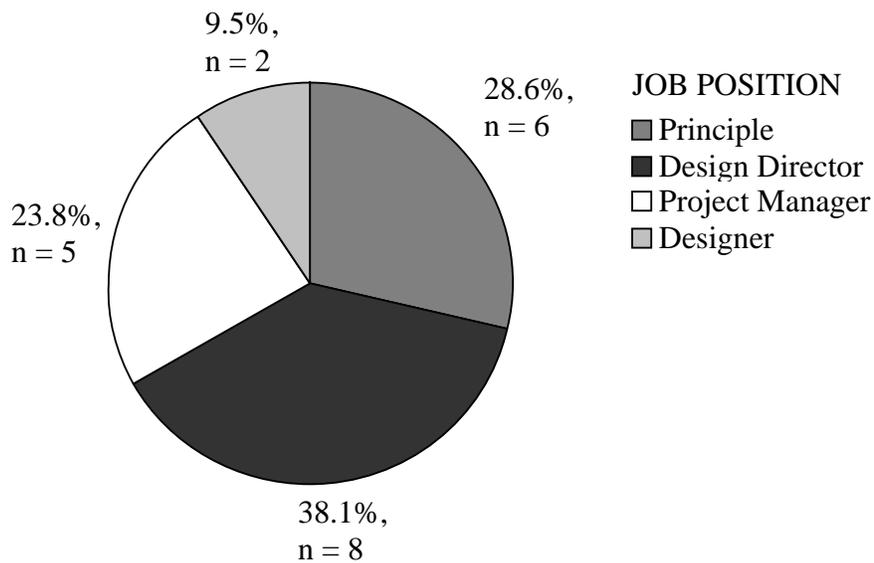


Figure 4-2. Distribution of job positions

In addition, questions were asked regarding experience in design as well as experience reviewing portfolios. These variables appear to correlate naturally with job position. Table 4-2 illustrates that the higher the position, the more experience the participant had in design practice and with portfolio reviews. The six Principles had the most design experience with 24.17 years, followed by Design Directors (20.38 years), Project Managers (11.80 years), and Designers (7.50 years).

Table 4-2. Position title by employment variables

Group	n	%	Design Exp. (n = 21)		Review (n = 21)		Portfolio / yr (n = 21)	
			<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Principle	6	28.6	24.17	8.80	15.50	6.63	26.42	20.60
Design Director	8	38.1	20.38	6.37	11.57	6.02	27.44	20.61
Project Manager	5	23.8	11.80	5.93	05.60	6.66	07.80	10.33
Designer	2	09.5	7.50	3.54	01.00	1.41	02.25	01.77

Design Exp. = Number of years participant has practiced design

Review = Number of years participant has reviewed entry-level portfolios

Portfolio / yr = Number of entry-level portfolios participant reviews per year

The Principles reviewed portfolios for 15.50 years; Design Directors reviewed for 11.57 years; Project managers reviewed for 5.60 years; and Designers reviewed portfolios for 1.00 year. The approximate number of portfolios reviewed each year showed that the two most experienced groups—Principles and Design Directors—reviewed the greatest number of portfolios. On average, Design Directors (27.44) and Principles (26.42) review comparably the same number of portfolios each year, Project Managers review 7.80 portfolios per year, and Designers reviewed only 2.25 portfolios per year.

Data Analysis

The majority of the data analysis centered on examining relationships between three creative product attributes. Designers evaluated 12 portfolios using a locally designed instrument that measured thirteen items using a five-point Likert scale ranging from poor to excellent. The instrument contained five variables that consisted of items defining the creative product attributes of novelty, resolution, and style, as well as creativity and hiring potential. Creativity was included to gauge the creativeness of the

portfolio, while hiring potential was included to measure the value of entry-level interior designers seeking employment.

To ensure that the items correlated and consistently measured the main variables, data entered into Microsoft Excel was tested for inter-item reliability. Table 4-3 illustrates the thirteen items that make up the five variables. The items within each variable were pair-tested to see if they correlated. The items that make up the style variable, for example, were pair-tested three times: well-crafted with organic, well-crafted with elegant, and elegant with organic. These correlations were used to obtain alpha ratings using *Cronbach's alpha*, a test that measures the reliability of variable in producing consistent results (Blaikie, 2003). A high alpha value indicates a high level of consistency among items, while an alpha rating less than .70 is not considered reliable. The reliability ratings for the five variables can be seen in Table 4-4. All five variables were found to be consistent reaching an alpha level of .85 or higher, with creativity reaching the highest reliability with an alpha score of .92.

Table 4-3. Portfolio assessment variables

Novelty	Resolution	Style	Creativity	Hiring Potential
Original	Logical	Well-crafted	Creative	Potential
Surprise	Useful	Organic	Innovative	Promise
	Understandable	Elegant		
	Valuable			

Evaluations of the 13 items within the portfolio instrument resulted in a total of 248 data points. This data was inserted into SPSS, a statistical software program, and analyzed. Table 4-4 illustrates the mean and standard deviations of the five variables. Since the findings show the mean scores for the five variables were between 3 and 4, the thirteen items within the evaluation instrument were rated between average and good.

Resolution was the highest scoring variable with a mean score of 3.53 and consequently had the smallest spread of scores (SD = 0.77). However, resolution had one of the lowest average inter-item correlations (.69). Even so, resolution had a high alpha level indicating a strong correlation among items. Alpha has a positive correlation with the number of items within a variable: the more items in a variable, the higher the alpha value will be (Blaikie, 2003). Novelty had the lowest mean score of 3.21. The spread of the distribution of scores was largest for hiring potential shown with a standard deviation of 0.99.

Table 4-4. Descriptive statistics of novelty, resolution, style, creativity, and hiring potential

Variable (n = 248)	Average Inter- Item Correlation	Alpha	Mean	Standard Deviation
Novelty	.74	.85	3.21	.90
Resolution	.69	.90	3.53	.77
Style	.66	.85	3.44	.88
Creativity	.85	.92	3.31	.95
Hiring Potential	.84	.91	3.37	.99

Research Question One

What is the relative importance of novelty, resolution, and style in entry-level interior design portfolios in predicting creativity? This question considers the three creative product variables, as identified by Besemer and Treffinger (1981; Besemer, 2003), in relation to the creativity of entry-level interior design portfolios. It further seeks to examine the relationship between these attributes and creativity.

The analysis being undertaken is based on the assumption that there are key attributes of a product that relate to creativity. More specifically, these attributes are

likely to influence the degree of creativity of the product. Figure 4-3 illustrates the possible associations and influences novelty, resolution, and style have on creativity.

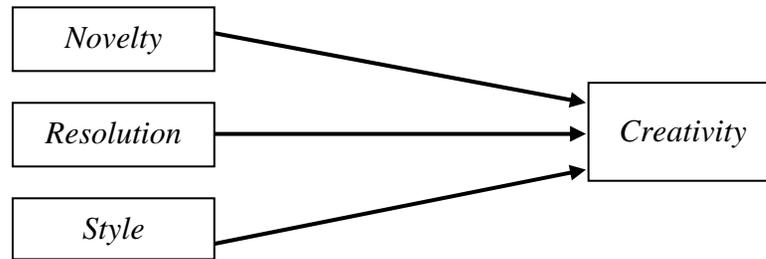


Figure 4-3. Relationship model of novelty, resolution, style, and creativity

The associations between the three creative product variables (novelty, resolution, and style) and creativity can be seen in Table 4-5. As a measure of the strength of association, Pearson's r coefficient shows the larger the number, the stronger the association is between two variables; and how much variance two variables share in common (Blaikie, 2003). The relationships demonstrated here are all positive and significantly associated with creativity, but with varying strengths of association.

Examining the associations between these four variables, the strongest relation exists between novelty and creativity ($r = .89$). Style also has a very strong association with creativity with a coefficient of .84. The weakest association is between resolution and creativity ($r = .71$). Even though this association is still considered to be strong, it is the weakest among the three creative product variables. Some unaccounted variance may exist between the variables but since their associations are not fully correlated they are not measuring the same thing, and thus, the variables are not interchangeable.

In order to understand the variance between two variables, the r value is squared. For instance, in the relationship between novelty and creativity, $r^2 = .79$. This means that novelty can predict creativity 79% of the time. Additionally, style can predict creativity 71% of the time, while resolution only has a 50% chance of predicting creativity.

Table 4-5. Correlation matrix of novelty, resolution, and style related to creativity

Variables	Novelty	Resolution	Style	Creativity
Novelty	---	.70*	.79*	.89*
Resolution	.70*	---	.81*	.71*
Style	.79*	.81*	---	.84*
Creativity	.89*	.71*	.84*	---

* $p < .05$

To examine these relationships further, multiple regression was used to explain the relative influence of the predictor variables on a single outcome variable by indicating the contribution of each predictor variable when the influence of all other predictors is held constant. In this case, novelty, resolution, and style are the predictor variables and creativity is the outcome variable. This type of analysis assumes the relationship between variables is linear; that as one variable increases or decreases, the other variable also increases or decreases, and that the changes in value on both variables occur at the same rate (Blaikie, 2003). In addition, “the predictor variables are regarded as having the same role, that is, in possibly contributing to an explanation of the outcome variable” (Blaikie, 2003, p. 294).

The influences of the three creative product variables on creativity can be seen in Table 4-6. The purpose of this table is to explain the variances of creativity and to illustrate which predictor variables are the strongest contributors to creativity. By looking at the R^2 value (which is the correlation coefficient for multiple regression, comparable to r^2) of .84, this set of predictor variables—novelty, resolution, and style—can explain 84% of the variance in the outcome variable. In looking at the significance values, novelty ($t = 14.17$) and style ($t = 7.15$) are the only two significant variables ($p <$

.05) with a t-value greater than 1.96, while resolution is not significant with a t-score of 0.62.

To further assess the individual contributions of the predictor variables, we need to examine the standardized coefficient beta for each variable. We find .61 for novelty, -.22 for resolution, and .38 for style. These values indicate that novelty has one-third more influence on creativity than style. This may be a result of the fact that there is a very strong association between novelty and creativity ($r = .89$), and marginally less association between style and creativity ($r = .84$). Hence, novelty, defined as the original and surprising characteristics of a portfolio, is viewed as more creative than the stylistic attributes of well-crafted, elegant, and organic.

Beta values also indicate the linear degree of contributions by the predictor variables. *Beta* tells us how many standard deviation units of the predictor variable will cause an increase in one standard deviation unit in the outcome variable. In this case, as the value of creativity increases by one standard deviation unit, the value of novelty increases by .61 standard deviations and the value of style increases by .38 standard deviations.

Table 4-6. Multiple regression analysis of creativity

Predictor Variables	Slope (b)	Std. Error	Beta	t	Sig.
Novelty	0.67	0.05	.61	14.17	.00*
Resolution	-0.03	0.06	-.22	-0.50	.62
Style	0.43	0.06	.38	7.15	.00*
$R = .92$		$R^2 = .84$			

*p < .05

The data analysis from research question one initially examined the relationships between the creative product attributes and creativity. Since significant associations were

established, the data analysis was taken a step further to examine the strength of influences the attributes had on creativity. Novelty, resolution, and style are all significantly associated with creativity, but only novelty and style significantly influence creativity. Furthermore, novelty predicts creativity almost two-thirds of the time, while more than one-third of creativity is attributed to style.

Research Question Two

What is the relative importance of novelty, resolution, style, and creativity of entry-level interior design portfolios in predicting hiring potential? This question addresses the creative product attributes in addition to creativity and their influence on entry-level interior designers hiring potential.

A conceptual model guided this analysis that conveyed the relationships of the five variables (Figure 4-4). The relationships between hiring potential and novelty, resolution, style, and creativity are analyzed in the same manner as the previous research question.

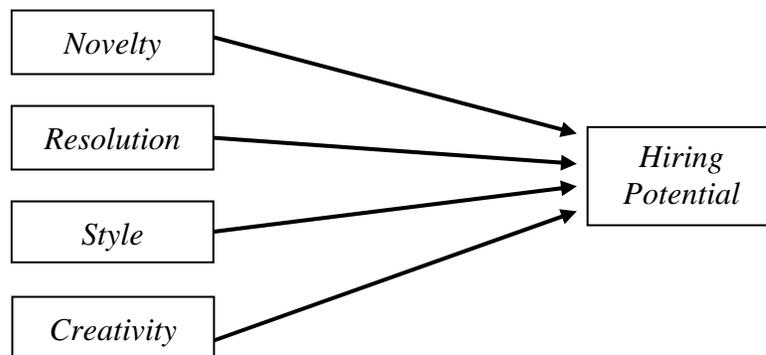


Figure 4-4. Relationship model of novelty, resolution, style, creativity and hiring potential

By looking at the Pearson correlation matrix illustrating the five variables in question (Table 4-7), we find that novelty, resolution, style, and creativity are statistically

associated with hiring potential. With values ranging from .77 for novelty to .87 for style, the four variables show very strong associations with hiring potential. Style has the strongest association ($r = .87$), followed by creativity ($r = .81$), resolution ($r = .80$), and novelty ($r = .77$). The last three variables seem to differ only marginally while presenting a larger gap between style and the others. This could possibly be indicating a stronger, independent association with hiring potential. In addition, the bivariate regression produced a R^2 of .76. This suggests that style accounts for 76% of the variance, meaning that 76% of the time, style can predict hiring potential. The other three variables of creativity, resolution, and novelty accounted for 66%, 64%, and 59% of the variance, respectively.

Table 4-7. Correlation matrix of novelty, resolution, style, and creativity related to hiring potential

Variables	Novelty	Resolution	Style	Creativity	Hiring Potential
Novelty	---	.70*	.79*	.89*	.77*
Resolution	.70*	---	.81*	.71*	.80*
Style	.79*	.81*	---	.84*	.87*
Creativity	.89*	.71*	.84*	---	.81*
Hiring Potential	.77*	.80*	.87*	.81*	---

* $p < .05$

Multiple regression established the independent influence of the set of predictor variables on hiring potential. Table 4-8 shows the regression analysis scores of the predictor variables—novelty, resolution, style, and creativity—on the outcome variable—hiring potential. The R^2 score (.80) indicates that this set of predictor variables can explain 80% of the variance in hiring potential. By looking at the t-test values, we notice that resolution, style, and creativity are significant at the .05 level. Novelty's low t-test

value of 1.08 doesn't meet the 1.96 criterion, which in turn explains why this variable does not have a significant influence on hiring potential. The *beta* values indicate that style (.46) has almost twice as much influence on hiring potential than resolution (.25), which is followed by creativity (.19).

In analyzing the contributions of resolution, style, and creativity on hiring potential, we can discuss several things about the linear regression. As the value of hiring potential increases by one standard deviation unit, the value of style increases by .46 standard deviations, the value of resolution will increase by .25 standard deviations, and the value of creativity will also increase by .19 standard deviations.

Table 4-8. Multiple regression analysis of hiring potential

Variables	Slope (b)	Std. Error	Beta	t	Sig.
Novelty	0.07	0.07	.07	1.08	.28
Resolution	0.30	0.06	.25	4.93	.00*
Style	0.49	0.07	.46	7.04	.00*
Creativity	0.18	0.07	.19	2.61	.01*

$R = .89$ $R^2 = .80$

*p < .05

With these results, we can summarize the relative importance novelty, resolution, style, and creativity have on predicting hiring potential. The correlation matrix (Table 4-7) illustrates the strong associations between all four variables to hiring potential. The strongest association lies with style ($r = .87$), followed by creativity ($r = .81$), resolution ($r = .80$), and novelty ($r = .78$). Additionally, style has the strongest influence on hiring potential with a beta of .46. Resolution has about half as much influence ($beta = .25$), creativity has even less ($beta = .19$), and novelty does not significantly influence hiring potential.

When we analyze the results from question one and two, we can better understand the relationship between the independent and dependent variables. All four predictor variables have a statistically significant influence on hiring potential. (See Figure 4-5). Since we already know that creativity is associated to novelty, resolution, and style, this model took into account both the direct and indirect influences. In this instance, creativity becomes an intervening mechanism with the influence novelty, resolution, and style on hiring potential indirectly mediated through creativity. Since we learned in the previous question that resolution does not have a significant influence on creativity, the line connecting the two variables is dashed. The associations between novelty and style with creativity are shown with solid lines representing a significant influence. *Beta* values are represented to show the degree of influences between two variables. The results from question two allow us to chart the direct influences as well. Resolution, style, and creativity have direct, significant influences on hiring potential, while novelty does not. Novelty does, however, influence hiring potential indirectly through creativity.

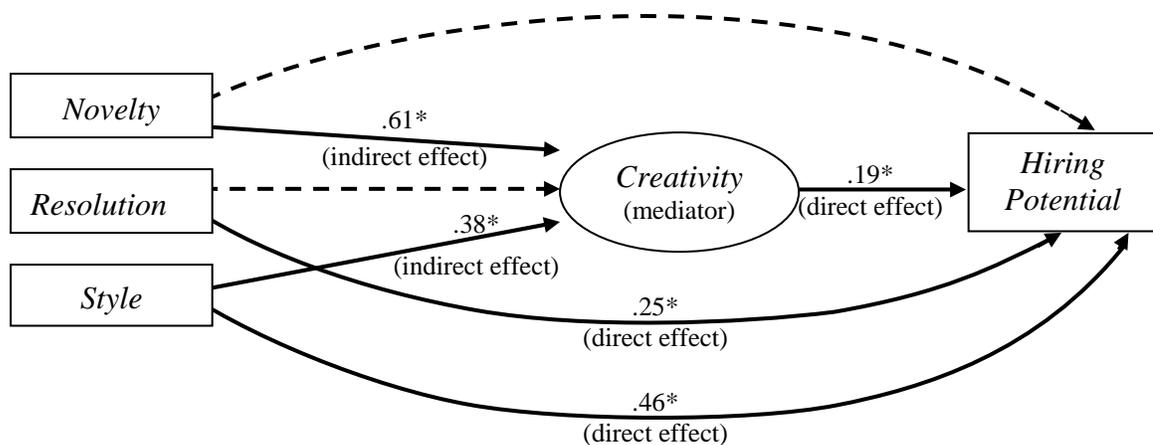


Figure 4-5. Model of creative product variables related to hiring potential in interior design

Research Question Three

How do the open-ended designer perceptions of creativity and entry-level interior design portfolios relate to the quantitative portfolio evaluations? This question examines the similarities and differences between how professional designers personally define creativity and how they assess creativity of design portfolios in terms of novelty, resolution, and style. Findings from portfolio evaluations will be analyzed relative to the four questions posed in order to better understand designers' perceptions of creativity. Figure 4-6 illustrates an overview of designers' responses to the qualitative inquiry.

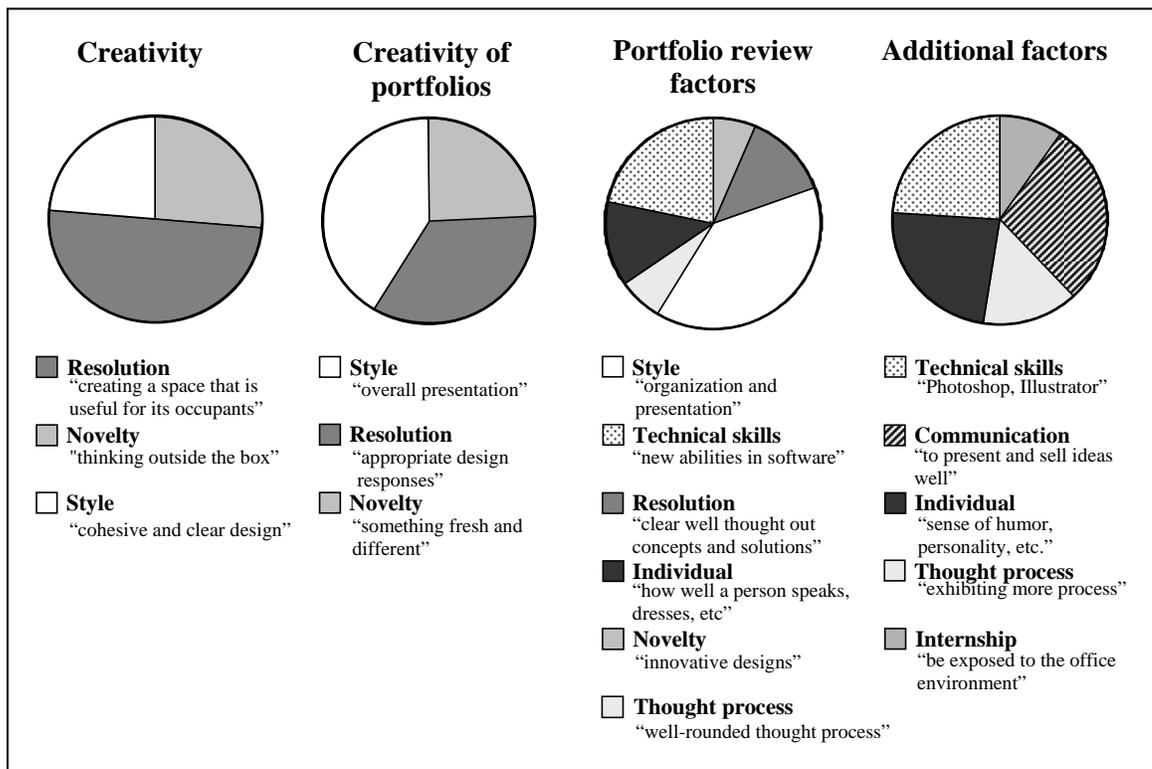


Figure 4-6. Designer responses to open-ended questions

Open-ended questions allowed designers to answer freely without other preconceived factors inhibiting responses. Two researchers independently assessed the answers from the four qualitative questions and classified responses accordingly. The

first two questions dealt with definitions of creativity and the characteristics of novelty, resolution, and style emerged as the three categories in which responses were organized. The third question, asking for other factors that were important when reviewing portfolios, was also coded based on responses and included the three creative product attributes as well as three other categories comprised of technical skills, the individual, and thought process. The final question simply asked participants for further elaboration on the topic of creativity and portfolio evaluation. These responses were organized into the five categories of technical skills, the individual, communication, thought process, and internship experience.

Defining creativity in interior design

Designers were asked to supply their personal definition of creativity. The responses to this question were organized using the attributes novelty, resolution, and style. The frequency of each attribute appears in Figure 4-7. Sixty-two percent of responses referenced design specifically, suggesting creativity was “the ability to see multiple solutions to a design problem,” while the other 38% of responses were more general and, for example, defined creativity as “developing unique solutions.” Overall, 50% of the responses related to characteristics of resolution, 27% mentioned characteristics of novelty, and 24% referenced the stylistic attributes of a portfolio.

The majority of designers defined creativity in entry-level portfolios in terms of resolution. Responses that related to resolution as a variable of creativity defined a functional solution that is both useful and sensitive to human aspects and client needs. Designers mentioned characteristics of the four items representing resolution: logical, useful, valuable, and understandable. For example, one designer shared the sentiment of others when he defined creativity as “creating a space that is useful for its occupants.”

Designers also recognized the value of the human condition for both the client and the end users with statements that demonstrate the need to “support human functions” and “meet the client’s expectations.”

Further, the designers referenced novelty (26.5%) and style (23.5%) in their definitions almost equally. Novelty, representing originality and surprise, was noted as an “uncommon solution for a common problem” and the ability to “think outside the box.” Style describes the portfolios appearance and how well it is put together. Style was captured by designers who emphasized, “solving a problem in a manner that is aesthetically pleasing” and presenting a “cohesive and clear design.”

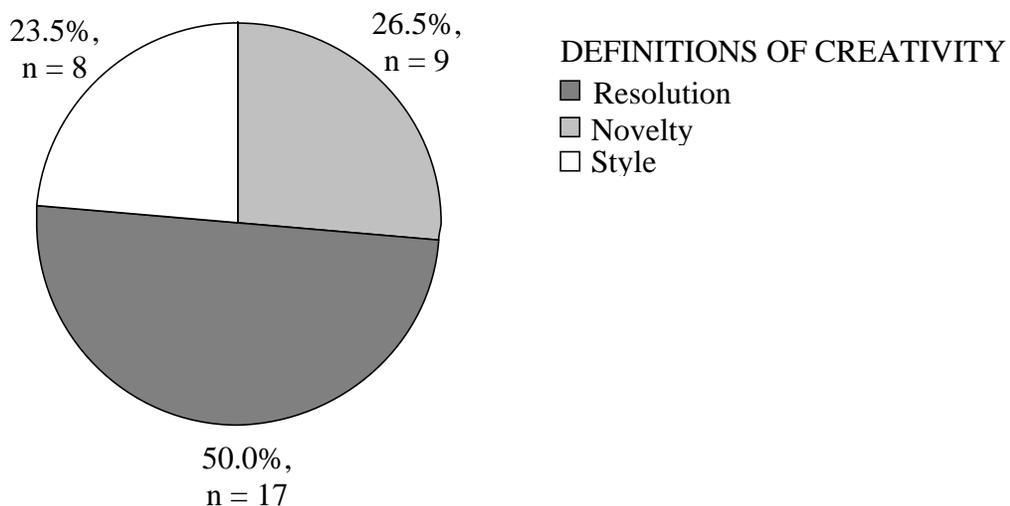


Figure 4-7. Definitions of creativity by novelty, resolution, and style

These findings strongly support the quantitative findings in that novelty, resolution, and style are considered by designers to be important aspects of creativity in entry-level design portfolios. However, the analysis from the first research question that examined the importance of novelty, resolution, and style for predicting creativity concluded that resolution did not influence creativity, but did have a significant influence hiring potential. In addition, the value designers place on the creative product attributes differs

from their perceptions of creativity of entry-level interior design portfolios. When designers define creativity, the characteristics of resolution are mentioned twice as much as the characteristics of novelty and those of style.

Defining creativity in entry-level portfolios

Question two asked designers to define creativity in terms of entry-level portfolios. Since characteristics of novelty, resolution, and style were also mentioned for this question, responses were organized accordingly. Figure 4-8 illustrates that the characteristics of style were considered 43.3% (n = 13) of the time when discussing creativity of entry-level interior design portfolios, followed by resolution (33.3%) and novelty (23.3%). Designers who emphasized characteristics of style felt “overall presentation” was important with responses including topics of format, layout, techniques, and materials. One designer felt it was important to “organize your portfolio to be clear but graphically outstanding,” while another contended “well translated and well put together” as qualities of creativity in entry-level portfolios.

The features of resolution were mentioned second to style with 33.3% of responses (n = 10) as novelty captured 23.3% of responses (n = 7). Designers who defined creativity of portfolios using characteristics of resolution talked about “appropriate design responses,” “resolving design issues,” and “maintaining a good design concept and solution.” Novelty was mentioned as a “reinterpretation of the expected,” “something fresh and different,” “new,” and “not what everybody else is doing.” One designer captured the essence of all three attributes when he said creativity of a portfolio was “the ability to relay an idea, a concept, in a very simple fashion, so it’s understandable, exciting, does have a sense of surprise to it but also a sense of reality.”

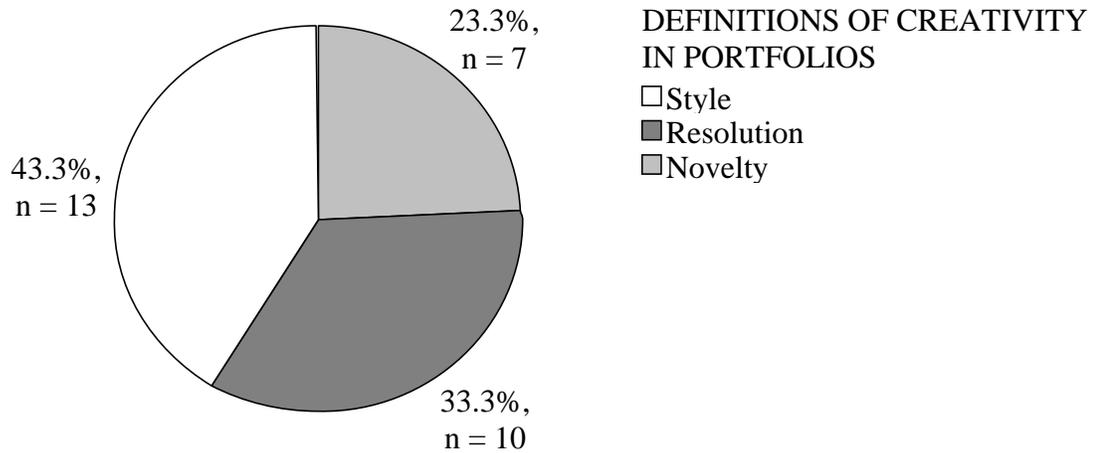


Figure 4-8. Definitions of creativity in design portfolios by novelty, resolution, and style

This question essentially focused on hiring potential by examining the connections between the three attributes of a creative product and entry-level interior design portfolios. This finding offers additional support for recognizing style as the greatest influence on hiring potential, followed by resolution. Novelty was also very important to designers when defining creativity of portfolios even though novelty only had an indirect influence on hiring potential in the quantitative findings.

Additional factors for portfolio evaluation

Designers were asked to identify additional influences besides creativity that they perceived to be important when reviewing portfolios. Interestingly, although this question targeted other factors besides creativity, responses still included characteristics of the three creative product attributes. Designers noted characteristics of style the most, followed by technical skills, the individual, resolution, novelty, and the thought process as additional factors they perceive as important. Figure 4-9 illustrates the relative importance of each category. Qualities of style were mentioned almost 40% of the time with responses focusing on the “overall look” including “organization skills” and

“presentation” techniques. A few designers stated “neatness, spelling, [and] grammar” were important factors as well.

Technical skills (21.7%) were reported the most after style and were related to specific skills and computer programs. Issues dealing with “new abilities in software,” “technical drawing,” and “skill sets in general” were discussed. The characteristics of resolution (13%) were mentioned as “appropriate scale of space” and “clear well thought out concepts and solutions.” The individual (13%) was also discussed the same number of times as resolution. One designer’s felt it was important to point out that the firm “looks at the work and person as a whole. How well a person speaks, how they are dressed, etc.,” are important considerations besides the portfolios.

Other responses mentioned by designers were qualities of novelty (7%) and topics dealing with the thought process (7%). Designers talked about the characteristics of novelty by suggesting “new ideas” and “innovative designs.” They also revealed the importance of presenting a “well-rounded thought process.”

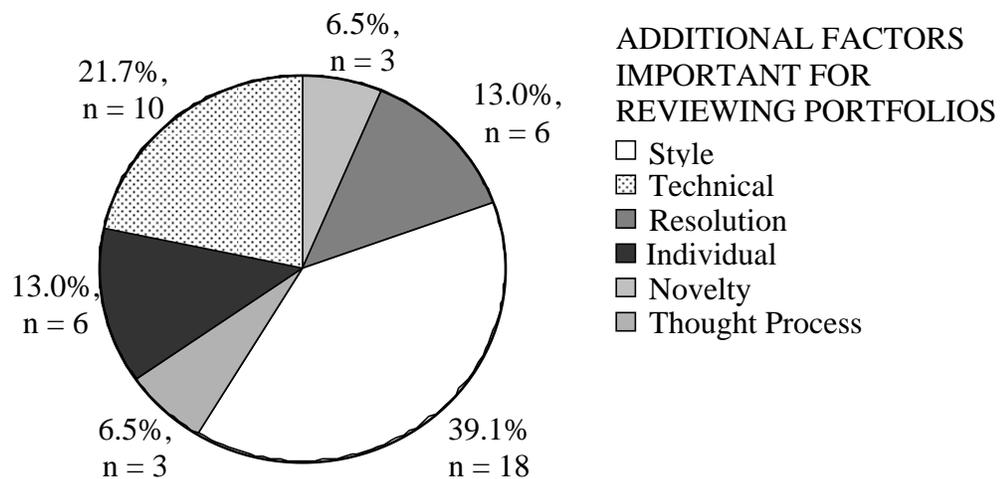


Figure 4-9. Designer considerations for reviewing portfolios

Since this question examines factors important for reviewing portfolios, these findings relate to hiring potential. The findings discussed here support the quantitative findings that examined the importance of novelty, resolution, and style in predicting creativity and hiring potential and the findings from the previous interview question related to definitions of creativity for entry-level portfolios. Novelty, resolution, and style remain important factors that designers consider when reviewing portfolios. Within the three creative product attributes, style of a portfolio continues to be the most important factor in terms of hiring potential, followed by resolution and novelty. However, the findings for this interview question introduce additional factors designers feel are important that, in some instances, are more important than resolution and novelty. Following style, important factors designers mentioned were: technical skills, resolution, the individual, novelty, and the thought process. Resolution and the individual were mentioned equally, as well as novelty and the thought process.

Finally, the designers were asked to offer any additional comments on the topics of creativity and entry-level interior design portfolios. Overall, technical skills were mentioned the most, followed by communication and the individual, the thought process, and lastly, a new, additional category of internship experience was discussed (Figure 4-10). When designers talked about characteristics of technical skills (28.6%), comments mostly related to knowledge and experience with various software programs including three-dimensional rendering with “Photoshop and Illustrator,” as well as “[Auto]CAD skills.”

Designers also mentioned themes conveying communication (23.8%) skills to illustrate the importance of being able “to present and sell ideas well,” as well as “speak

in front of others, and listen to potential clients.” Communication was discussed the same amount as the personality of the individual (23.8%). As one designer asserted, “The people themselves are a huge part of it; sense of humor, personality, etc.”

Issues relating to thought process were mentioned in terms of “exhibiting more process,” especially when one designer suggested, “that there is a keen interest among professionals to see the entire process.” Lastly, internship experience was pointed out as an additional benefit. Designers shared this sentiment by saying it was important “to work, or intern, or be exposed to the office atmosphere” and that students should spend time “interning for architectural or interior design firms.”

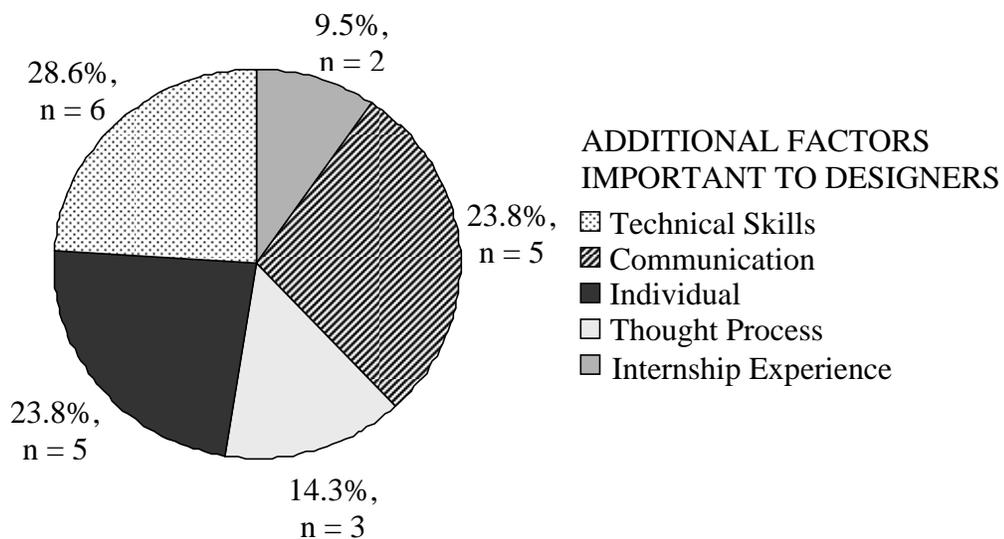


Figure 4-10. Additional designer considerations for entry-level hiring

This last interview question relates to the quantitative findings by addressing topics that go beyond what was asked in the previous interview questions that looked at designers’ personal definitions of creativity, their perceptions of creativity in design portfolios, and their considerations for portfolio review. The topics introduced by designers are thought to be important and support the additional factors designers reported that relate to hiring potential. Furthermore, the third qualitative question found

that in addition to the three creative product attributes, technical skills, the individual, and the thought process are supplementary aspects designers felt were important when reviewing portfolios. These three aspects, along with communication and internship experience were also mentioned in question four by designers when they had the opportunity to suggest other issues relevant to the topic of creativity and entry-level interior design portfolios.

Summary

This study examined the creative product attributes of entry-level interior design portfolios to understand the relationships between novelty, resolution, style, creativity, and hiring potential. The statistical analyses found strong associations between each variable. Moreover, novelty and style significantly influence creativity, while style, resolution, and creativity influence hiring potential. The qualitative findings strongly support creative novelty, resolution, and style on many levels. When discussing creativity and entry-level portfolios, designers implicitly recognized the three attributes of a creative product. In an ideal sense, they perceived resolution to be the strongest quality of creativity, followed by novelty and style. In terms of creativity relative to entry-level interior design portfolios, style was the greatest quality, followed by resolution and novelty. Characteristics of style were also recognized as the strongest contributor for designers when reviewing portfolios. Technical skills, resolution, the individual, novelty, and the thought process were also considered important by designers, as well as communication and internship experience.

CHAPTER 5 DISCUSSION

This study considered the impact of creativity on the evaluation of entry-level interior design portfolios by examining the relationships among the creative product attributes of novelty, resolution, and style. The portfolio evaluation instrument also revealed the significance of each attribute in influencing the creativity and hiring potential of interior design portfolios while open-ended interview questions revealed additional, qualitative factors. These results will be discussed and interpreted in relation to the larger literature on creative products and connected to the domain of interior design. Possible reasons for several seemingly contradictory findings will be suggested along with recommendations for future research directions.

This study examined perceptions of creativity in a sample of entry-level interior design portfolios where designers individually assessed 12 portfolios from graduating seniors in an accredited interior design program using an instrument measuring novelty, resolution, style, creativity, and hiring potential. Designers responded to qualitative questions aimed at revealing individual views of creativity and entry-level interior design portfolios. The findings from the research questions below will be discussed in detail and implications will be made for the field of interior design as a whole.

- What is the relative importance of novelty, resolution, and style of entry-level interior design portfolios in predicting creativity?
- What is the relative importance of novelty, resolution, style, and creativity of entry-level interior design portfolios in predicting hiring potential?
- How do the open-ended designer perceptions of creativity and entry-level interior design portfolios relate to the quantitative portfolio evaluations?

Validity

The present study was designed to employ highly experienced designers skilled in reviewing entry-level interior design portfolios. The participants of the study represent a high caliber judge group of professional designers from respected firms in Jacksonville, Orlando, and Tampa. Six of the ten firms represented in the study are considered large firms with over 50 employees and are nationally recognized in the Top 100 firms of 2006 (Davidsen & Leung, 2006). Many of these firms have multiple offices across the world. For example, Gensler is ranked as the number one firm in the nation in terms of value of their work installed and interior design fees, and generates design work from 29 offices spanning the globe. Other firms that made the list include: HKS in 31st place, ASD in 48th place, Gresham Smith and Partners in 54th place, Gould Evans in 63rd place, and Wimberly Allison Tong and Goo in 78th place. The remaining four firms are medium in size and have one or two offices with between 8 and 49 employees. Though somewhat smaller, these firms are also considered industry leaders having received numerous accolades from the foremost design organizations such as American Society of Interior Designers and the American Institute of Architects.

The 21 designers involved in the study were also considered highly respected with significant experience. The designers were nearly 43 years of age on average, which is consistent with significant professional experience needed to evaluate portfolios. While the 21 designers involved in the study illustrated various levels of responsibility and review experience, the majority represented primary decision makers or senior designers of the firms. Since nearly sixty-seven percent of the designers were in high-level positions, the level of experience designers noted was also consistent with their job position and further validates the strength of the judge group. The findings also suggest

that Principles and Design Directors actively participate in the hiring of entry-level designers possibly more than Project Managers and Designers. The professional experience of the participants provided a particularly good fit with the University of Florida's Interior Design program from which the portfolios were selected; a strong commercial emphasis of the interiors program was reflected in the portfolios and in the designers' specializations.

Why is it important to have such a high caliber judge group? Not only does the experience of the judge group strengthen the methodology, but it also provides pertinent information for interior design education. Since the firms are respected leaders in the field of interior design, students who aspire to work for one of these firms and design educators preparing students to enter the field can trust the findings as representative of what designers from highly valued firms are looking for in portfolios of prospective entry-level employees.

In addition to the experience level of the judge group, the validity of the study is also dependent on familiarity with accepted standards for portfolios in the domain of design. The designers' open-ended responses reinforced that creativity of a product should be assessed within its field. Specific examples offered insights into the meaning of creativity in entry-level portfolios and the results of the investigation support domain specificity. This finding aligns with Amabile's (1982; 1996) consensual definition of creativity maintaining that creativity is domain specific and should be judged by experts in the field under study. For example, if individuals with only basic design knowledge judged the entry-level design portfolios, the findings would not be as relevant especially

for predicting hiring potential. In sum, the reliance on well seasoned designers from noted firms increases the validity of the study.

Reliability

The idea of domain specificity supports evaluating portfolios within interior design in as close to an actual setting as possible. For example, since the hiring process quite often takes place in a conference room or office of a designer guiding the interview, the present study collected data at each firm in either a conference room or designer's office. Other assessment tools also reflected factors tied to field testing. For pragmatic reasons, the evaluation instrument was an abridged version of the theoretical framework developed by Besemer and Treffinger (1981). Although the Creative Product Analysis Matrix offered a 55-item semantic scale adjective checklist, a 13-item evaluation instrument based on the matrix was developed to shorten the time necessary to complete the assessment. Since designers evaluated 12 portfolios on 13 items, a shorter instrument was more practical and sensitive to time, fatigue, and other uncontrollable responses.

Other studies have taken into account the benefits of creating an evaluation instrument that responds to the domain in question. For example, Cropley and Cropley's (2000) study also utilized an abridged version of the Creative Product Analysis Matrix to examine products designed by engineering students. For the dimensions of novelty, germinality, which relates to resolution, and elegance, which relates to style, they found novelty and germinality significantly correlated with overall creativity, but elegance did not. Though these three dimensions were termed differently, this study essentially explored novelty, resolution, and style. Cropley and Cropley's (2000) study implies that these dimensions are considered in the engineering field as one thing, yet, the findings

from the present study suggest the three dimensions mean something else for the domain of interior design.

The findings indicate the designers consistently judged the 13 items utilized in the portfolio evaluation instrument. Where an alpha rating greater than .70 is considered acceptable (Blaikie, 2003); novelty, resolution, style, creativity, and hiring potential yielded high alpha ratings ranging from .85 to .92, showing strong internal reliability of the instrument,. In several preliminary studies testing the reliability of the subscales for the original Creative Product Analysis Matrix (Besemer & O'Quin, 1987), similar high alpha ratings were found. Besemer and O'Quin tested a variety of letter openers, cartoons, and art work using an experimental judging instrument based on the model. They found reliability ratings ranging from .70 to .80 with an average alpha of .76 for all the studies. The present study reported even higher alphas averaging .87 for the five variables, which further validates the reliability of the judging instrument.

After establishing the level of reliability, designers' judgments of novelty, resolution, and style of the 12 portfolios were examined further by comparing average ratings of the variables. The mean score for resolution was the highest of the variables and had the smallest variance of rated scores assigned by judges. This suggests the four items indicating the functionality of a portfolio in terms of its logicalness, usefulness, understandability, and value, were scored higher and more consistently among judges than the other two variables. Style had the second highest mean of the five variables, while novelty had the lowest.

Since this study used Besemer and Treffinger's (1981) definition of a creative product that features novelty, resolution, and style as attributes, it is interesting to note

the mean score for the variable creativity was almost exactly the average of the means for the three creative product variables. The findings suggest the creativity variable may closely measure the creativeness of design portfolios. This is especially important because, while there is a fair amount of agreement in the field that these dimensions are important for creative products. However, it is not definitive that other factors do not come into play, particularly in an interior creative design product.

In addition, the average of novelty, resolution, style, and creativity is almost equal to the mean score of hiring potential. Although novelty, resolution, and style are products of creativity, their value along with the actual value of the portfolio's creativity is a strong indicator of the potential of the portfolio's creator to be hired by the firms involved in the study. Since the variables correlate highly to overall creativity and hiring potential, the findings of the study help establish the reliability of the evaluation instrument utilizing the creative product attributes of novelty, resolution, and style. Further research would have to be undertaken to explore other influencing factors.

Entry-level Interior Design Portfolios

A portfolio is a summation of work accomplished throughout a period of time (Newstetter & Khan, 1997). An entry-level interior design portfolio is comprised of selected design projects that are perceived by the individual compiling his or her portfolio as representing a body of work produced over a given period of time. Design projects, by definition, are creative products. While design projects are guided by design criteria and program requirements, these open-ended problems encourage many imaginative, innovative solutions. There may be several design projects featured in an interior design portfolio, but the portfolio itself acts as a single unit to display a student's abilities, experiences, and potential. It is because of this reason that interior design portfolios can

be viewed from two vantage points: as a creative product and as a means for employment.

The findings support examining entry-level interior design portfolios from a creative product perspective. A number of researchers in creativity have suggested criteria to define the creative product (Newell, Shaw, & Simon, 1963; Jackson & Messick, 1965; Getzels & Csikszentmihalyi, 1976). While many discuss novelty and appropriateness, there exists disagreement on these criteria. Nevertheless, researchers agree that a set of criteria that defines a creative product should apply to creative products across domains and disciplines. Besemer and her colleagues support this notion and propose nine facets of the Creative Product Analysis Matrix that “are internally consistent across different creative products in different samples” (Besemer & O’Quin, 1987).

Yet, a creative product should also be considered in the context for which it was created. An entry-level interior design portfolio, as one designer stated, is “an artistic and creative rendition of one’s best academic works.” The purpose of the portfolio is to act as a mechanism for gaining entry-level employment. By connecting the creative attributes of a portfolio to the reason why entry-level designers create portfolios initially, the findings of the study help understand the relationship of the portfolio to hiring potential. This study also examined creativity in a domain-specific context to see how important creativity is to hiring potential in interior design.

To reiterate the primary purpose, the present study examined theory of a creative product to see if it could be applied to interior design portfolios. After reviewing a number of writings on the creative product, Besemer and Treffinger’s Creative Product Analysis Matrix (1981) appeared to be the most appropriate for the interior design field.

According to Besemer and Treffinger (1981), the three attributes inherent to all creative products are novelty, resolution, and style. Novelty refers to the newness or originality of the product; resolution deals with how well the product functions or does what it was supposed to do, while style pertains to the stylistic and craftsmanship qualities of the product. This matrix helped direct the research questions that focused on analyzing specifically what was creative about entry-level interior design portfolios and how the creative product attributes contribute to hiring potential. The findings related to novelty, resolution, style, and creativity will be discussed in further detail.

Novelty

Novelty, defined as “the extent of newness of the product in terms of processes, techniques, and concepts” (Besemer & Treffinger, 1981, p.164) appears to be a significant factor in design portfolios. Of the three product attributes, the present study found the strongest associations between novelty of a portfolio and perceived creativity but not to hiring potential. The findings also show that novelty significantly influences the creativity of a portfolio more than the other attributes of resolution and style. The designers participating in this study were not supplied with a formal definition of creativity, yet, when they offered their own creativity definitions, interestingly characteristics of novelty were mentioned in more than one-fourth of the responses, such as “thinking outside the box” as well as “developing unique solutions.” Thus, the quantitative and qualitative results support the concept of novelty as a clear dimension of creativity.

While novelty clearly emerges as a well-recognized dimension of the portfolio as a creative product, its influence is not nearly as strong in predicting hiring potential as resolution and style. Furthermore, the indirect influence novelty had on hiring potential,

though important, is not as significant as the influences of resolution and style on hiring potential. When considering the design portfolio as a vehicle for entry-level employment, it appears that novelty may be necessary for a portfolio to be considered a creative product, but is not sufficient to gain employment. Designers making hiring decisions may not give as much credence to portfolios that are just novel, different, or unique in interior design where factors such as functionality and presentation may supersede creative novelty.

However, novelty of a portfolio should not be completely discounted. Designers may feel that an individual can be trained on the job to think and design in more functional and stylistic ways, whereas the ability to develop novel idea may be more difficult to develop. Although some designers may show a preference for individuals that create portfolios illustrating more original and novel points of view, it is possible that a large group of designers from other regions may have different preferences, but further research is explore this issue.

Resolution

Another variable examined in the study was resolution, which was defined as “how well the product works, functions, and does what it is supposed to do” (Besemer & Treffinger, 1981, p. 164). The most surprising and contradictory findings of the study relate to resolution as a creative product attribute. Resolution had the weakest association to creativity and was not significantly perceived to be an indicator of creativity in the design portfolio. It is possible that, while the resolution scores were the highest of all the variables, they were also the least comparable to creativity scores, especially because resolution did not correlate as strongly to creativity. For example, if a portfolio was judged to have very high resolution, while novelty, style, and creativity were scored less;

novelty and style would be more closely associated to creativity than resolution, indicating a stronger influence on creativity. It appears that strength of influences are directly associated to strength of correlations between two variables, and furthermore, by controlling the effects of novelty and style on the creativity of portfolios, the effects of resolution become redundant and thus non-significant.

Nonetheless, resolution emerged as an important factor in designers' definitions of creativity. Fifty percent of responses illustrated characteristics of resolution manifest in designers' comments that often referenced a practical solution to a challenge. This is likely because resolution deals with how well the design solution functions or solves the problem. Additionally, over sixty percent of those responses focused on design rather than creativity in a general sense. For example, such statements explained resolution as "useful for its occupants," "functional to the end user," and "solves the design problem." Consequently, designers' definitions of creativity seem to regard functionality very highly and support resolution as a dimension of creativity.

Perhaps designers viewed resolution as a key factor because functionality is so critical to the success of design projects, and in design practice, the designer's main concern is to create a space that is purposeful and functional to its end users and proves satisfactory to clients. This may be true since eighty percent of the designers participated in corporate design where work environments need to offer employees adequate settings in which to work productively. Rengel (2003) suggests that resolution of an office design project involves:

A good understanding of the many units on the office, their roles, and their relationship to each other. The first step of any office design solution is to carefully place all elements for optimal function. The second step is to organize these into a coherent system of open and enclosed areas (p. 337).

While optimal function is necessary in order to achieve resolution in an office design, the design would have to demonstrate a logical, useful, understandable, and valuable solution.

The findings of the study might have been very different if the focus was on designers and portfolios that were residentially oriented. It is possible that resolution would not be viewed as the most important attribute since residential design often times deals largely with the stylist attributes and in an interior residence those may include interior finishes, color, pattern, and ornamentation (Rengel, 2003). These are significant to enriching the overall environment but may contribute less to the function of the design. While it is not to say that residential interior designers don't consider novelty and resolution when designing the interior of a home, further research in this area is necessary. However, it is hypothesized that style would be regarded as the most influential attribute.

The influence resolution had on hiring potential is cleaner cut than resolution. Considered the second most influential variable, resolution of a portfolio predicts hiring potential more than creativity and novelty, but less than style. In addition, characteristics of resolution also contributed to one-third of the qualitative comments including "appropriate design responses" that are "understandable" and "easy to follow." It appears that designers consider resolution to be an important element in entry-level design portfolios, and these findings are illustrated in the words of one designer who implicitly explained the value of functionality over novelty:

I guess a lot of what you see in entry-level portfolios is just extreme creativity and you don't see a lot of the technical information. You know there are other elements to our industry.... [Students] see something and think 'oh that's cool,' but is it

practical to use here, how do you install it, and will it last through the people working in the environment.

This citation demonstrates that the functional aspects of design are just as important, if not more important than novelty alone.

While resolution appears to be an important element for interior design, it is difficult to determine why resolution was not an influential factor for predicting creativity in the quantitative results, but emerged as such a major component in the qualitative portion of the study defining creativity. One explanation may be attributed to the fact that designers made specific judgments on the 12 portfolios without accompanying project descriptions or narratives while they commented on creativity and entry-level design portfolios in a general sense. It appears that designers responded to the open-ended questions by describing or suggesting considerations of an actual entry-level hiring situation. One designer suggested the difficulty in evaluating portfolios without having the actual job applicant present:

I think the difficult thing to separate was that I was evaluating the portfolios and not the projects, that was hard because some of them had some really good projects but again not as strong a presentation, and again, I think seeing it only on a laptop makes it harder to evaluate a portfolio and a person or a person's ability.

An actual portfolio evaluation involves designers viewing a portfolio with the job candidate talking through and explaining the contents within the portfolio. By verbally communicating the ideas and thought processes behind a design solution, the characteristics that define resolution may become clear, in that, the functionality of a design is based on its logical, useful, valuable, and understandable qualities. This may be especially relevant since designers recognized the importance of communication, thought process, and the individual when considering additional factors that contribute to entry-level hiring. One designer felt: "If you have the opportunity to present your portfolio, it

is a little easier to talk about what the process was and it is a little more personal than to have it all written down because you lose the attention span.” Yet, understanding the design process and the functionality of the design is not the only factor driving the design solution; if this were the case, the path to the solution would be clear cut and only a limited number of design solutions would emerge. In addition, a portfolio in an actual hiring situation may illustrate design projects through physical pages or may be viewed digitally. Nevertheless, designers seem to encourage verbal communication of the process by explaining how the design responded to the limitations and functional criteria, while at the same time incorporating original ideas.

Style

Style is identified as “the degree to which the product combines unlike elements into a refined, developed, coherent whole, statement or unit” (Besemer & Treffinger, 1981, p.164). In the present study, style of a portfolio refers to how the portfolio looks visually, particularly its organization and craftsmanship. Style, in addition to novelty, was found to significantly influence creativity. Although novelty was more influential, the degree of influence for style was quite substantial. This is interesting since the previous findings indicate that novelty may be the least important attribute of the three. In addition to the possibility that novelty is viewed synonymously with creativity, it is also possible that novelty influences creativity more than style because the two items representing novelty were found to be more consistent than the three items representing the style of the portfolios, indicated by equal alpha scores. Yet, the emphasis placed on novelty and style for predicting creativity is contradictory to designers’ definitions of creativity that mention resolution in half of the responses.

Style also had a strong relationship with hiring potential. Of the four variables, style claimed the strongest association to and influence on hiring potential. Style significantly influences hiring potential almost twice as much as resolution and more than double creativity. The value placed on style of a portfolio shown by the findings suggests that the style may be more important than novelty, resolution, and creativity in predicting hiring potential. This means that when designers try to determine the potential of an entry-level interior designer by assessing their portfolio, they are most strongly influenced by how well the portfolio is put together and the overall, visual presentation.

In addition to the direct influence style has on hiring potential, intervening effects of style also persuade hiring potential. Since the style of a portfolio influences its perceived creativity and the creativity of a portfolio influences hiring potential, a portfolio's style inadvertently influences potential for employment. We already know that the visual presentation of a portfolio is a very significant indicator of hiring potential. The fact that style has an additional affect on hiring potential that is indirectly mediated through creativity, further supports that entry-level interior designers should prioritize the look of their portfolio and its organization.

Style is further supported as the most important consideration by designers in determining hiring potential. When asked to define creativity in entry-level portfolios, designers' responses mentioned characteristics of style over forty percent of the time. Even though designers cited to characteristics of style more than novelty and resolution, they appeared to value each attribute since the frequency of responses were quite similar across the three variables. Interestingly, since designers recognized these three attributes of a creative product, designers' views were consistent with the study's guiding

framework developed by Besemer and Treffinger (1981). In sum, the designers' comments frequently reflected novelty, resolution, and style in entry-level interior design portfolios.

When asked to suggest other factors important while reviewing portfolios, designers referenced the style of a portfolio more than other factors. For example, comments included "organization from the start to finish of the portfolio" and the "presentation [and] overall look." Perhaps style is given more attention when evaluating hiring potential because the stylistic qualities of a portfolio affect how the information is presented and may influence designers' perceptions of the material within the portfolio. In other words, the style of the portfolio illustrates "the ability to solve a problem in a manner that is aesthetically pleasing." Interior design is highly visual, and as one designer mentioned, "[the] visual impact [of the portfolio] is just as important, sometimes as a first impression more important than the design because you want someone to pay attention to what you are trying to do." The overall look of the portfolio, through the organization and the layout of the page, maybe the factor they return to when evaluating a portfolio and making hiring decisions.

Creativity

The creativity variable was included in the multiple regression analysis to gauge its contribution to hiring potential. Although a significant influence on hiring potential was found, we do not know how much of the influence was solely attributed to creativity. Since novelty and style influenced creativity, part of the influence creativity had on hiring potential was also influenced by these other factors, and furthermore, because these variables overlap to a degree. Some designers appeared to view novelty as the same thing as creativity. As mentioned earlier, one designer stated "A lot of what you see in

entry-level portfolios is just extreme creativity and you don't see a lot of the technical information.” This comment implies novelty may be viewed synonymously with creativity. Although novelty has a strong association with creativity, the two variables were still found to be different statistically. The profession of interior design also supports this view by defining interior design as “a multi-faceted profession in which creative and technical solutions are applied within a structure to achieve a built interior environment. These solutions are functional, enhance the quality of life and culture of the occupants, and are aesthetically attractive” (NCIDQ, 2006). This definition implies that the interior design profession may view novelty and creativity similarly. It also reflects a misconception that designers cannot be creative with the technical and functional aspects of design. Yet at the same time, the definition illustrates the importance of creative novelty, resolution, and style. Nevertheless, the qualitative findings showing less than perfect associations suggest that novelty and creativity are not the same thing since designers regarded them differently when rating the portfolios on the five variables in question. Further research into the field of interior design should target these misconceptions and suggest a clearly defined definition of interior design that takes into account the creativity aspects of novelty, resolution, and style.

In sum, the results of the present study support the complex and multifaceted nature of creativity based on both the quantitative and qualitative findings. The quantitative findings are more definitive than the qualitative findings since they are based on 248 assessments of portfolios as opposed to the opinions of 12 judges. The quantitative portion of the study found:

- Novelty, resolution, style, creativity, and hiring potential are associated;
- Creativity is influenced the most by novelty and then by style, and;

- Hiring potential is influenced the most by style, and then resolution and creativity.

The qualitative, exploratory findings of the elite judge group found:

- Designers perceive resolution to be the most important attribute of creativity; and
- Designers perceive style, resolution, and novelty to be important for hiring potential.

In addition to the importance of entry-level design portfolio to interior design, the portfolio appears to carry a significant weight in the hiring process, accounting for almost three-fourths of the hiring decision. In Baker and Sondhi's (1989) study that looked at competencies and attributes of entry-level interior design graduates, they noted that sixty-eight percent of hiring decisions by professionals are made based on the individual's portfolio. The current study supports the importance of portfolios for assessing performance and emphasizes the role portfolios play in gaining entry-level employment.

Yet, additional factors that account for remaining influences in hiring decisions should be recognized. The participating designers stressed the importance of being able to communicate, show technical skills, exude personality, illustrate thought processes, and have internship experience. As one designer put it, "We do not evaluate a portfolio alone, we also are interviewing the person: how well a person speaks, how they are dressed, etc. We look at the work and the person as a whole." This multi-dimensional process is captured by Baker and Sondhi (1989) who concluded that "large interior design firms are looking for entry-level personnel who critically think through design solutions based on design theories, communicates verbally and through graphic presentation, practice professional ethics, and present themselves as mature, enthusiastic, and well groomed" (p. 35). Assuming an evidence-based approach to portfolio

preparation at the job applicant level can facilitate the development of a portfolio that provides the best opportunity for employment.

Implications

Recommendations can be drawn from these results to benefit interior design educators and entry-level graduates who are entering the job market. If interior design educators were informed of the significance these attributes have on entry-level portfolios, they could consider focusing their studios and even curriculum to align with professional expectations. Educators could incorporate novelty, resolution, and style into the earliest stages of design and through the final presentation stage. They could structure design problems to specifically address the three attributes, in turn, providing a framework helpful for students throughout the development of a design solution. These criteria—novelty, resolution, and style—could then be used by educators to evaluate projects. Furthermore, during the design juries, students could present their design solution by explaining how the attributes contributed to their process. For instance, novelty can be explained as an enriching factor of a design by possibly creating originality and surprise; resolution can be explained as an ordering factor that facilitates understanding and orientation while also clarifying the value and usefulness of the design; and style can be explained as an expressive factor that communicates the design message as a cohesive unit that is elegant and carried out skillfully. Informed educators could inevitably influence the way students address their design projects, as well as create their portfolios. These advantages, in turn, could create a greater seamlessness between education and practice.

The findings from this study also allow entry-level interior designers to maximize their potential for employment. It is suggested that entry-level interior designers create a

portfolio that showcases their talents and skills while keeping in mind professional designers' perceptions of creativity and entry-level portfolios. It was found that designers with hiring responsibility appeared very impressed with how the portfolio is presented visually and the degree to which it emphasizes appropriate solutions, originality and uniqueness. A combination of these attributes is preferred rather than concentrating on one attribute. For example, a portfolio that is purely novel may be viewed as bizarre or attention getting, with no underlying substance or style. If a portfolio has only characteristics of resolution it may be lacking organization, a visual impact and imagination. Alternatively, if a portfolio is purely stylistic it can suggest a lack of substance, functionality, interior design skills, and originality.

Though the results of this study strongly support the stylistic attributes, a portfolio should illustrate characteristics of all three variables in varying degrees. Kilmer and Kilmer (1992) suggest overall design impressions are greater than the sum of its parts and are dependent on style: "The impact of design will depend on its successful organization of ideas or elements into unifying wholes—the use of materials, the manipulation of form, aesthetic sensitivity, and satisfying a need" (p. 17). The current study advocates that style is considered the umbrella for the portfolio, or the overall visual impact of the organization of the portfolio. Style is also integrative, in that, it bridges the attributes of novelty and resolution into an organized, coherent unit. This is true for the portfolio as a unit as well as for the individual design projects within a portfolio. One designer mentioned the importance of presenting the individual work in a stylized manner and stressed "organization from start to finish of the portfolio and each project within."

Evident at many levels, style contributes to the design of spaces within design projects, and also influences the visual impact across projects in a portfolio.

One challenge for design students when integrating the attributes of creativity into their portfolios is the issue of illustrating resolution. Designers evaluating the design portfolios appeared to have a harder time recognizing resolution than novelty and style. While the findings support job applicants explaining the resolution of their portfolios, there are benefits to explicitly clarifying the functional considerations within design projects. Some ways to do this, for example, may include manipulating graphics or including written explanations to better communicate the effectiveness and organization of the design, as well as bring more attention to the human conditions. While the job candidate remains important to the hiring process, carefully considering the functional aspects of a design by visually illustrating resolution will allow entry-level design portfolios to convey a more accurate message.

Suggested Future Research

Given the paucity of research on creativity in interior design related to entry-level portfolios, Bender encourages further investigation into this topic and is writing the first book dedicated to interior design portfolios (D. Bender, personal communication, October 2006). The following recommendations offer ideas on expanding this study conceptually and methodologically.

The first recommendation is to replicate and expand the study by utilizing a large, random sample of differently focused participants. While the designers and the portfolios in the study focused on commercial design, another worthwhile study could examine residentially focused designers and portfolios. It is hypothesized that style would emerge as the most important factor along with novelty because residential design and designers

seem to direct more attention on the stylistic attributes of a space while also incorporating unique characteristics. Resolution may not be as influential because residential designs frequently do not address as many code regulations or special user groups or constraints.

A second recommendation is to compare physical design portfolios to digital ones. Although it may be difficult, this study would be beneficial to providing a more accurate representation of the portfolio, in turn, contributing to more accurate results. One designer mentioned “seeing [the portfolio] only on a laptop makes it harder to evaluate.” Using actual portfolios in the assessment task would allow designers to see and touch the portfolio. It is possible that “the texture” and “the quality of the paper” contribute to the visual impact or style of the portfolio, which in the end influences designers’ perceptions and the portfolio’s potential for employment. Further, some design programs encourage the development of a container to hold the portfolio. This container may in fact contribute to designers’ perceptions of the style of a portfolio, but would have to be investigated further.

It may also be beneficial to expand the present study to include other components that addressed one or more of Mooney’s four ‘P’s” (1963) discussed in the review of literature. Creativity studies revolve around the creative person, the creative process, the creative product, and the creative press. Future studies relating creativity to hiring potential in interior design, for example, could investigate characteristics of the creative person as well as related to their creative product. In the domain of interior design field, entry-level portfolios and entry-level interior designers could be examined to gain better insights into whether the characteristics of a creative person contribute to the perceived characteristics of their design portfolio.

A final recommendation for future research is to explore the interior design programs from several universities. Often times, interior program may convey and overall identity or look that could possibly contribute to how design projects are resolved and portfolios developed. In turn this could have positive or negative influences on designers' perceptions of the novelty, resolution, and style of a portfolio.

Research is responsible for continually expanding the current perceptions and knowledge base in the interior design field. The findings from the current study support and suggest further research in order to inform design education and design students as well as advance the profession.

Conclusion

The purpose of this study was to determine what design professionals consider creative in entry-level interior design portfolios. More specifically, the study explored the specific attributes of creative products to determine how the perceptions of entry-level interior design portfolios relate to creativity and hiring potential. Twenty-one professional designers applied a locally developed instrument to 12 entry-level interior design portfolios to judge novelty, resolution, style, creativity, and hiring potential. Further open-ended questions expanded designer views on creativity and interior design portfolios.

The study found that designer's perceived creativity of entry-level interior design portfolios to be influenced by the portfolio's unique character and its overall presentation. Furthermore, the perceived hiring potential of the portfolio's creator was influenced directly by the overall presentation, the appropriateness of the portfolio, and its creativity. When designers discussed creativity, they most often cited characteristics relating to the appropriateness of the portfolio. However, when discussing factors relevant to the hiring

potential of portfolios, designers most frequently cited the characteristics of style were most often cited, followed by appropriateness and novelty.

The results of the study are significant for creativity research, as well as for design educators and students applying for entry-level employment or even internships. The understanding of creativity as a scholarly area of research is expanded through new and exciting applications of interior design. Benefits also accrue with the field when educators can inform interior design students on best practice requirements for creating their portfolios, and in turn students will have the best opportunity for gaining employment at suitable design firms.

APPENDIX A
PARTICIPATION LETTER REQUEST

March 1, 2006

Designer
Firm
Address

Dear Designer,

My name is Katie Levins. I am a graduate student at the University of Florida studying interior design. I am currently working on a thesis project that seeks to understand what interior design professionals look for in senior design portfolios. As you know, creativity is a vital aspect of any design project or product, including portfolios. With this study, I want to measure how design professionals judge creativity in potential employees by assessing the portfolios of senior interior design students.

For my sample, I would like to collaborate with you and possibly another member of your firm that you would recommend with experience in reviewing portfolios and hiring entry level designers. I anticipate your involvement being less than two hours and at a time convenient to your work schedule. I would like to collect my data towards the middle of April and will be calling you to discuss your possible participation in this study and answer any questions you may have.

Dr. Meg Portillo is the professor who is supervising this project with me. She has done several studies on creativity in interior design and been published in numerous journals. If Dr. Portillo or I can answer any questions for you, please feel free to contact either one of us.

Sincerely,

Katie Levins

Margaret Portillo, Ph.D.
Associate Professor and Chair

APPENDIX B
INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

Informed Consent

Protocol Title: The impact of creativity on the evaluation of entry-level interior design portfolios.

Please read this consent document carefully before you decide to participate in this study.

Purpose of the research study: This study intends to measure how design professionals judge creativity in potential employees by assessing the portfolios of students from an accredited four-year interior design program. A quantitative scaled measurement, paired with a qualitative inquiry will give substantial insight into the professional practices of interior designers.

What you will be asked to do in the study: You will be asked to review and evaluate 12 entry-level design portfolios with an evaluation form that will be supplied to you for each portfolio. The portfolios will be viewed in PowerPoint format. You will first watch a timed slide show revealing one randomly selected project from each portfolio to familiarize yourself with the portfolios to be evaluated. Following the slide show you will observe the 12 portfolios individually and complete an evaluation form for each one. The speed for viewing the individual portfolios is controlled by you. When you are finished evaluating the 12 portfolios, you will be asked several questions regarding the portfolios and your background. These answers will be audio taped for later reviewing by the research committee.

Time required: 2 hours

Risks and Benefits: There are no anticipated risks for participating in this study. You will be given an executive summary of the findings that will document the perceptions of entry-level portfolios of leading firms in Florida.

Compensation: There will be no compensation for participating in this survey.

Approved by
University of Florida
Institutional Review Board 02
Protocol # 2006-U-306
For Use Through 04/3/2007

Confidentiality: Your identity will remain confidential to the extent provided by the law. Any information linking you and your work will be kept in a locked file. Your name will not be mentioned in any report. Your taped responses will not be heard by anyone other than the research committee.

Voluntary participation: Your participation in this study is completely voluntary. There is no penalty for not participating.

Right to withdraw from the study: You have the right to withdraw from the study at anytime without consequence.

Whom to contact if you have any questions about the study: Katie Levins, Graduate Student, Department of Interior Design, 342 Architecture Building, PO Box 115705, Gainesville, FL 32611-5706, ph 941-928-5209, klevins@ufl.edu

Whom to contact about your rights as a research participant in the study: UFIRB Office, Box 1112250, University of Florida, Gainesville, FL 32611-2250; ph 352-392-0433.

Agreement: I have read the procedure described above. I voluntarily agree to participate in the procedure and I have received a copy of this description.

Participant: _____ Date: _____

Principal Investigator: _____ Date: _____

Approved by
University of Florida
Institutional Review Board 02
Protocol # 2006-U-306
For Use Through 04/3/2007

APPENDIX C
PORTFOLIO EVALUATION INSTRUMENT

PORTFOLIO EVALUATION

portfolio # _____

Evaluate the portfolio as a complete unit. Rate the thirteen dimensions for each portfolio using the following scale:
1 = Poor; 2 = Below Average; 3 = Average; 4 = Good; 5 = Excellent

		Below Poor	Average	Average	Good	Excellent
Logical	The portfolio is appropriate for the discipline of interior design.	1	2	3	4	5
Useful	The portfolio has clear, practical applications.	1	2	3	4	5
Understandable	The portfolio communicates in an effective and "user-friendly" way.	1	2	3	4	5
Well Crafted	The portfolio presentation shows a high degree of technical skill and care.	1	2	3	4	5
Original	The portfolio is unusual and novel.	1	2	3	4	5
Innovative	The portfolio is innovative.	1	2	3	4	5
Surprise	The portfolio presents unexpected information to the viewer.	1	2	3	4	5
Creative	The portfolio is creative.	1	2	3	4	5
Elegant	The portfolio is refined and graceful.	1	2	3	4	5
Valuable	The portfolio addresses the human condition.	1	2	3	4	5
Organic	The portfolio has a sense of wholeness or completeness about it.	1	2	3	4	5
Promise	What is the likelihood that this portfolio seems comparable to your other entry-level employees?	1	2	3	4	5
Potential	What are the chances that the person who created this portfolio would be hired by your firm?	1	2	3	4	5

APPENDIX D
INTERVIEW QUESTIONNAIRE

1. How do you define creativity in interior design?

2. How do you define creativity in entry-level portfolios?

3. What factors besides creativity are important when you evaluate portfolios?

4. Is there anything else that you would like to add?

5. Can you estimate on how many portfolios do you review a year?

Year of birth _____

How many years have you practiced interior design? _____ years

How many years have you reviewed portfolios? _____ years

What type of design work do you do?

____ Healthcare ____ Corporate ____ Retail ____ Educational ____ Government
____ Commercial ____ Hospitality ____ Residential Other _____

Formal Position Title _____

How many interior designers are employed by your firm? _____ number

APPENDIX E
SUMMARY OF QUALITATIVE FINDINGS

Question 1: How do you define creativity?

NOVELTY

- 1 to think outside their realm of exposure
- 2 uncommon solutions for common problem
- 3 thinking outside of the box
- 4 innovative
- 5 creativity is developing unique solutions
- 6 an idea of reordering something in a way that is different
- 7 innovation
- 8 creativity, innovative
- 9 creating an unforgettable experience

RESOLUTION

- 10 evolving practical solutions to design challenges
- 11 design solution that is based on the clients' needs
- 12 solution that not only meets the client's expectations but also the functional and the human aspects
- 13 various design solutions
- 14 the ability to totally capture a concept or idea into a 3D space
- 15 to have a concept or point-of-view regarding the program or client, that will drive the project.
- 16 solutions for what the client is asking for
- 17 creating useful space; makes it function better
- 18 do they clearly illustrate the main item or idea of the project.
- 19 support human functions
- 20 relationship between form & function
- 21 functional to the end user
- 22 solves the design problem
- 23 the ability to see multiple solutions to a design problem or client request.
- 24 understanding of forms and human elements
- 25 creating a space that is useful for its occupants
- 26 design that reflects the function of the space

STYLE

- 27 color, texture
- 28 use of materials
- 29 creative use of material, textures, form, and light
- 30 is the complete thought shown; plans, perspectives, or other items to convey the ideas
- 31 leverage available materials
- 32 an expressive understanding of the process of interior architecture
- 33 the ability to solve a problem in a manner that is aesthetically pleasing
- 34 cohesive and clear design

Question 2: How do you define creativity in entry-level portfolios?

NOVELTY

- 1 different attitude, a different way of looking at things, a different way to solve a problem
- 2 exciting, does have a sense of surprise
- 3 putting your own twist on it, fresh and something different
- 4 fresh ideas
- 5 an attempt at reinterpretation of the expected
- 6 not what everybody else is doing
- 7 thinking beyond the obvious solution

RESOLUTION

- 8 understandable
- 9 has a sense of reality
- 10 used their sources of inspiration & concepts to inform their projects
- 11 to resolve design issues could be in use of materials or space definition
- 12 drawings clearly define the concept
- 13 the ability to deliver appropriate design responses
- 14 good design concept and solution
- 15 understanding of forms and human elements
- 16 easy to follow
- 17 clarity of intent is most important

STYLE

- 18 design solution is detailed
- 19 overall presentation
- 20 well translated and well put together
- 21 the ability to rely an idea, a concept, in a very simple fashion
- 22 creativity is well-rounded, in all aspects of the portfolio, concepts, graphic/technical, hand sketches
- 23 using materials
- 24 organizing your portfolio to be clear but graphically outstanding
- 25 format on your portfolio page
- 26 an artistic and creative rendition of ones best academic works
- 27 new presentation techniques
- 28 showcasing all of ones projects in a highly designed manner
- 29 design and layout of the pages can emphasis the design
- 30 use of various mediums is good

Question 3: What factors besides creativity are important when you evaluate portfolios?

INDIVIDUAL

- 1 an individual or a team project
- 2 the person seems to be organized
- 3 we also are interviewing the person, so how well a person speaks, how they are dressed, etc.; we look at the work and the person as a whole
- 4 what you love to see is consistently excellent and excellent people are typically consistently excellent
- 5 what can the person bring to the team
- 6 range of talents and experiences

NOVELTY

- 7 new ideas
- 8 innovative designs
- 9 innovation

RESOLUTION

- 10 a consistent train of thought
- 11 is it put together in a very logical [way]
- 12 consistent level of quality
- 13 constructability, rationality, realism
- 14 clear well thought out concepts & solutions
- 15 appropriate scale of the space

STYLE

- 16 excellent organizational skills
- 17 an understanding of color and proportion
- 18 I look at it for professionalism, is the portfolio neat, clean, well organized, are the edge cut clean, and precise, are the mountings meticulous
- 19 graphics, the texture, the quality of the paper, or if it's in PowerPoint, on the computer, then the visual impact
- 20 overall organization of the portfolio
- 21 neatness, spelling, grammar; it should look professional
- 22 clearly organized
- 23 organization, fluidity, metaphoric "tie-ins"
- 24 presentation, line weight in drawings, true 3D perspectives
- 25 understanding the materials
- 26 organization from the start to finish of portfolio & each project within
- 27 graphics, technology, balance
- 28 organization, logical layouts; easy to read and understand
- 29 neatness, spelling
- 30 design flow
- 31 graphics
- 32 presentation, overall look
- 33 simple and clear presentation of the project process and goals

TECHNICAL SKILLS

- 34 technical drawing
- 35 understand how to put construction documents together
- 36 are they familiar with codes and regulations
- 37 technical skills, skill sets in general
- 38 new abilities in software
- 39 graphic design skills
- 40 varied skills; technical, graphic
- 41 technical skills
- 42 showing of skill sets
- 43 use of computer automated drafting

THOUGHT PROCESS

- 44 thought process
- 45 thought process and seeing how someone's mind works
- 46 well rounded thought process and interpretation

Question 4: Is there anything else that you would like to add?

COMMUNICATION

- 1 a clarity in the thought process about what role you play
- 2 how to present yourself, how to speak in front of others, how to listen to potential clients or your boss
- 3 actually talk to someone and see how they talk to you and how they present themselves
- 4 emphasize importance of communication skills; you have to know how to present and sell your ideas well
- 5 communication methods are important

INDIVIDUAL

- 6 attitudes and chemistry between the interviewer and interviewee is huge
- 7 person or person's ability
- 8 the people themselves are a huge part of it
- 9 sense of humor, personality, etc.
- 10 expressing your personality is also important, adding that personal touch
- 11 mature and professional individuals

INTERNSHIP EXPERIENCE

- 12 the ability to work or intern or be exposed to the office atmosphere
- 13 interning for architectural or interior design firms

TECHNICAL SKILLS

- 14 entry-level position people need to be cognoscente that there is actually someone out there that is going to build this thing
- 15 design is in the details
- 16 you don't see a lot of the technical information
- 17 conceptual sketches are a great tool
- 18 would like to see less "hand coloring" and more Photoshop rendering
- 19 Photoshop, Illustrator, CAD skills, 3D graphics

THOUGHT PROCESS

- 20 there is a keen interest among professionals to see the entire process and not just the end result; portfolios have a lack of the thought process of details
- 21 exhibit more process, the evolution of design ideas
- 22 display your thought process

LIST OF REFERENCES

- Amabile, T. (1979). Effects of external evaluation on artistic creativity. *Journal of Personality and Social Psychology*, 37, 221-233.
- Amabile, T. (1982). Social psychology of creativity: A consensual assessment technique. *Journal of Personality and Social Psychology*, 43, 997-1013.
- Amabile, T. (1983). *The social psychology of creativity*. New York: Springer-Verlag.
- Amabile, T. (1996). *Creativity in context*. Boulder: Westview Press.
- Alves, J., Marques, M. J., Saur, I., Marques, P. (2005). Building creative ideas for successful new product development. 9th European Conference on Creativity and Innovation. Lodz, Poland.
- Arter, J. (1999). Teaching about performance assessment. *Education Measurement: Issues and Practice*, (Summer), 30-41.
- Baer, J., Kaufman, J. C., & Gentile, C. A. (2004). Extension of the consensual assessment technique to nonparallel creative products. *Creativity Research Journal*, 16(1), 113-117.
- Baker, I. J., & Sondhi, L. E. (1989). Entry-level competencies and attributes needed by interior design graduates: A survey of top interior design firms. *Journal of Interior Design Education and Research*, 15(2), 35-40.
- Barron, F. (1955). The disposition towards originality. *Journal of Abnormal and Social Psychology*, 51, 478-485.
- Barron, F., & Harrington, D. M. (1981). Creativity, intelligence, and personality. *Annual Review of Psychology*, 32, 39-476.
- Battaglini, C. (2003). *Dallas' JH+P named 2003 IDP outstanding firm*. AIArchitect. Retrieved September 11, 2006, from http://www.aia.org/aiarchitect/thisweek03/tw0425/0425tw4_idpaward.htm
- Beatte, D. K. (2000). Creativity in art: the feasibility of assessing current conceptions in the school context. *Assessment in Education*, 7(2), 175-192.

- Benhamou, R. (198). Professional practices in interior design: Frequency profiles and their relation to interior design education. *Journal of Interior Design Education and Research*, 6(2), 16-21.
- Besemer, S. P. (1998). Creative product analysis matrix: Testing the model structure and a comparison among products - Three novel chairs. *Creativity Research Journal*, 11(4), 333-346.
- Besemer, S. P. (2003, January). Creative Product Analysis Model. IdeaFusion. Retrieved January 23, 2006, from <http://www.ideafusion.biz/CPAM.htm>
- Besemer, S. P. & O'Quinn, K. (1986). Analyzing creative products: Refinement and test of a judging instrument. *Journal of Creative Behavior*, 20, 115-126.
- Besemer, S. P. & O'Quinn, K. (1987). Creative product analysis matrix: Testing the model by developing a judging instrument. In S. G. Isaksen (Ed.), *Frontier of creativity: Beyond the basics* (pp. 341-357). Buffalo, NY: Bearly Limited.
- Besemer, S. P. & O'Quinn, K. (1999). Confirming the three-factor creative product analysis matrix model in an American sample. *Creativity Research Journal*, 12(4), 287-296.
- Besemer, S. P., & Treffinger, D. J. (1981). Analysis of creative products: review and synthesis. *Journal of Creative Behavior*, 15, 158-178.
- Boden, M. A. (1994). What is creativity? In M. A. Boden (Ed.) *Dimensions of creativity*, (pp. 75-117). Cambridge: MIT Press.
- Boden, M. A. (2001). Creativity and knowledge. In A. Craft, B. Jeffrey, & M. Leibling (Eds.), *Creativity in Education* (pp. 95-102). London: Continuum.
- Brogden, H. E. & Sprecher, T. B. (1964). Criteria of creativity. In C. W. Taylor (Ed.), *Creativity: progress and potential* (pp. 155-176). New York: McGraw-Hill.
- Castiglione, L. V. (1996). Portfolio assessment in art and education. *Art Education Policy Review*, 97(4).
- Christiaans, H. (2002). Creativity as a design criterion. *Creativity Research Journal*, 14(1), 41-54.
- Colanelo, N., Kerr, B., Hallowell, K., Huesman, R., & Gaeth, J. (1992). The Iowa Inventiveness inventory: Toward a measure of mechanical inventiveness. *Creativity Research Journal*, 5, 157-163.
- Coleman, C. (Ed.) (2002) *Interior design handbook of professional practice*. New York: McGraw-Hill.

- Council for Interior Design, (2006). Professional standards. Council of Interior Design Presentation. Retrieved September 18, 2006, from <http://accredit-id.org/profstandards.html>
- Cropely, D. H., & Cropley, A. J. (2000). Fostering creativity in engineering undergraduate. *High Ability Studies, 11*(2), 207-219.
- Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*. New York: Harper Collins.
- Csikszentmihalyi, M., & Getzels, J. (1971). Discovery-oriented behavior and the originality of creative products: A study with artists. *Journal of Personality and Social Psychology, 1*(19), 47-52.
- Davidson, J., & Lueng, W. (2006, January). *Setting the Pace*. Interior Design Magazine online. Retrieved September 18, 2006, from http://www.interiordesign.net/id_article/CA6301962/id?stt=001
- Denzin, N. (1984). *The research act*. Englewood Cliffs, NJ: Prentice Hall.
- Douthitt, R. A., & Hasell, D. E. (1985). Correlating needs of interior design employers with program development in interior design. *Journal of Interior Design Education and Research, 11*(2), 21-26.
- Eisner, E. (1999). Performance assessment and competition. *Education Digest, 65*(1), 54-58.
- Getzels, J., & Csikszentmihalyi, M. (1976). *The creative vision: A longitudinal study of problem-finding in art*. New York: Wiley-Interscience.
- Gronlund, N. (1998). *Assessment of student achievement*. Boston: Allyn & Bacon.
- Hennessey, B. A. & Amabile, T. (1988). The conditions of creativity. In R. J. Sternberg (Ed.) *The nature of creativity*, (pp. 11-38). Cambridge: Cambridge Press.
- Hernecheck, P.J., Rettig, K.D., & Sherman, M. P. (1983). Professional viewpoints of competencies for interior design entry-level positions. *Journal of Interior Design Education and Research, 9*(2), 7-14.
- Hoofman, C.L. (1983). Architectural graphics competencies in interior design: A comparison of professional and student usage. *Journal of Interior Design Education and Research, 9*(1), 14-19.
- Horn, D., & Salvendy, G. (2006). Product creativity: Conceptual model, measurement and characteristics. *Theoretical Issues in Ergonomics Science, 7*(4), pp. 395-412.

- Jackson, P. W., & Messick, S. (1965). The person, the product, and the response: conceptual problems in the assessment of creativity. *Journal of Personality*, 33, 309-329.
- Kilmer, R., & Kilmer, W. O. (1992). *Designing interiors*. Fort Worth: Harcourt Brace Jovanovich College Publishers.
- Kneller, G. (1965). *The art and science of creativity*. New York: Holt, Rinehart, & Winston, Inc.
- Lobert B. M. and D. G. Dologite, (1994). "Measuring creativity of information systems ideas: An exploratory investigation," Proceedings of the twenty-seventh Annual Hawaii International Conference on Systems Sciences, pp. 392-402.
- MacKinnon, D. W. (1978). *In search of human effectiveness: Identifying and developing creativity*. New York: Creative Education Foundation.
- MacKinnon, D. W. (1987). Some critical issues for future research in creativity. In S. G. Isaksen (Ed.) *Frontiers of creativity research*, (pp.120-130). Buffalo: Bearly Limited.
- Matthews, J., & Gritzmacher, J. (1984). Preferred content and format for portfolios and review criteria. *Journal of Interior Design Education and Research*, 10(2), 28-31.
- Mooney, R. L. (1963). A conceptual model for integrating four approaches to the identification of creative talent. In C. W. Taylor & F. Barron (Eds.), *Scientific creativity: Its recognition and development* (pp. 331-339). New York: Wiley.
- Mullin, J.A. (1998). Portfolios: Purposeful collections of student work. *New Directions for Teaching and Learning*, 74, 79-87.
- Myers, C. (1982). Entry level competencies needed by interior designers. *Journal of Interior Design Education and Research*, 8(1), 19-24.
- NCIDQ, (2004, July). *NCIDQ Definition of interior design*. National Council for Interior Design Qualification. Retrieved September 18, 2006, from <http://www.ncidq.org/who/definition.htm>
- Newstetter, W., & Khan, S. (1997). A developmental approach to assessing design skills and knowledge. *Frontiers in Education Conference, Atlanta*, 676-680.
- Nickerson, R. S. (1999). Enhancing creativity. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp.392-430). New York: Cambridge Press.
- Parnes, S. J., Noller, R. B., & Biondi, A. M. (1977). *Guide to creative action*. New York: Scribners.

- Perkins, D. N. (1979). Evaluative response to art. In C. J. Nodine, & D. J. Fisher (Eds.), *Perception and pictorial representation*. New York: Praeger.
- Plucker, J. A. & Renzulli, J. S. (1999) Psychometric approaches to the study of human creativity. In R. J. Sternberg (Ed.) *Handbook of creativity*, (pp. 35-58). Cambridge: Cambridge Press.
- Reis, S. M., & Renzulli, J. S. (1991). The assessment of creative products in programs for gifted and talented students. *Gifted Child Quarterly*, 35, 128-134.
- Rengel, R. J. (2003). *Shaping interior space*. New York: Fairchild Publications.
- Runco, M. A. (1991). The evaluative, valuative, and divergent thinking of children. *Journal of Creative Behavior*, 25, 311-319.
- Runco, M. A., & Mraz, W. (1992). Scoring divergent thinking test using total ideational output and a creativity index. *Educational and Psychological Measurement*, 52, 213-221.
- Simonton, D. K. (1980). Thematic fame and melodic originality in classical music: A multivariate computer-content analysis. *Journal of Personality*, 48, 206-219.
- Sobel, R. S., & Rothenberg, A. (1980). Artistic creation as stimulated by superimposed versus separated visual images. *Journal of Personality and Social Psychology*, 39(5), 953-961
- Sommer, R., & Sommer, B. (2002). *A practical guide to behavioral research* (5th ed.). New York: Oxford University Press.
- Spalding E. (2000). Performance and the new standards project. *Phi Delta Kappan*, 81(10), 758-765.
- Stein, M. I. (1953). Creativity and culture. *Journal of Psychology*, 36, 311-322.
- Stewart, G. W. (1950). Can productive thinking be taught? *Journal of Higher Education*, 21, 411-414.
- Tardif, T. Z., & Sternberg, R. J. (1988). What do we know about creativity? In R. J. Sternberg (Ed.), *The nature of creativity* (pp.429-440). Cambridge: University Press.
- Taylor, I. A. (1975). An emerging view of creative actions. In I. A. Taylor & J. W. Getzels (Eds.), *Perspectives in Creativity* (pp. 297-325). Chicago: Aldine.
- Taylor, I. A., & Sandler, B. J. (1972). Use of a creative product inventory for evaluating products of chemists. *Proceedings of the 80th Annual Convention of the American Psychological Association*, 7, 311-312.

- Thurstone, L. L. (1952). Creative talent. In L.L. Thurstone (Ed), *Applications of Psychology* (pp. 18-37). New York: Harper & Row.
- Torrance, E. P. (1988). The nature of creativity as manifest in its testing. In R. J. Sternberg (Ed.), *The nature of creativity* (pp. 43-75). Cambridge: University Press.
- Treffinger, D. J., & Poggio, J. P. (1972). Needed research on the measurement of creativity. *Journal of Creative Behavior*, 6, 253-267.
- Turner, J. (2003). Examining an art portfolio assessment using a many-facet Rasch measurement model. (Doctoral dissertation. Boston College, 2003). ProQuest Dissertations & Theses, 764823501.
- Universtiy of Florida, (2003). *History*. Department of Interior Design. Retrieved September 18, 2006, from <http://www.dcp.ufl.edu/interior>
- Universtiy of Florida, (2003). *Mission and goals*. Department of Interior Design. Retrieved September 18, 2006, from <http://www.dcp.ufl.edu/interior/departmentprofile/mission.aspx>
- Ward, W. C., & Cox, P. W. (1974). A field study of nonverbal creativity. *Journal of Personality*, 42, 202-219.
- White, A. & Smith, B. (2001.). Assessing advertising creativity using the creative product semantic scale. *Journal of Advertising Research*, Nov/Dec, 27-34.
- Wiggins, G. (1989). A true test: toward more authentic and equitable assessment. *Phi-Delta Kappan*, 70(9), 703-713.
- Wiley, D., & Haertel, E. (1996). Extended assessment tasks: purposes, definitions, scoring, and accuracy. In M. Kane & R. Mitchell (Eds.), *Implementing performance assessment: promises, problems, and challenges*. Mahwah, NJ: Lawrence Erlbaum.
- Yin, R. (1984). *Case study research: Design and methods* (1st ed.). Beverly Hills, CA: Sage Publishing.

BIOGRAPHICAL SKETCH

Kathryn Levins was born and raised in Sarasota, Florida, and is the youngest of five children. She attended Riverview High School and later enrolled at the University of Tampa. There, she was an active member of the volleyball team and appeared in three Division II NCAA National Championship tournaments.

Kathryn graduated with honors from the University of Tampa in 2002 earning a Bachelor of Fine Arts degree in graphic design. Seeking to achieve a higher level of education, she joined the University of Florida to pursue a Master's of Interior Design degree from the College of Design, Construction, and Planning.

During her graduate education, she was a member of the Foundation of Interior Design Education Research Executive Committee responsible for designing the student accreditation exhibit as well as the related graphical literature. She assisted in teaching the graphic communications course in the spring of 2005 and participated in a study abroad program in Vicenza, Italy for six weeks during the summer of 2004. After graduation, she plans to join a commercial design firm in Tampa, Florida.