THESIS

PERCEPTIONS OF PRACTICING INTERIOR DESIGNERS: MOTIVATIONS THAT ENCOURAGE THEIR SUSTAINABLE DESIGN PRACTICES

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ABSTRACT

PERCEPTIONS OF PRACTICING INTERIOR DESIGNERS: MOTIVATIONS THAT ENCOURAGE THEIR SUSTAINABLE DESIGN PRACTICES

This exploratory research developed an understanding of the various perceptions practicing interior designers have of sustainability and sustainable interior design strategies. Various motivations interior designers have for the pursuit of sustainable interior design strategies were also uncovered. Following a phenomenological method, individual interviews were conducted with eleven interior designers living and practicing in the Denver, Colorado region. Purposeful sampling techniques were utilized in order to obtain participants with experience in the phenomenon in question, sustainable interior design strategies. Participants completed short demographic surveys and answered open-ended questions regarding their experiences with sustainability and sustainable interior design strategies. During these interviews, participants' perceptions of and motivations for sustainable interior design were uncovered. Interviews were audio recorded and transcribed. Motivational data were coded using Means End Chain Theory and perceptional data were coded separately. The findings create an understanding of interior designers' perceptions and motivations as well as their future intentions toward sustainable interior design strategies. The manner in which this research complements the existing literature is also discussed, as are several related areas for future study.

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INTRODUCTION

Sustainable built environments are vital to the overall environmental sustainability effort (Brick & Frostell, 2007). It is estimated that each year in the United States alone, approximately 170,000 new commercial buildings are built, while almost 44,000 commercial buildings are torn down (U.S. Environmental Protection Agency Green Building Workgroup, 2004, p. 1). And the U. S. Green Building Council (USGBC), citing the Department of Energy (DOE), stated in a 2002 report on the future of sustainable construction that there were approximately 5 million commercial buildings and 76 million residential buildings in the U.S. at that time (U.S. Green Building Council, 2002, p. 3). This is of significant interest to researchers in construction and related disciplines such as interior design, due in part to the fact that construction waste comprises almost 60% of all of the non-industrial waste produced in the United States (U.S. Environmental Protection Agency Green Building Workgroup, 2004, p. 5). If a building is not designed in an environmentally sustainable manner during the initial planning stage, not even environmentally sensitive remodeling can ensure that it will ever become sustainable (Yeang, 1998).

Also, buildings account for roughly 39.4% of the total energy use in the U.S. and approximately 67.9% of all electricity used in the U.S. (Energy Information Administration, p.62). Buildings also account for approximately 15% of the United States gross domestic product each year (U.S. Green Building Council, 2010). And in the

United States, people spend approximately 90% of their time indoors (U.S. Environmental Protection Agency Green Building Workgroup, 2004, p.3), making interior design an important aspect of any sustainable construction project.

While it seems readily apparent to some that the building industry should fully embrace sustainable design practices, green buildings and sustainable design practices are still the exceptions. As recently as 2007, only 3% of new commercial buildings were considered sustainable by the USGBC (U.S. Green Building Council, 2008, p. 5). And residential interior designers are statistically less likely to pursue sustainable design solutions than commercial interior designers (Kang & Guerin, 2009A). Surprisingly, concern and feelings of personal responsibility for the environment among adolescents has been trending downward during the last two decades (Wray-Lake, Flanagan, & Osgood, 2010). Therefore, neither educators nor practitioners can assume that the next generation of interior designers, nor the ones to follow, will automatically become sustainable interior designers without careful guidance and meaningful education.

Officially, the profession of interior design is one that promotes sustainability. The American Society of Interior Designers (ASID) includes a link to continuing education opportunities in sustainable design on the home page of its web site and co-sponsors awards for sustainable interior design projects and sustainable products such as furniture or finishes (American Society of Interior Designers, 2010A). The International Interior Design Association (IIDA) offers a Sustainability Forum in addition to its other knowledge forums for the education of its members. Like ASID, IIDA sponsors annual competitions for green design as well as offering continuing education units (CEUs) in sustainable interior design (International Interior Design Association, 2010B).

There are also several interior designers who have become outspoken proponents of sustainable design and who are considered influential not only in interior design, but in the building industry in general. For instance Penny Bonda, possibly the most famous, is a founding member of the USGBC. She has also published textbooks on sustainable design, and is an ASID Fellow who writes weekly on issues related to sustainable design in addition to her work as an environmental consultant (Ecoimpact Consulting, 2009).

Many interior designers hold a generally positive view of the environment and are generally supportive of the movement toward sustainable design. However there are fewer interior designers actively practicing sustainable interior design than are professing a positive perception of sustainable interior design (Kang & Guerin, 2009A). Interior design students are also, on average, willing to report having positive attitudes toward the environment. Yet fewer interior design students are willing to claim that it is their personal responsibility to take steps toward protecting the environment (Ruff & Olson, 2009). It is precisely this disconnect between the self-reported positive perceptions of sustainability and actual sustainable interior design in practice that is of concern in this research.

Why do some interior designers choose to practice sustainable design while others do not? Is it a difference in values or in education? What factors influence or motivate designers to pursue sustainable design? Does sustainable design begin primarily with a sense of environmental responsibility or rather because of clients' environmentalism? Or are designers motivated by concerns such as their projects' long-term costs and building performance? There may be those interior design professionals who choose to design sustainable environments because they feel morally obligated to do so, while some

designers may believe that, because of the popularity of sustainable products branding themselves as green designers is a good business strategy. Others may simply be designing green out of social desirability bias, especially those who work in firms where the leadership advocates environmental sustainability. There may also be designers who practice sustainable interior design in order to satisfy clients' environmental concerns. Like designers, clients' are motivated to build sustainably either by ethics, economics, or a combination of both. Interior designers and clients influence each others' decisions throughout the design process to varying degrees.

Also, why are there still so many interior designers practicing traditional interior design instead of sustainable design? Considering the amount of attention environmental sustainability seems to receive from those in leadership roles within the professional organizations and taking into account the ever-growing ranks of Leadership in Energy and Environmental Design (LEED) accredited professionals, it would appear that sustainable interior design should be the norm. However, as of 2007, only 0.2% of new residential construction was considered sustainable by any officially recognized rubric (U.S. Green Building Council, 2008, p. 5). While commercial construction is trending greener than residential, sustainability is still something of a rarity in that section of the industry as well. Among interior designers who do not pursue sustainable design solutions, what are the major reasons they continue to practice traditional interior design? Do they lack knowledge? Or are they simply making traditional design decisions out of habit? It is also possible they are afraid of higher costs or have experienced difficulty convincing coworkers, superiors, clients and other stakeholders to pursue sustainability.

In addition to environmental concerns, there are several economic reasons for building in a sustainable manner. These include such issues as lower life-cycle costs or fossil fuel consumption, improved occupant health, as well as competitive advantage in branding and in attracting environmentally conscious consumers and end-users. To date, the economic advantages of sustainable building design, primarily those pertaining to energy efficiency and life-cycle costing, have received the vast majority of scholarly attention. At this time, relatively little research has been done regarding ethical, consumer-driven, or health-related motivations for sustainable building or interior design. This is likely due to the fact that most of the research on sustainable design is quantitative in nature. While issues such as life-cycle analysis and energy efficiency can be readily studied using quantitative methods, more esoteric concepts such as perceptions, motivations, and influences are not as easily quantified.

Justification

In order to encourage more interior designers to pursue sustainable design, more needs to be understood regarding what motivates and influences green designers to design sustainable projects (Kang & Guerin, 2009A). It is unlikely that those who practice traditional interior design do so out of any animosity toward the environment. It is more likely that they are simply acting out of habit, a lack of knowledge, or a fear of trying new techniques. A better understanding of the experiences, influences, and motivations of sustainable interior designers could be helpful in creating educational programs for both practicing interior designers and interior design students who wish to learn more about sustainable interior design. Learning from each other may be the best way to learn about sustainability (Koski, 2010). An understanding of the experiences,

influences, and motivations of traditional interior designers is also important. In order to understand how to motivate these interior designers to become green designers, we must first understand the motivations of those who do consider themselves to be green interior designers.

Definitions and Terms

- "Sustainable" has been defined as development that addresses current needs while remaining adaptable enough to ensure that the needs of the future can be met (Hyllegard, Ogle, & Dunbar, 2006).
- "Sustainable Interior Design" has been defined as interior design that has minimal negative effects and maximal positive effects on the environment throughout the building's life cycle (Kang & Guerin, 2009B).
- "Green" has been defined as buildings that have been designed in such a way as to have a lower environmental impact than comparable buildings (Leaman & Bordass, 2007).
- "Daylighting" has been defined as the use of sunlight in place of artificial light in order to illuminate the interior of a building (Liao, 2007).
- "VOCs" or "Volatile Organic Compounds" have been defined as synthetic and natural organic compounds that vaporize at room temperature (Nussbaumer, 2004).

REVIEW OF LITERATURE

Sustainability

Overview

By definition, the word "sustainable" refers to the capability of being maintained, borne, defended, upheld, or supported (Oxford University Press, 2007, p. 327). The terms "sustainable" and "sustainability" have both grown increasingly popular in our culture, and are often used in reference to the natural environment. In the natural sciences they refer to the responsible management of natural resources (McLean, 2009). In a broad sense, sustainability involves a long-term balance between environmental, economic, and social issues (Kang, 2004). Prior to the industrial revolution, most buildings and manufacturing processes were sustainable as they used local, usually renewable, materials and did not rely on fossil fuels for material or production. Since the nineteenth century, however, technological advances have allowed the industrialized world to rely heavily on cheap, inefficient building and manufacturing techniques that have often proven to be environmentally irresponsible (Berman, 2008).

In more recent history, several important steps toward environmental awareness and responsibility happened during the mid to late twentieth century. For instances, Rachel Carson's *Silent Spring* and Paul Ehrlich's *The Population Bomb* raised awareness of the issues of chemical pollution and overpopulation in the 1960s. Both Earth Day and the U.S. Environmental Protection Agency were founded in 1970. And the United States and several other countries banned aerosol chlorofluorocarbons in the 1980s (Jones,

2008). Awareness may have waned in subsequent decades, however. Longitudinal research involving surveys of adolescents found that concern for the environment trended lower during the late 1980s through the 1990s. While there was a slight increase during the early 1990s in awareness that is likely attributable to publicity surrounding the twentieth anniversary of Earth Day, environmental concern has been trending slightly downward in adolescents since that time (Wray-Lake, Flanagan, & Osgood, 2010). Currently our society is experiencing a paradigm shift, in which we are collectively becoming more aware of, and concerned with, issues of environmental responsibility. Possible reasons for this change in thinking include the relatively recent world-wide population growth, air pollution, deforestation, and the endangerment and extinction of various plant and animal species (Jones, 2008).

There were several internationally significant events in the last few decades that have helped to keep environmentalism and sustainability relevant to world leaders as well. In 1987, the United Nations' World Commission on Environment and Development issued a report entitled, *Our Common Future*. More commonly known as the Brundtland Report in honor of the commission's chair, Norway Prime Minister Gro Harlem Brundtland, the report outlined challenges and threats to the global environment, and therefore the people living on Earth. The commission was concerned with several aspects of sustainability, including food supply, human population growth, natural ecosystems, urban growth, energy, industrial pollution, and resource use. The authors of the report acknowledged that there were no easy, readily available answers to the environmental problems facing our world. However, they felt it was imperative to our survival that we continue searching for solutions (World Commission on Environment

and Development, 1987). Essentially humans, as a species, need to change their normative view of ecological management to one that values the sustainability of each component of the ecosystems in which we live. In order to ensure the health and restoration of our environment, we must first address our own population and negative influence. This will require not only political, educational, and social change, but behavioral change as well (Fowler, 2005).

However people, both individually and collectively, are capable of better environmental stewardship provided we have an appreciation for our natural surroundings and begin to understand that taking care of the environment equates taking care of ourselves (McLean, 2009).

In 1992 *The Framework Convention on Climate Change*, involving over 160 nations, met in Kyoto, Japan to discuss possible solutions and binding agreements regarding the reduction of greenhouse gasses. The resolution became known as the *Kyoto Protocol* and has since become the foundation of environmental legislation in industrialized countries throughout the world. Despite not formally adopting the full protocol requirements, the United States agreed to a reduction in greenhouse gasses that was to go into effect between 2008 and 2012. And the Department of Energy has used the report as a guideline for setting environmental policy regarding energy production and use (Energy Information Administration, 1998, p. iii). In fact, within the U.S., the federal government has been at the forefront of green design, with its efforts to build and remodel government buildings using sustainable models. This decision has saved taxpayers approximately $1.5 billion since 1985 (U.S. Green Building Council, 2002).

There has been a trend toward environmental and social responsibility recently in the business world as well. It is presumed that environmentally conscious business owners use a triple bottom line while evaluating their businesses to measure not only their profits, but their impact on the planet and the people involved in, and affected by, their business practices as well (Schlange, 2009). The USGBC has also recently included the promotion of the triple bottom line as one of its guiding principles (U.S. Green Building Council, 2008, p. 7). This is in keeping with the philosophy shared by many involved in the field of environmental education who believe that students should be made aware of how socioeconomic development interacts with environmental improvements (Hungerford, 2010). Also, sustainability-driven entrepreneurs have been researched in a study positing that their ability to identify financial partners who were both sympathetic to sustainability and willing to help back their sustainable ventures was integral to the success of entrepreneurs' green business goals (Schlange, 2009).

Sustainability in the Built Environment

According to the USGBC a sustainable building is one that is designed, constructed, and operated to be both environmentally and economically responsible as well as to encourage the health of the environment and building occupants over the lifespan of the building (U.S. Green Building Council, 2002, p. 4). The USGBC was founded in 1993 with the mission to promote sustainability through the promotion of energy efficient, cost effective green building practices (U.S. Green Building Council, 2010). There are currently over 18,000 companies supporting the USGBC as member companies, 79 individual chapter locations and a growing number of individual members representing diverse professions and industries. In addition to its emphasis on

environmental sustainability, the USGBC has included a commitment to promoting social equality in its 2009 to 2013 strategic plan (U.S. Green Building Council, 2008, p. 3).

Sustainability Rating Systems

The USGBC instituted a system for certifying sustainable buildings. This certification, known as LEED, is a voluntary standard meant to support and encourage sustainable practices in the construction, design, and operation of buildings throughout the U.S. Additionally, professionals involved in various design, construction, real estate, building management, and other disciplines may become accredited through the USGBC as LEED professionals. And buildings constructed to specific standards can be certified as LEED at the Certified, Silver, Gold, or Platinum levels (U.S. Green Building Council, 2002, p. 4).

The Green Building Certification Institute (GBCI) became responsible for administering the LEED certification process in 2009 (Green Building Certification Institute, 2010). Their most current information states that there are approximately 17,000 commercial building and development projects waiting to be certified under LEED guidelines. However, despite the growing membership in the USGBC and an expanding number of LEED accredited professionals, sustainable structures accounted for merely 3% of new commercial buildings in 2007 (U.S. Green Building Council, 2008, p. 5).

Energy Star is another rating system used to evaluate a building's sustainability and offers a rating system to evaluate both commercial buildings and residential buildings, including private homes. Primarily concerned with energy efficiency, Energy Star is administered jointly by the U.S. Department of Energy and Environmental

Protection Agency (EPA). While Energy Star is perhaps best known for rating household appliances and electronic devices, the rating can also be achieved by buildings and houses that reach the highest levels of energy efficiency as compared to similar houses and buildings constructed in the same time frame (U.S. Environmental Protection Agency & U.S. Department of Energy, 2010). In addition to products and commercial buildings, Energy Star also provides ratings for qualified building and organizational management operations as well as qualified energy efficient homes (U.S. Environmental Protection Agency, 2003, p. 1). In 2009 alone, the use of Energy Star rated products and buildings saved approximately 191 billion kWh. This prevented the equivalent emissions of approximately 30 million cars (U.S. Environmental Protection Agency, 2010A, p. 1).

In addition to LEED the USGBC teamed with ASID in order to create a program called ReGreen that would encourage homeowners to remodel existing homes in a sustainable manner. While the program is still new, having been launched in March of 2008, it offers case studies and strategy calculators accessible to both practitioners and homeowners. There are currently no statistics available to show how many homes have been renovated using ReGreen guidelines. However, the organizers find it encouraging that there have been at least 100,000 downloads of the guidelines since they became available in 2008 (American Society of Interior Designers and U.S. Green Building Council, 2008 & 2009). In addition to guidelines for residential remodeling, ReGreen offers education for both homeowners and industry professionals regarding sustainable renovation. A certification has been added for construction industry professionals involved in sustainable home remodeling called ReGreen Trained (American Society of Interior Designers and U.S. Green Building Council, 2010). Considering the fact that

approximately 74% of available housing in the U.S. was built before 1990, prior to the most modern energy codes (National Association of Home Builders, n.d.), the potential impact of sustainable residential renovation on overall sustainability efforts is quite large.

The National Association of Home Builders (NAHB) has also made efforts toward achieving sustainability. In 2008 NAHB published guidelines, in collaboration with the International Code Council (ICC), called the National Green Building Standard. This sustainable guideline is the first of its kind to be approved by the American National Standards Institute (ANSI). Like LEED for Homes, the NAHB standards include a ranked rating system and include sustainable guidelines for single family as well as multi-family homes (National Association of Home Builders, 2010B).

Energy Efficiency

Research from the past decade has concluded that, compared with similar traditionally constructed buildings, sustainably designed buildings were more energy efficient and therefore more cost effective to manage (e.g. Fay, Treloar, & Iyer-Raniga, 2000; McDougall, Nordmeyer, & Klaassen, 2006; Meacham, Bowen, Traw, & Moore, 2005). Energy efficiency can have a positive impact on the triple bottom line of economic, social and environmental factors (Strife, 2010). A 2008 study performed for the U.S. Department of Energy measured LEED certified and Energy Star rated government buildings against a standard baseline for the average energy consumption of comparable commercial buildings. This study determined that, due to their green design features, each sustainable government building used less energy than similar traditional

buildings (Fowler & Rauch, 2008, p. 29). Average energy cost savings from sustainable buildings have been estimated between 20% and 35% as compared to traditional buildings (Goering, 2009).

An energy efficient house designed as a zero-energy case study for the National Renewal Energy Laboratory in Golden, Colorado and Colorado Habitat for Humanity in Denver proved that, although the design was not quite as efficient as project team members and researchers had initially hoped, their sustainable home design did result in lower than average residential energy consumption (Norton & Christensen, 2008). Life-cycle energy assessments were performed in a prior study, predicting that specific homes which were designed with energy efficiency in mind will consume less energy over their period of use than can be expected of similar-sized traditionally designed homes in the same locations (Fay, Treloar & Iyer-Raniga, 2000).

Costs of Sustainability

Depending on the design and features involved, sustainable buildings can cost an average of 2% to 7% more in initial construction costs than traditional buildings. This is considered to be the major barrier to the advancement of green building practices, as many clients and other stakeholders take a short-term approach to evaluating cost and benefits (U.S. Green Building Council, 2002, p. 16). However, sustainable, energy efficient designs do not have to add significantly to the cost of a building, as compared to that of a comparable traditionally constructed building, as long as the sustainable decisions are incorporated early in the design process (Dator, 2010). In fact the zero-energy Habitat for Humanity case study house in Denver, Colorado was built on a limited

budget, primarily by volunteers, and designed to be constructed using readily available building supplies and commonplace materials (Norton & Christensen, 2008). Another case study, involving an office building designed to be a sustainable teaching tool for the Iowa Association of Municipal Utilities, found that similar office buildings could be constructed on a modest budget, provided that the design team used a systematic approach in order to ensure that the architecture of the building was designed to reduce the building's energy load (McDougall, Nordmeyer, & Klaassen, 2006). And a thesis involving case studies of sustainable buildings in Canada found that, on average, the buildings studied cost approximately 5% less to build than similar traditionally constructed buildings (McDonald, 2005).

Many sustainable solutions do not require additional technology or cost, as they simply reuse design solutions that were commonly used in the past, such as proper citing for passive solar heating, outdoor air exchange, or daylighting (Farzam & Todesco, 2010). Certain energy efficient design decisions, such as proper solar orientation, do not have to be comparably expensive or technologically advanced if made during the early stages of design development (Horsley, France, & Quartermass, 2003). Adaptive reuse and sustainable remodeling are another way to protect the environment and often cost far less than new construction (Pile, 1995). And designing for air-tightness can improve energy efficiency greatly, even reducing or eliminating the need for air conditioning in mild climates. Despite this, the issue of air-tightness was not found to have been requested, or even discussed, in all but a few projects in a post-occupancy study focused on sustainable buildings (Bordass, Cohen, Standeven, & Leaman, 2001). Sustainable design practices can also save money in other capital cost areas, such as reducing the

expected heating, ventilation, and air conditioning (HVAC) loads far enough so that a smaller, and less costly, HVAC system than would otherwise be needed can be installed (U.S. Green Building Council, 2002, p. 5).

Additionally, while the direct effects of daylight on productivity can be difficult to quantify, there is empirical evidence that increased daylighting can lower energy bills in commercial buildings (McDougall, Nordmeyer, & Klaassen, 2006). This should not be surprising considering that it has been estimated that artificial lighting accounts for approximately 20% to 25% of electrical energy use within the United States alone (Rewi, 2006). And one case study involving a sustainably-designed national park visitors' center in Utah found that reliance on natural lighting as a primary source of light saved approximately $14,000 each year in energy costs as compared to the average energy bills for buildings of similar size and use (U. S. Department of Energy Federal Energy Management Program, 2003, p. 9.). Other research has found that when the use of artificial lighting is increased in a given building, energy costs not only for lighting, but for cooling increase as well (Yohanis & Norton, 2006).

Lowering the health risks of building occupants could also be viewed as financially advantageous because it lowers the risk of litigation (Shiers, Rapson, Roberts, & Keeping, 2006). And a $15 billion loss in worker productivity each year across the United States can be blamed on poor indoor air quality alone (Whitemyer, 2007). It has also been hypothesized that Sick Building Syndrome is so closely related to rates of both employee absenteeism and low worker productivity that it should be possible to create a model for tracking the cost benefit ratio of improving indoor air quality in commercial buildings (Seppanen & Fisk, 2005). Researchers running experiments to simulate

potential cost benefits from improved HVAC systems in office buildings determined that the costs of HVAC improvements could be recovered through increased worker productivity in approximately two years, and that such improvements could generate additional productivity revenue of about $100,000 each year, assuming a company size of approximately one hundred employees (Wargocki & Djukanovic, 2005). A recent report issued by a task force advising the state of California on matters related to sustainable buildings concluded that the financial gains that could be either directly or indirectly related to increased productivity were large enough relative to the cost involved in improving indoor air quality and access to daylighting, to make sustainable design or remodeling decisions financially advantageous despite their initial construction costs (Sustainable Building Task Force, 2003, p. ix).

Life-Cycle Analysis

Most studies regarding the economic advantages of building sustainably have focused on various economic bottom-line aspects such as the life-cycle costs of building materials and finishes (e.g. Augenbroe & Park, 2005; Fay, Treloar, & Iyer-Raniga, 2000; Moussatche & Languel, 2002) or sustainable design's ability to lower heating and air conditioning costs (e.g. McDougall, Nordmeyer, & Klaassen, 2006; Wilms, 1982). Research on life-cycle costing has found that finishes needing replacement less often are more cost-effective in the long run, regardless of initial purchase and installation costs (e.g. Moussatche & Languel, 2002; Shiers, Rapson, Roberts, & Keeping, 2006). The U.S. Department of Energy created a set of guidelines for determining life cycle cost analysis that have been implemented in the design and construction of federal buildings (U. S. Department of Energy Federal Energy Management Program, 2003, p. 1). A study

involving school buildings in Florida concluded that the initially lower cost of purchasing materials is usually outweighed by the higher costs involved in having custodial staff maintain these finishes, due to their higher operations and maintenance needs (Moussatche & Languel, 2002). And while there are some who believe performing economic calculations such as life-cycle costing is too complicated, such analyses can be done fairly easily and at a low cost under most circumstances, ensuring that a design team and their clients are able to choose long-term cost effective design solutions (Marshall, 1987).

Complicating the issue of life-cycle costing is the issue of performance-based building regulations, which mandate certain expected outcomes from the use of specific design criteria such as interior materials. The concern is the fact that most commercial buildings change uses several times throughout their life cycle. A performance-based code may mandate material choices that are good for the first client's use, but which are not at all suitable to the next building owner or set of occupants, forcing a change in materials that might otherwise still be in useable condition (Meacham, Bowen, Traw, & Moore, 2005). Also, most life-cycle analysis done to prove the financial benefits of sustainable building practices versus traditional building practices assumes an extended use period. Because of this, life-cycle cost analysis can be a deterrent for sustainable design for clients who will not be occupying the building themselves, or who plan to occupy the building for only a short time period. It is assumed that this is the primary reason why most large sustainable construction projects are undertaken by government agencies or large corporations who often have buildings designed and built to suit them and either own their buildings outright, or lease the same space for several decades at a

time (Nelson, 2007). However, some researchers, such as those working for the federal government, have concluded that the higher initial construction costs associated with higher quality products can often pay off in lower maintenance and/or reduced replacement costs in as few as three to five years (U. S. Department of Energy Federal Energy Management Program, 2003, p. 6).

In most research involving residential construction life-cycle costs, however, the analysis is often done assuming a fifty year life-span of the home itself, while the average U.S. home buyer moves approximately once every eight years (Keoleian, Blanchard, & Reppe, 2001). However a case study involving a sustainably designed home in Melbourne, Australia concluded that even a sustainable decision as simple as increasing a home's insulation could result in an almost 6% increase in energy efficiency, annually beginning in the first year of the upgrade (Fay, Treloar, & Iyer-Raniga, 2000).

Building Performance

Interior designers may feel compelled to pursue sustainable design solutions not only for reasons related to life cycle costs but also because the energy used by buildings has a significant impact on the environment (Horsley, France, & Quartermass, 2003). Previous research found that architects in the United Kingdom believed energy efficiency and energy consumption were two of the most important considerations when choosing to pursue sustainable design solutions (Vakili-Ardebili & Boussabaine, 2007). Due to the close connection between the two disciplines' goals, it may be reasonable to presume that some interior designers have similar motivations.

Buildings are the largest consumers of energy in the U.S., making sustainable design an important contributor to overall sustainability efforts (Sev, 2009). A recent

survey conducted jointly by the American Society of Mechanical Engineers and the software firm, Autodesk, indicated that approximately 53% of mechanical engineers believed that increases in energy costs will be a determining factor in their decisions to make sustainable design choices in the future (Winters, 2010). Building performance expectations of both owners and occupants are often a major determinant of design decisions (Augenbroe & Park, 2005). And the U.S. federal government estimates that, between 1985 and 2003, its commitment to owning and leasing energy efficient facilities for various government agencies has saved tax payers approximately $1.4 billion annually (U. S. Department of Energy Federal Energy Management Program, 2003, p. 3).

Stakeholders

Clients

A survey of British architects and other construction industry professionals found that while most held a positive attitude toward the United Kingdom's (U.K.) sustainable building standard, Building Research Establishment Environmental Assessment Method (BREEAM), only approximately 35% used BREEAM's specification tool, Green Guide, in order to ensure the specification of sustainable materials. The reason given by most participants for not using the Green Guide to verify various materials' sustainability was simply that they did not believe the extra effort it would take to use the Green Guide was worth their time unless their clients explicitly asked for a sustainable design (Shiers, Rapson, Roberts, & Keeping, 2006). And a 2003 survey of construction industry professionals found that 53% felt that they had failed in the past in their attempts to convince clients and/or colleagues to apply sustainable design solutions to their projects (Cassidy, 2003). NAHB considers the negative attitudes of homeowners in existing, low-

density neighborhoods toward the potential for nearby high-density and pedestrian-friendly development to be the driving force against the growth of sustainable neighborhoods (National Association of Home Builders, n.d.). And a survey of sustainable designers found that a lack of support for sustainability from clients was one of the main issues cited as a limitation on their ability to practice sustainable design (Barber-Estores, 2010).

Interior designers often need to educate clients and stakeholders about sustainability and the benefits of green design (Barber-Estores, 2010; Pile, 1995). Metropolis magazine surveyed interior designers, product designers, and architects in 2002 and found that only 52% believed their clients would be interested in sustainable design (Jones, 2008). Though it has been posited that interior designers may find it difficult to convince clients who are unfamiliar with sustainable design to pursue sustainability within their projects, and that many interior designers themselves believe green design has to include products that are more expensive than those found in traditional interior design (Kang & Guerin, 2009B). However some researchers believe that there is evidence to suggest that sustainable building designs may become more affordable as design teams become more experienced with and knowledgeable about sustainable design (Sustainable Building Task Force, 2003, p. 17).

It has also been found that a public educated on energy efficient design is better equipped to make informed purchasing decisions (Wilms, 1982). And uncertainty regarding climate change is hypothesized to reduce the likelihood that existing energy efficient buildings will be remodeled or demolished, which would have the added benefit of resulting in the reduction of construction waste (Nordvik & Robert-Liso, 2004).

Additionally, when compared to similar traditionally constructed buildings, LEED certified and Energy Star rated commercial properties sold for approximately 16% more, and commanded rental rates that were approximately 6% higher (Eichholtz, Kok, & Quigley, 2009). However the higher cost involved in renting office space in a LEED or Energy Star building is insignificant compared to the economic advantages of keeping employees healthy (Miller, Pogue, Gough, & Davis, 2009).

Regarding the research of performance-based building design, it has been suggested that more studies are needed in order to understand the relationship between client goals and objectives in order to properly assess a building design's success (Meacham, Bowen, Traw, & Moore, 2005). Also, studying the stakeholders involved in sustainable entrepreneurial ventures could help the growth of sustainable building projects (Schlange, 2009). In order to ensure a well performing, energy efficient building, the designers must work closely with clients and building managers beginning in early stages of design development (Horsley, France, & Quartermass, 2003).

Building Occupants

As part of the environment in which we live, buildings and infrastructure significantly impact our health and well-being (Majdalani, Ajam, & Mezher, 2006). Sustainably designed buildings can have a positive effect on building occupants' health (e.g. Seppanen & Fisk, 2005; Shiers, Rapson, Roberts, & Keeping, 2006) and general sense of well-being (e.g. Kuller, Ballal, Laike, Mikellides, & Tonello, 2006; Leaman & Bordass, 2007; McDougall, Nordmeyer, & Klaassen, 2006). On average, people in the U.S. spend approximately 90% of their time indoors (U.S. Environmental Protection

Agency Green Building Workgroup, 2004, p.3) and the air inside a building is often approximately five times more polluted than the air outside a building (U.S. Environmental Protection Agency Green Building Workgroup, 2004, p.3). The energy sources traditionally used for heating and lighting produces carbon monoxide, which can be lethal at high levels in enclosed spaces (Berman, 2008). Environmentally responsible design solutions, such as the use of products with lower than average VOCs, can help keep building occupants healthy (Nussbaumer, 2004). For instance, Indoor Air Quality was considered an important enough concern to those with poor health that a recent addition to a Seattle hospital was designed to circulate nothing but air brought in from the outdoors (Iverson, 2010). Asthma, which is considered the number one cause of student absenteeism in the U. S., is also adversely affected by poor air quality (U.S. Green Building Council, 2002, p. 8).

Additionally, commercial building occupants complain less about their work environments and have higher over-all levels of satisfaction with their workplaces when they know they occupy a sustainable building as compared to occupants of traditional buildings (Leaman & Bordass, 2007). Similarly, a study regarding employees working in sustainably-designed government office buildings found that these occupants reported higher satisfaction with their work environments as compared with an industry average of workplace satisfaction (Fowler & Rauch, 2008).

Access to windows provides not only natural lighting, but the opportunity to relax ones eye muscles by gazing at distant objects and the monotony of a lighting design that uses nothing but artificial light at a constant level can cause eye fatigue and the interruption of biological rhythms (Gordon, 2003). An international study found office

workers who have greater access to daylighting, a common feature of sustainable building design, reported better moods and more energy than those who did not have daylight access (Kuller, et al., 2006). Additionally, research involving K-12 students in California found that students with the most access to natural lighting scored an average 26% higher on reading tests and 20% higher on math tests than students working under artificial lighting with little access to daylight (U.S. Green Building Council, 2002, p. 9). It has been suggested that more research should be done regarding how occupants in office buildings perceive lighting levels and their access to daylighting, as most lighting research is done on the actual light levels rather than on the people affected by the light (Tzempelikos & Athienitis, 2005).

Commercial and academic buildings are increasingly occupied at odd hours and days, not just during regular daytime business hours, as is often assumed by design teams. And occupants should be given greater control over systems designed to help maintain a building's energy efficiency, such as operable windows, HVAC systems and lighting controls, in order to maintain proper balance between sustainability and usability (Bordass, Cohen, Standeven, & Leaman, 2001). It is important that building occupants be taught how to properly maintain that balance, however. For instance, when sustainable dormitories were recently built to include operable windows at a University of California campus, many students failed to realize that leaving their windows open all day long, not just during cool times of the day such as early mornings, would cause their building to overheat. This put undue strain on the building's HVAC system and prevented the building from staying cool. After the correct use of their windows was explained to them, the students found that their dormitory was able to remain both

comfortable and sustainable (Friedman, 2010). Building occupants also need to be educated so that they understand such concepts as proper usage of HVAC systems in order to prevent mold growth, and the purpose of light shelves in order to take full advantage of available daylighting (Adler, 2009). It has even been suggested that designers seem to forget about occupants when they design buildings. For instance, remembering to educate occupants about the efficient use of natural ventilation could be a more effective means of ensuring sustainable operation of a building than the installation of a more efficient HVAC system (McDonald, 2005).

Consumers

Environmentally sustainable businesses may also have a competitive advantage over other businesses (e.g. Schlange 2009). This is particularly true when the target demographic for a business includes people who consider themselves to be environmentally conscious (Hyllegard, Ogle, & Dunbar, 2006). Retailers are increasingly likely to request sustainable design solutions for their interiors (Robinson, 2007; Thompson, 2007). For instance, consumers who believed themselves to be environmentally responsible were found to be more likely to shop at a sustainably-designed flagship store for REI, a company that has branded itself as environmentally aware, than were consumers who did not consider themselves to be environmentally conscious (Hyllegard, Ogle, & Dunbar, 2006). According to longitudinal survey research concluded in 2007, 87% of people in the U.S. believed businesses should support causes that have social or environmental benefits. This survey found that 91% of respondents had a more favorable view of businesses they believed to be environmentally responsible, and 93% believed businesses should be environmentally responsible. It was also found

that 66% would boycott and 77% would refuse to work at a company they believed to be environmentally irresponsible (2007 Cone Cause Evolution and 2007 Cone Environmental Survey, 2007). While some retailers' motivations may be at least partially altruistic, building green can also be an effective means of branding and of differentiating a business from its traditional competitors (Hyllegard, Ogle, & Dunbar, 2006; Kent & Stone, 2007).

Interior Design

Traditional Interior Design Process and Strategies

The process of interior design is traditionally accepted as one following the specific steps of programming, preliminary and conceptual design, design development, construction documentation and bidding, construction, and post-occupancy evaluation (Pile, 1995). However the NCIDQ now lists sustainability as one of the core facets of interior design, along with building codes, accessibility, aesthetics, and function (NCIDQ, 2006). Despite increased awareness among interior designers and official support for sustainability among design organizations, sustainability has not yet become widely recognized an official part of the design process (Kang & Guerin, 2009B). If the health of the environment can affect the health of the people living in the environment, then sustainable design should be considered a key component of the role of the interior designer.

While ASID does not include sustainable design in its code of ethics and professional conduct, they do have a committee specifically to address issues related to sustainability and to promote sustainable interior design (American Society of Interior

Designers, 2010B). IIDA which, like ASID, promotes environmental education and sustainability among its membership also does not specifically mention sustainable design as part of its mission statement (International Interior Design Association, 2010A). However, both organizations mention in these statements that the role of the interior designer is to protect the health, safety, and welfare of clients. Considering that the environmental impact of interior design can directly impact health (e.g. Nussbaumer, 2004; U. S. Environmental Protection Agency, 1997, p. 4-5), an environmentally conscious interior designer might infer that sustainability is a core component of interior design.

Issues related to, and practices supporting, environmental sustainability are not a part of the scope of the traditional interior design process (Kang & Guerin, 2009B). There are many challenges to our environment, and a design can either be part of the solution to the problem, or be part of the problem (Barber-Estores, 2010). A survey reported in 2002 that the primary considerations for most interior designers during material specification are the clients' needs, aesthetics, and material pricing. Such sustainability issues as VOCs and long-term impact on the environment were not found to be of significant concern to many interior designers, most of whom relied primarily on manufacturers for information regarding materials and finishes (Moussatche, King, & Rogers, 2002). Any product that satisfies an immediate need without regard for the environment is unsustainable (Jones, 2008). Traditional interior design practice could therefore be considered unsustainable. The profession of interior design, however, is continuously evolving (Piotrowski, 1994).

Sustainable Interior Design

Designs should protect our safety by protecting the health of the environment as well as our own health (Berman, 2008). Interior designers are unique among related professionals in that they have both the expertise and the platform to promote sustainability (Whitemyer, 2008A). Interior designers have the most direct affect of anyone on two important areas within the built environment, the interior finish materials and indoor air quality (Kang & Guerin, 2009A). These are areas that can be either sustainable and healthy, or wasteful and polluting. The EPA has long considered space planning, furniture, fixtures, and building renovation all areas directly related to interior design, to be key components that can contribute to indoor air pollution (U. S. Environmental Protection Agency, 1997, p. 4-5). In order for a design solution to be sustainable, environmental concerns must be considered a key design criterion throughout the interior design process (Kang, 2004).

NCIDQ has begun to raise awareness of the environmental impact of interior design by incorporating sustainability into the latest version of the NCIDQ exam. They are also now declaring sustainability and sustainable design as official components of the practice of interior design (National Council for Interior Design Qualification, 2010). Both IIDA and ASID offer CEUs specifically to train members on sustainable design practice and inform them of sustainable products. They have also begun sponsoring annual competitions for sustainable design projects and sustainable products (American Society of Interior Designers, 2010A; International Interior Design Association, 2010A). ASID has formed a committee, called the Sustainable Design Council, to address issues related to sustainable interior design and to promote sustainable design practices and

sustainable education opportunities among members (American Society of Interior Designers, 2010C). IIDA includes a forum on sustainable design among its educational forums in order to make finding information regarding sustainable practice convenient for its members (International Interior Design Association, 2010A). Additionally, ASID and the USGBC recently joined forces to launch a program for residential remodeling. ReGreen offers guidelines, education, and certification for sustainable home remodeling, which both organizations felt was an important gap among existing sustainable building efforts which mostly addressed new construction or commercial remodeling (American Society of Interior Designers and U.S. Green Building Council, 2008 &2009).

The Network of the Hospitality Industry (NEWH) is an interdisciplinary organization for those who work in or for the hospitality industry and whose membership includes many interior designers. Like many other professional organizations, NEWH has begun to recognize the importance of sustainability to its industry and offers educational resources to encourage the growth of sustainable practices among its membership. NEWH also offers directories for members who want to find sustainable partners and products (NEWH.org, Inc., 2009). Kitchen and bath design, a specialty within interior design, also has a professional organization, known as the National Kitchen and Bath Association (NKBA). As an organization, the NKBA recognizes that building professionals, including those in kitchen and bath design, have a responsibility to protect the environment. Because of this the NKBA is making an official effort to become a leader in sustainability and is working toward educating kitchen and bath professionals on sustainable design and construction practices (National Kitchen and Bath Association, 2010). Additionally, NAHB has created standards for sustainable

home construction and, like most other professional organizations, encourages members to become more educated on sustainable practices (National Association of Home Builders, 2010A). Like ASID, the American Institute of Architects (AIA) has formed a committee with the intention of addressing sustainable issues. AIA's Committee on the Environment (COTE) works as an advocate for the promotion of environmentally responsible architecture to professional architects, students, educators, and related professionals. COTE offers educational opportunities and case studies in order to promote understanding of sustainable design and, like IIDA and ASID, sponsors awards for outstanding sustainable design projects (American Institute of Architects, 2010).

Some interior designers and related professionals have also become leaders outside of the mainstream professional organizations. Architect William McDonough became internationally famous and influential within the sustainability movement as an architect, lecturer, and writer. Along with business partner Michael Braungart, he co-wrote *Cradle to Cradle: Rethinking the Way We Make Things*, a widely-read book which helped bring the topic of sustainability to the attention of several industries (MBDC, 2010). Many architects and interior designers, as well as organizations such as the USGBC have joined an organization founded by architect Edward Mazria known as Architecture 2030. Founded in 2002, Architecture 2030's goal is to dramatically reduce the carbon dioxide emissions for which the building industry is responsible by the year 2030. The goal is not just energy efficiency, but the abatement of global warming and other environmental issues related to carbon emissions through efficient building design (Architecture 2030, 2010). There are also interior designers who have been inspired to use building design as a platform for reducing greenhouse emissions. Among them is

Rachelle Schoessler Lynn, a partner in the Minneapolis, Minnesota firm Studio 2030 and a board member of the Minnesota Environmental Fund (Studio 2030, 2010). And members of Denver, Colorado interior design firm Associates III wrote a report published by ASID outlining their experiences in becoming a sustainable design firm, not just in their design decisions, but also in their day to day business practices and office habits in order to advise fellow interior designers who wish to become more environmentally responsible in their business practices (Associates III & American Society of Interior Designers, 2006).

Strategies for Sustainable Interior Design

Possibly the best solutions interior designers and related professionals have to the challenges facing our environment is their ability to implement sustainability in building design (Sev, 2009). A recent USGBC white paper has concluded that an understanding of people, combined with an understanding of design practice, sufficient information, and analytics could enable professionals in the construction industry to have a large and positive impact on the way people experience the built environment (Pyke, McMahon, & Dietsch, 2010). Interior designers are uniquely qualified to drive sustainable project decisions due to their training in participatory design programming techniques (Moussatche & Languel, 2002). A competition requiring entries to supply a Cradle-to-Cradle design determined that those entrants who had applied an holistic approach to the design process created designs that were more sustainable than those of designers who approached sustainability based on material or systems selection alone (Tucker, 2010). Designers should focus on the process of sustainable design rather than the end product of the sustainable building (McDonald, 2005). It has also been found that an initial

design process that is well managed is imperative to the implementation of sustainable practices in construction (Horsley, France, & Quartermass, 2003).

Insufficient construction techniques can also further exacerbate the erosion of the environment (Majdalani, Ajam, & Mezher, 2006) and must be considered. Because construction techniques and building use can greatly affect a building's energy performance, they must be considered as early as the pre-design phase in order to ensure a sustainable building design (Enck, 2010). And understanding building owners' needs is important to the post-occupancy evaluation of a green building's performance (McDougall, Nordmeyer, & Klaassen, 2006).

Material and finish selection is an important area in which interior designers can achieve sustainable design solutions. One viable solution available to interior design professionals for the conservation of natural resources is the specification of long-lasting, sustainable materials (Kang & Guerin 2009A). Textiles made of natural fibers such as wool, ramie, organic cotton, or linen can be used in place of synthetic fabrics and non-organic cotton, the production of which accounts for approximately 25% of the world's pesticide use. Additionally, textiles dyed with vegetable or mineral dyes should be specified when possible, and "clean process" dye techniques using only non toxic chemicals are also available (Berman, 2008). Interior designers can also reduce a building's environmental impact by specifying fewer finishes. Other sustainable strategies include specifying salvaged materials, or finishes that are made from recycled materials (Kang & Guerin, 2009B). Renewable materials, such as cork or sustainably grown hardwoods are also responsible design solutions. And while many tropical hardwoods such as iroko and mahogany should be avoided due to rainforest depletion,

there are many other hardwoods available that are certified as sustainable by the Forest Stewardship Council (Berman, 2008). There are healthy, sustainable alternatives to particle board as well. Particle board emits VOCs, while boards made of alternative fibers such as wheat straw do not (Warren, n.d.). Material choice is an especially important topic for interior designers who wish their projects to be sustainable, as the manufacturing process of all materials, even those of recycled or natural components, consumes energy and uses resources. Interior designers can contribute to the health of the environment as well as end-users by specifying materials that have the lowest overall ecological impact on energy consumption, waste production and resource depletion (Pile, 1995). Some manufacturers have proven that sustainable production practices can also be economically viable (Berman, 2008). Also, specifications should be written in an unambiguous manner, in order to prevent incorrect interpretations or inadequate substitutions in the field (Piotrowski, 1994). Such substitutions may be less sustainable than the designer intended.

Additionally, while sourcing local products is not always practical, issues such as manufacturing process, embodied energy, and the distance an object or material must be transported are important considerations (Berman, 2008). For instance bamboo, often regarded as a sustainable alternative to hardwood due to its ability to regenerate far more quickly, has to be shipped to the U.S. from China, while several species of Oak are available in North America, often from sustainably managed forests (Jones, 2008). It has also been suggested that interior designers should question their manufacturers to find out which products are capable of being disassembled for recycling, which are made of recycled products, how far the products must travel during shipping, and if the factories

themselves are environmentally as well as socially responsible (American Society of Interior Designers, n.d.). Salvaged materials can be used when available and appropriate, as they are a sustainable alternative to sending used materials to a landfill. Reuse of existing building materials is often more cost efficient than new materials as well (McDonald, 2005).

Many sustainable materials and finishes also promote higher indoor air quality, due to their low VOC emissions. Poor indoor air quality can negatively affect people with respiratory ailments (e.g. Iverson, 2010) or Multiple Chemical Sensitivity (Nussbaumer, 2004). Passive ventilation systems can also be included in order to ensure a healthy exchange of indoor and outdoor air (Berman, 2008). Many traditional finishes, such as paints, carpets, adhesives, and furniture finishes contain harmful chemicals such as formaldehyde, toluene, and benzene and should be avoided (Pile, 1995). Natural materials, such as fabrics dyed without the use of chemicals, wool and grass carpets, linoleum, untreated stone, and woods that have not been treated or finished with harmful substances do not have the negative impact on indoor air quality as traditional materials (Berman, 2008). Materials and finishes containing VOCs, chemicals such as benzene and phenols, and heavy metals such as zinc and cadmium should also be avoided due to the off-gassing of harmful substances (Berman, 2008). Stone, porcelain, and ceramic are among the most preferred finish materials for people suffering from MCS, however color treated and stain resistant grouts can cause respiratory problems in those who are sensitive to the chemicals involved. And while linoleum itself does not affect indoor air quality, the chemical adhesives traditionally used to install it often do (Jones, 2008).

Paints and stains are traditionally among the most harmful finish materials available, however stains derived from natural oils and low-VOC paints, preferably made of natural ingredients rather than acrylic or latex, are healthier substitutes for chemical finishes (Berman, 2008). Vinyl wallcoverings also contribute to poor indoor air quality, though there are sustainable alternatives such as paper and natural fibers. Recycled and biodegradable wallcoverings are also good alternatives to those made of PVC and other harmful chemicals (Jones, 2008). And because no interior is entirely free of VOCs and off-gassing materials, interior designers should require that finished spaces remain unoccupied for a sufficient period of time in order to allow the toxins to dissipate (Jones, 2008). Plants and indoor gardens can also be included as a means of cleaning indoor air (e.g. Berman, 2008; Jones, 2008). Because of its potential to cause serious health issues, indoor air quality and the finishes that affect it should be of primary consideration to interior designers as part of the professional requirement to protect health.

Designers can learn from the vernacular structures of indigenous cultures. Earlier or more primitive forms of shelter were built with regard for local climate. Taking cues from such structures could help interior designers and related professionals who wish to find sustainable design solutions (Ballard & Taylor, 2002). Traditional housing can teach interior designers about sustainable techniques such as passive solar, the use of local materials, energy conservation, and natural ventilation (Akkurt, 2009). Before the widespread use of fossil fuels began in the nineteenth century, buildings were designed with natural materials and older structures were not demolished or wasted simply because they were considered unfashionable (Berman, 2008). Retaining older structures is an important lesson from our past. Adaptive reuse of existing structures is an effective way

for interior designers and architects to conserve energy and resources, as the demolition of existing buildings is the most dramatic waste of resources attributable to interior design and architecture (Pile, 1995). Items specified for interiors can also take cues from the past. Cradle-to-Cradle, for instance, is not an entirely new concept. For example, Shaker chairs were made using all natural ingredients such as locally harvested wood and are reparable, but in the event one is discarded, it can simply decompose into harmless organic matter (Berman, 2008).

Furniture and fixtures can be chosen with sustainability in mind as well. Locally produced furniture products, preferably made with locally sourced materials can represent a low environmental impact because they are not shipped over great distances. Also, natural materials such as wood or rattan are less toxic and use few if any non-renewable resources such as plastics. Furniture and fixtures made of recycled glass, plastic, rubber, and other materials are also available and are more sustainable than products made of new materials as they keep existing materials out of landfills and reduce the need for new plastics and other harmful substances (Berman, 2008). Additionally, as metals are non-renewable resources, furniture and fixtures containing metal should be made from recycled metal, or be constructed so as to be recyclable when no longer in use, whenever possible (Berman, 2008). Interior designers can also specify plumbing fixtures designed to use minimal water, which can reduce water consumption dramatically within a building. And providing clients with an efficient design solution for recycling and waste disposal can encourage occupants to lower their environmental impact as well (Pile, 1995).

Lighting and windows are two more areas in which interior designers can ensure a project is environmentally responsible. For instance, operable windows provide fresh air, which helps to keep indoor air pollution low. And when used properly, fresh air can also lower HVAC loads, thereby lowering a building's energy consumption (e.g. Friedman, 2010; Pile, 1995). Window placement is also an important lighting issue. If a window is placed high enough, or is tall enough, natural light can penetrate far into a space (Gordon, 2003). More available daylight lowers dependency on artificial light sources throughout the day, and skylights and light tubes can also be used to introduce daylight (e.g. Berman, 2008; Gordon, 2003). Windows with proper glazing are capable of providing year round light, warming an interior space during cold weather while preventing excess heat gain during warmer weather (e.g. Jones, 2008; McDougall, Nordmeyer, & Klaassen, 2006; Pile, 1995). In order to prevent glare and heat gain, interior designers can also specify window coverings such as shades, screens, draperies, or louvers (Gordon, 2003). Exterior views also allow occupants a means of gazing at a distant object, which reduces eye strain (e.g. Gordon, 2003; Jones, 2008).

Space planning should also take daylighting into consideration, as the arrangement of rooms can be done in a way that takes advantage of the direction of sunlight throughout the day. And views from one interior space to another, in the form of interior windows or glass walls, can maximize the sunlight from exterior windows. Colored or frosted glass can be used to introduce natural light while maintaining privacy (Berman, 2008). And high efficiency lighting such as fluorescents and halogens can be specified, and dimmers and timers can be installed in order to lower energy consumption (e.g. Berman, 2008; Gordon, 2003). Wall finishes can be selected to take advantage

of light as well. Light colors and reflective surfaces reflect and enhance existing light levels, though care should be taken to ensure that they do not contribute to glare (e.g. Berman, 2008; Gordon, 2003; Pile, 1995). And dark flooring surfaces, especially tile, concrete or stone, can absorb and distribute the heat energy that windows provide (Berman, 2008).

Interior Design Education

Interior Design Programs

According to the 2009 Council for Interior Design Accreditation (CIDA) standards, environmental sustainability is now expected to be an integral part of any CIDA accredited interior design program (CIDA Professional Standards 2009, 2008). However the USGBC believes colleges and universities currently lack adequate, comprehensive curricula regarding sustainable building practices (U.S. Green Building Council, 2008, p. 12). According to a survey published in 2005, approximately only 34% of accredited interior design programs addressed sustainable design in either a stand-alone class or as a specialization within the design curriculum (Kunkle-Tomasewski & Jones, 2005). However this does not imply that individual instructors are not covering the topic of sustainability within their classes. And concerns about inadvertently teaching students to compartmentalize sustainability as separate from the design process was cited by several design educators as a reason not to teach sustainable design as part of a stand-alone class or specialty emphasis (Crane & Waxman, 2009). These educators felt it was better to address sustainability throughout the whole curriculum, giving students multiple opportunities to learn about sustainable products and solutions. Students should also

have opportunities to see how the principles of sustainable design can be incorporated into the design process in a seamless manner. It has been suggested that, due to the expansion of interior designers' responsibilities, interior design education should also be expanded to include topics such as the built environment's relationship to the natural environment, daylighting, and how building infrastructure and interior environments interact (Steig, 2006).

One survey of educators found that most interior design programs teach material selection from the point of view of the clients' budget concerns and aesthetic desires (Snyder & Steig, 2005). These considerations are often stressed as more important than all other concerns, including environmental responsibility (Beecher & Davies, 2002). Issues such as social responsibility and environmental friendliness should be addressed, by material type and not material application, in design education (Snyder & Steig, 2005). A recent survey of interior design faculty found that, for those who wish to promote sustainability in the classroom, challenges include a lack of appropriate textbooks and real-world examples, as well as a lack of interest in teaching sustainability among fellow faculty members. These, in addition to time and budget constraints may be factors in the relatively slow growth of sustainable design instruction on many campuses (Crane & Waxman, 2009).

Interior Design Students

A recent survey of interior design students found that most have a somewhat positive view of the environment, however many also believe the environment is capable of withstanding human interference (Ruff & Olson, 2009). This is not surprising,

considering that a meta-analysis of survey data measuring various attitudes and beliefs of high school students between 1976 and 2005 found that adolescents' concern for the environment and willingness to personally conserve the environment has been on the decline since the early 1990s (Wray-Lake, Flanagan, & Osgood, 2010). While interior design students have been shown, on average, to be supportive of environmental responsibility, educators cannot assume that all students are very environmentally aware. Even when incorporating elements of sustainable design into interior design curricula as per CIDA guidelines, educators should understand that their students hold varying opinions regarding the importance of sustainability within interior design (Ruff & Olson, 2009). Students' reflective writing assignments have shown that many students do not understand interior designers' roles in overall environmental efforts. And it has also been noted that, in order to have lasting impact on students' values and habits, issues of environmental sustainability must be addressed at the earliest stages of interior design education (Wallack & Webb, 2007).

It has been posited that a better understanding of how to educate interior design students in such a way that they will feel confident utilizing sustainable design techniques after graduation should help narrow the gap between sustainability in the theoretical designs of academia and the real, built designs of practice (Steig, 2006). Additionally, educating students about the environment could have a positive effect on students' overall performance because it engages students in the learning process (Strife, 2010). And teaching students about nature could encourage environmental awareness. When students learn about nature, they learn not only to appreciate it, but to view humans as a

natural part of the ecosystem (McLean, 2009). If people view themselves as a part of nature, rather than separate from or above nature, they may feel more obligated to protect nature.

Also, environmental education should focus on how sustainability can help humankind and show examples of how sustainability efforts can have a positive impact, rather than focus on negatives such as climate change and pollution. Education that focuses on such negatives often does more to discourage students from becoming environmentally active, or instill in them feelings of apathy towards the environment, than to encourage positive action (Strife, 2010). Youth should be given opportunities to learn about environmentalism in a context they find relevant to their needs and to the needs of their own society while also learning to think both critically and independently about environmental solutions (Short, 2010).

Like CIDA, NAAB (National Architectural Accrediting Board) has included sustainability within accreditation requirements as of 2009 (Martin & Kroelinger, 2010). Curricula could be designed specifically to teach interior design students about issues surrounding environmental sustainability. For instance, a class project introducing students to the concept of Cradle-to-Cradle could allow students to see first-hand the challenges faced by ecologically minded interior designers (Marshall-Baker, 2005). This approach would also allow students to gain a better understanding of possible design solutions for environmentally responsible projects (Cao, Vogel, Gam, & Farr, 2005).

Teaching interior design students about sustainability within a collaborative, interdisciplinary setting may also be a helpful way to generate understanding of

environmental issues and knowledge of possible solutions. Such studio courses could combine interior design students with students in engineering, architecture, planning, or other related disciplines (Solovyova, Rashid-Ali, Ohlenbusch, & Clark, 2010). And while interior design education often deals with issues surrounding new construction, building a new structure uses far more embodied energy than is used by existing buildings. Therefore, teaching students about the adaptive reuse of existing structures is another way to promote understanding and information regarding sustainability (Eisen-Brown, 2009).

Creating opportunities for collaboration between students and practitioners could also be useful. Students working on a real sustainable project with practicing interior designers would gain first-hand knowledge of how to implement sustainable design solutions. This experience would reinforce the significance of sustainable solutions to interior design (Schneiderman, & Littlejohn, 2010). Service learning projects are also a potentially useful tool for gaining experience with and awareness of sustainable design and construction (Torres-Antonini, Park, & Hasell, 2009).

Additionally, existing sustainable projects could serve as teaching tools that educate about the importance of team decision making for designers and other project team members who wish to build green (Hyllegard, Ogle, & Dunbar, 2003). A recent survey of interior design students found that approximately 30% were undecided as to whether or not they could recognize a sustainable house in order to point it out as an example to potential clients and approximately 25% stated that they knew they could not do so (Ruff & Olson, 2009). A clearer idea of which existing projects are sustainable, and how to find and recognize sustainable projects, would be helpful to interior design

students as well as practicing interior designers both for their own edification, as well as for their ability to knowledgeably discuss sustainability with clients (Ruff & Olson, 2009). Existing sustainable projects could also serve as teaching tools, helping people learn about the environment as well as some of the available and creative solutions for lowering the impact people's lives have on the environment (Office of the Federal Environmental Executive, 2008, p. 3). Educators and students could learn how to incorporate sustainability throughout the design process as well as how to successfully integrate multiple project stakeholders into the process of finding sustainable solutions by studying successful existing sustainable projects (Hyllegard, Ogle, & Dunbar, 2003).

The current generation of interior design students, on average, possesses a positive view of environmental responsibility. However many also generally believe that emerging technology will enable humans to remedy current and future environmental damage (Ruff & Olson, 2009) and may therefore be more passive than preceding generations regarding sustainable design when left to their own devices. This is consistent with longitudinal research regarding adolescents' attitudes toward environmental responsibility across the United States that has found that concern for the environment has been waning in youth over the last few decades, while their faith in the ability of technology to overcome environmental problems has been steadily growing (Wray-Lake, Flanagan, & Osgood, 2010). Technological advancements, however, may be part of the problem. Continued reliance on technology could put our ecosystem, and therefore humans, at increased risk (Fowler, 2005). Some interior design educators also caution that students need to be taught to view product claims of sustainability with a bit of skepticism, in order to ensure that they do not become complacent about green design.

In order to ensure that efforts to educate students in environmental responsibility are effective long term, educators need to equip students with the skills, knowledge, and awareness that will allow them to make environmentally responsible choices based on their own objective analysis and sound reasoning (Short, 2010). Such critical thinking, when applied to sustainable products and potential sustainable design solutions, would also ensure that a design is truly sustainable and not just slightly less unsustainable than a comparable traditional design (Whitemeyer, 2010).

Interior Design Practitioners

Additionally, as the practice of sustainable interior design varies from one specialty from another, creators of continuing education courses might benefit from using the experiences of sustainable designers who practice in those specialties to help create teaching units specifically for the encouragement of sustainability within each specialty (Kang & Guerin, 2009A). Adequate continuing education opportunities offering current information and advanced sustainable design techniques could help to close the knowledge divide between designers who regularly practice sustainable design and those who do not (Steig, 2006). Both ASID and IIDA offer CEUs focusing on sustainable interior design techniques as well as sustainable products and materials in addition to maintaining article archives and educational resources regarding sustainability for their members to access online (American Society of Interior Designers, 2010A; International Interior Design Association, 2010A).

A recent survey of ASID members found that approximately 55% had taken part in continuing education course regarding sustainable design. This survey also noted that most interior designers were concerned about indoor environmental quality issues, such

as indoor air pollution. However, a similar percentage of these survey subjects felt they did not know enough about sustainable materials and were therefore uncomfortable specifying them. Therefore continuing education courses regarding sustainable specification practices would be beneficial (Kang & Guerin, 2009B). One solution could simply be the practice of learning by doing. Integrating sustainability into the design process itself is an effective way for practicing interior designers to learn about sustainability (Jennings & Schomer, 2009).

The growth and dissemination of knowledge regarding low-saliency concepts such as sustainable building design is more dependent on networks of professional peers and organizations such as the U.S. Green Building Council than on government regulations or incentives (Koski, 2010). The USGBC has focused efforts on change within the marketplace, not the government (U.S. Green Building Council, 2008, p. 13). This is consistent with a recent dissertation which surveyed LEED accredited designers representing various design disciplines and found that 95% of participants believed that conferences addressing sustainability were an important influence on their green design decisions (Barber-Estores, 2010). In light of this, it is imperative that professional organizations continue to do their part to promote sustainability and offer educational opportunities for members to learn more about interior design's role in overall sustainability efforts.

Sustainability within Interior Design and Architecture

Perceptions of Sustainability

A survey of ASID members indicated that most interior designers perceive sustainability to be an important issue, though they do not always practice sustainable design (Kang & Guerin, 2009B). Because both their disciplines are linked to ethical concerns such as sustainability, interior designers and architects cannot become so engrossed in their artistic endeavors that they fail to meet the world's ecological needs as well (Bech-Danielsen, 2003). Citing USGBC membership data, researchers for the state of California noted that membership in the U.S. Green Building Council approximately doubled every year between 2000 and 2002 (Sustainable Building Task Force, 2003, p. 5). However a recent qualitative study of Australian architects found that many in that profession believed that one could practice either aesthetically pleasing architecture or sustainable building design, not both at the same time. It was found that some architects felt that architecture should be, by definition, sustainable. These architects believed that buildings should be both environmentally sound and aesthetically interesting enough to stand the test of time. Many others architects, however, believed that a building designed with sustainability in mind could not possibly be true architecture, but merely a building. These architects were therefore reluctant to either practice sustainability or recommend it to clients (Owen & Dovey, 2008).

There is also a perception held by some that sustainability in architecture is a façade, that green buildings merely appear sustainable on the surface but are not truly more efficient or environmentally responsible than traditionally designed buildings.

Some design and construction industry professionals have noted that many so-called sustainable buildings may be energy efficient, but are made with materials such as metal and glass that consume a high amount of energy and raw materials in order to produce and, therefore, may not have a significantly better over-all environmental impact than traditional buildings (Winter, 2002). Additionally, a negative perception exists within the design industry that sustainable buildings may be more ecologically responsible without being aesthetically pleasing, or architecturally innovative or creative in ways other than environmental sustainability (e.g. Bech-Danielsen, 2003; Owen & Dovey, 2008). Whether either reputation is deserved, it may be hindering the sustainable design movement among architects and interior designers, both those who care more about the environment and those who care more about aesthetics and creativity (Winter, 2002).

Environmental Responsibility

It has been observed that interior designers develop gradually into sustainable interior designers as part of a personal process. This is because a commitment to environmental responsibility stems from biophilia and interaction with nature, rather than from an intellectual belief in the environment's importance (Steig, 2006). Interviews of adolescents who occupy leadership roles in various environmentalist organizations found that each of these teens had had experiences with nature that they felt had a strong influence on their environmental beliefs and goals. Ten of the twelve participants in that study noted that they had experienced a transformation when some experience or outside influence acted as a catalyst to influence the growth of their environmental awareness into a passionate commitment to act (Arnold, Cohen, & Warner, 2009). A survey of

sustainable designers also concluded that approximately 78% of participants felt their childhood experiences with nature influenced their decisions to practice green design (Barber-Estores, 2010).

There is currently relatively little research regarding the individual characteristics of green decision makers such as interior designers or architects (e.g. Kang & Guerin, 2009A; Vakili-Ardebilli & Boussabaine, 2007). Individual characteristics of interior designers have been studied in order to determine if there were similarities among those who designed green buildings regularly versus those who did not (Kang & Guerin, 2009A). It has been found that designers who practice sustainability typically believe that they can make a difference through the practice of environmentally responsible design (Barber-Estores, 2010). Attitudes of interior design students toward sustainability have also been researched (Ruff & Olson, 2009). Each of these studies was quantitative in nature, however, and did not probe the motivations or individual meanings behind the decision whether or not to practice sustainable design. Additionally, there is very little current literature addressing the experiences, motivations, or attitudes of practicing interior designers who specifically pursue sustainable design.

Characteristics of Sustainable Interior Designers

Individual characteristics of interior designers have previously been studied in order to determine if there were demographic similarities among those who designed sustainable buildings regularly versus those who did not. It was found that some interior designers practice sustainable design as a matter of personal ethics (Kang & Guerin, 2009A). Interior designers who have made a personal commitment to environmental

sustainability in their own lives may be more likely than other interior designers to make sustainable design decisions (Steig, 2006). And possessing an internal locus of control as well as having influential role models who promote sustainability, such as educators and family members, is essential for designers' decisions to pursue sustainable design (Barber-Estores, 2010).

Interior designers only rarely research information regarding the sustainability of materials, as they generally rely on the information supplied by manufacturers (Moussatche & Languel, 2002), possibly because the time commitment required to research sustainable options may be considered too great, when weighed against project deadlines. However designers who are willing to investigate problems, issues, and solutions themselves are more capable of producing environmentally and socially responsible design solutions than those who are not (Pile, 1995). This is especially important in situations where clients, occupants, or consumers may have medical conditions such as Multiple Chemical Sensitivity that can be drastically and adversely affected by traditional building materials (Nussbaumer, 2004).

It is also possible that geography may have an influence on interior designers' willingness to pursue sustainable design solutions. For instance, in a recent geographical analysis of LEED certified buildings in the United States, it was found that a majority were located along the Northeast coastline, in the West, in college towns, and in certain specific urban centers (Cidell, 2009).

Specialization also appears to play an important role. Commercial interior designers are more likely than residential designers to utilize sustainable design practices.

Though as of 2009, only approximately 37% of interior designers worked primarily in commercial design (Kang & Guerin, 2009A). Designers specializing in the interior design of educational institutions reach a significant portion of the population. For instance, in California, approximately 20% of the population spends its weekdays inside a school building (Sustainable Building Task Force, 2003, p. 86). Interior designers who specialize in the design of educational or child care institutions are more likely than designers in all other specialties to practice sustainable design (Kang & Guerin, 2009A). Also, there are eleven states which have adopted minimal environmental sustainability and healthy building criteria for new and remodeled public school buildings that reach beyond even current LEED standards (Adler, 2009). Interior designers working primarily in hospitality or healthcare design are also more likely than other commercial, and all residential, designers to design sustainable interiors (Kang & Guerin, 2009A). The U. S. federal government owns over 500,000 buildings (U. S. Department of Energy Federal Energy Management Program, 2003, p. 17) and various pieces of legislation such as 1992's Energy Policy Act mandate that buildings owned and operated by the federal government must be designed to operate at significantly reduced energy loads (U.S. Environmental Protection Agency Report, 2010B, p. 3). Therefore it may be reasonable to assume that many interior designers working on government projects are likely to be concerned with producing sustainable design solutions for their clients.

Overall, commercial interior designers in all specialties are more likely than residential interior designers to practice sustainable design. This may be because larger projects are more often designed using green building standards, either because of larger budgets or because commercial clients are more likely than residential clients to request

sustainable design (Kang & Guerin, 2009A). However, this means that adequate sustainable design is lacking in an important segment of the building industry, considering there are approximately 1.8 million new residential buildings constructed each year (U.S. Environmental Protection Agency Green Building Workgroup, 2004, p.1). And, thus far, neither government and utility provider incentive programs, nor consumer demand for sustainable products has created an increased drive toward sustainable residential building projects (Dator, 2010). It is possible that an increased awareness of sustainability and green design practice among residential interior designers could help encourage increased sustainability within the residential portion of the construction industry.

While specialty, geography, and project size have been found to be predictors of individual designers' propensity for sustainability, designers' employers and design firm culture were not been found to be predictors (Kang & Guerin, 2009A). Architects, by contrast, seem to view sustainable design as a specialty in and of itself, separate from other forms of architecture and usually independent of the artistic endeavors of what many in that field consider true architecture (Owen & Dovey, 2008).

Client Concerns Regarding Sustainability

It has also been found that many of the green interior designers were pursuing sustainability simply in order to satisfy clients' interests (e.g. Kang & Guerin, 2009A). For example, government agencies usually expect, and are willing to pay for, sustainable design solutions (McDougall, Nordmeyer, & Klaassen, 2006). This may be due in part to the idea that government buildings are symbolic of the government's priorities or ideals (Office of the Federal Environmental Executive, 2008, p. 5). Companies may feel

pressure from customers, employees, and business partners to become more environmentally responsible and to express that responsibility in ways the public can see and understand. Building or leasing sustainable office space is one way such a company can practice its standards of corporate environmental responsibility and present a public image of environmental awareness at the same time (Nelson, 2007). And a survey of designers and related professionals who had been involved in LEED for New Development pilot projects found that the LEED-ND criteria could be a useful tool for guiding project requirements, provided the clients shared LEED's sustainability ambitions and were willing to pay for any additional costs incurred in meeting LEED-ND standards (Garde, 2009).

Additionally, there are retailers who, because of their environmental philosophies, are becoming increasingly likely to seek sustainable solutions for their built environments. For instance, REI has pursued sustainable design in many of its retail stores due in part to their corporate culture, but also to appeal to their ecologically aware consumer base (Hyllegard, Ogle, & Dunbar, 2003). The Body Shop has also used sustainable retail environments as a way to strengthen its brand image as one of corporate social responsibility, knowing that many of its customers are environmentally as well as socially aware (Kent & Stone, 2007). And despite not being a retail space open to their customers, grocery chain Whole Foods Market wanted its Austin, Texas corporate headquarters to be a LEED certified space in keeping with its corporate philosophy of environmental responsibility (Hill, 2006).

Residential designers are less likely to incorporate sustainable design than commercial designers (Kang & Guerin 2009A). This could be due, in part, to the fact

that many clients, especially those less familiar with construction or building design, are unwilling to finance a project they believe to be experimental. Therefore clients must be kept informed of sustainability during the design process so that they do not feel they are at a disadvantage regarding the information pertinent to their new home or building (Duncan, 2005).

It has been posited that the most ecologically sound solution to the environmental impact of residential construction would be environmentally sensitive high-rise buildings designed to include natural lighting. This theoretical high-rise design would house people who are willing to accept, as a condition of their environmental responsibility, inconsistencies in temperatures consistent with weather changes outside the building. The benefits to these residents, it is supposed, are the ability to experience nature while living in the city and an improved sense of well-being (Yeang, 1998). To date, this skyscraper has not been built. There are, however, real residential clients who seek green design solutions as a means to foster more sustainable lifestyles. For instance, homeowners who view their kitchen design's recycling solutions as convenient are more likely than those who have no design solution at all for the sorting of recyclables, or a solution they view as inconvenient, to recycle (Macy & Asher Thompson, 2003).

Some issues such as air-tightness may make less sense to owners of existing homes. For instance a study in Montreal, Ontario determined that, even in a cold climate, renovating homes in order to make them air-tight was not cost-effective given current energy prices (Zmeureanu, 2000). However, when practical, the reuse and/or retrofitting of existing homes should be encouraged as it significantly reduces construction waste and allows for the continued use of existing building materials, as it is reasonable to assume

that homes, when designed to be sustainable, may be less likely to be demolished and more likely to be remodeled and kept in continuous use in the future (Dong, Kennedy, & Pressnail, 2005). And newly constructed homes do not always offer higher energy efficiency as compared to sustainably remodeled homes (Fay, Treloar, & Iyer-Raniga, 2000).

Significance

To date, no research has been found in the current literature regarding the motivations or perceptions of interior designers regarding the practice of sustainable interior design strategies. There is also relatively little research available regarding the individual characteristics of sustainability-minded decision makers such as interior designers or architects (e.g. Kang & Guerin, 2009; Vakili-Ardebilli & Boussabaine, 2007), or business leaders and investors (e.g. Schlange, 2009). However, there are a few more studies available regarding the clients, end users, occupants, and consumers involved with sustainable buildings (e.g. Fowler & Rauch, 2008; Hyllegard, Ogle, & Dunbar, 2006). The vast majority of the research regarding sustainable design available to date has focused on the buildings themselves (e.g. McDougall, Nordmeyer, & Klaassen, 2006). There appears to be a great deal of existing research on building energy use (e.g. Norton & Christensen, 2008). Life-cycle costing has likewise received a fair amount of attention (e.g. Fay, Treloar, & Iyer-Raniga, 2000). The economic bottom-line aspects seem to be the primary focus of the existing research regarding sustainable building design. However, to date, relatively little research designed to create an understanding of the people involved in making the sustainable design decisions has been performed.

Research regarding the motivations of interior design practitioners involved with sustainable design would promote an understanding of why some designers choose green design. This would offer direction for promoting sustainability within the field of interior design (Kang & Guerin, 2009B). It is important to understand interior designers' perceptions of sustainable design as well as their motivations for practicing sustainable design. Previous research (e.g. Kang & Guerin, 2009A) has indicated that positive views of the environment and positive attitudes toward sustainability have not always equaled action within the interior design profession. If designers care about the environment and believe in sustainability yet do not practice sustainable design, something must be holding them back. If research can create a better understanding of what motivates some interior designers to practice sustainability, better, more targeted, educational programs could be developed.

Additionally, most of the research in the existing literature incorporated quantitative methods. Many of the studies involving human subjects used methods such as surveys in order to measure client or building user satisfaction and attitudes. Only three studies, each quantitative, measured the attitudes of interior designers or interior design students toward sustainable design. No qualitative research on this topic has been found. Exploratory studies in this area are also missing from the existing literature.

Implications

Determining the different motivations interior designers may have for practicing sustainable design would be useful in a number of ways. First, interior design educators would have a better understanding of what might motivate their students to pursue green design and what perceptions their students may hold regarding sustainability. This would

also help educators in developing curricula for teaching sustainable interior design. Continued research into the characteristics and demographics of interior designers who create sustainable design projects would benefit educators as they develop curriculum to inform both current and future designers about sustainable design (Kang & Guerin, 2009A). And understanding the values and attributes interior designers relate to sustainable design and products could also help educators encourage all students, not just ecologically minded students, to learn about and practice sustainable interior design.

Companies that manufacture sustainable building products, fixtures, furniture, or equipment would also benefit from this research. Understanding the attributes interior designers identify with these products and what values motivate certain designers to choose sustainable design solutions would allow manufacturers to more effectively brand their products.

This study is potentially useful to those in the practice of sustainable interior design as well. Designers would have more clarification as to the perceptions and motivations of other interior designers regarding sustainable design practices. They would also be able to ascertain their own hierarchy of attributes and values by comparing their beliefs to those of the respondents. Having an understanding of interior designers' motivations for and perceptions of green design could help them to communicate more effectively with sustainably minded clients, end users and other project stake holders. This understanding would also be helpful to them as they try to encourage sustainability among their clients, colleagues, and collaborators who may not otherwise pursue sustainable design solutions.

Purpose

The purpose of this phenomenological study is to understand the motivations and perceptions behind sustainable interior design solutions among interior designers who practice green design as well as the perceptions interior designers have of sustainability and sustainable design. It is the intention of this study to gain an understanding of how interior designers became, and continue to become, motivated to practice sustainable design. To date there has been almost no research found on this topic. Within this exploratory study, the phenomenon of sustainable or green design, as a process, will be defined as the conscious pursuit of environmentally responsible building design, materials selection, and construction techniques by interior designers and related professionals. This definition includes, but is not limited to, said professionals' willingness to follow available guidelines for sustainable design, or their intentions of obtaining LEED or Energy Star certification for finished projects.

This research will be qualitative in nature and the goal of this study is to identify themes or patterns within the various motivations of interior designers who practice green design. It is believed that themes regarding interior designers' values and the attributes which they attach to sustainable design can be found. These may prove beneficial to designers who wish to begin practicing sustainable design as well as to educators who are developing sustainable design curricula. These themes could also be useful to manufacturers of sustainable building products as they develop marketing campaigns. Also, because there is almost no research on this topic to date, finding such themes and patterns could help to guide future research.

Research Questions

Sustainable Interior Designers

It is the intention of this study to discover what motivates interior designers to practice sustainable design rather than traditional design.

- How do interior designers arrive at the decision to practice sustainable design?
- What factors influence the decision to design sustainable projects and how are those factors influential?
- What meanings do these designers assign to their sustainable projects and to sustainability in general?
- What values and intended consequences do these designers share that underlie their sustainable decisions?
- Do some designers feel an obligation to apply sustainable techniques, finishes and products to new buildings or building remodels out of personal concern for the environment?
- Do other designers feel obligated to apply sustainability due to clients' needs and concerns?
- Are there other motivating factors behind some designers' decisions and, if so, what are they?

METHODOLOGY

Introduction

This chapter will describe the research method used in this study regarding interior designers' perceptions toward sustainable interior design, and their motivations for practicing sustainability. The specific data gathering and data analysis methods used will also be described in this chapter. Because this study involved qualitative research in the phenomenological tradition, this chapter will also include a description of the phenomenological approach used in this research, as well as phenomenology's roots in qualitative research.

A Phenomenological Method

The study explored the practice of sustainable design in interiors as a phenomenon. This study attempted to uncover the meaning behind the experienced reality of the practice of sustainability in interior design as well as interior designers' motivations and perceptions concerning sustainable strategies used in interior design. The research focus of this study was to understand how or why interior designers specify sustainable strategies in their interiors based on the meanings designers attach to sustainability and their perceptions of their experiences with sustainable design, rather than the outcome of sustainability. Phenomenology allowed the researcher to develop an understanding, in the case of this research, of sustainable interior design. This understanding was based on the experiences and perceptions of several individuals who have lived experiences with the phenomenon (Creswell, 2007).

Phenomenology, which has its roots in philosophy, was proposed by Edmund Husserl as a method of scientific inquiry into the concept of consciousness or of human experience and was originally used to study philosophy and theology (MacDonald, 2001). The main focus of phenomenology is to understand the meaning of an experience (Roubach, 2004). Beyond philosophy and theology, the phenomenological approach has been used extensively to study psychology with an emphasis on consciousness and perceptions (e.g. Willis, 2007). Phenomenology has also been a chosen approach in disciplines such as organizational management and development (White, 1990), and consumer research (Churchill & Wertz, n.d.). This approach has also been recently used to develop an understanding of the experiences of designers across several design disciplines, including architecture, fashion design, and product design (Blackwell, Eckert, Bucciarelli, & Earl, 2009).

In keeping with the phenomenological approach, interviews were conducted in order to obtain an understanding of the meanings that participants attach to the phenomenon in question, as it is the meanings and perceptions of participants that are of concern in phenomenological research (Willis, 2007). A qualitative inquiry research method was appropriate to this study because the phenomenon explored, the perception of interior designers concerning the practice of sustainable design in interiors, is a process experienced by the participants. The purpose of a phenomenological study such as this is not only to describe the phenomenon in question, but to interpret the meanings behind it as well (Creswell, 2007). Phenomenology allows researchers to distinguish between individuals' perceptions of a reality and the reality itself (Willis, 2007).

Procedures and Research Questions

Participants

In-depth interviews were conducted with eleven interior designers located in the state of Colorado. The participants were interior designers who had practiced sustainable design strategies. Data collected from this set of interviews has created an understanding of some interior designers' perceptions of sustainable design, as well as the motivations designers have for practicing sustainability.

Once potential participants were identified, each was contacted in order to determine their interest in participating in the study. Those who were willing to participate received a short demographic survey and a copy of the informed consent form via email prior to their scheduled interviews. The survey included questions regarding topics such as gender, age, type of employment, the number of years in practice, and highest level of education achieved as well as specialty, length of time within their specialty, whether or not they have changed specialties. Questions were also asked regarding professional status such as membership in professional organizations and whether the designer had passed either the NCIDQ or LEED A.P. examinations. This information provided context for the data gathered during the in-depth interviews. The consent form provided participants with information regarding how interviews were to be conducted and how their interview answers would be utilized. The consent form also contained information regarding the participants' assurance of confidentiality. Hard copies of the survey and consent form were also brought to the interviews in the event that participants did not fill out and return either document prior to the interview.

Interview Questions

Interviews conducted during qualitative research inquiry are generally in-depth in nature, unstructured, and comprised primarily of open-ended questions designed to elicit the participants' opinions and views (Creswell, 2009). For this study, interviews lasting approximately forty-five minutes to one hour were conducted face to face and each participant was interviewed individually. This procedure allowed the researcher to control the line of questioning, and allowed each participant to provide in-depth information (Creswell, 2009).

Participants were asked a series of interview questions designed to uncover their perceptions of sustainable design as well as their motivations for practicing sustainable strategies for their clients. The first set of questions addressed such topics as whether or not the participant had exposure to sustainable interior design and, if so, what type of exposure, and when did that initial exposure take place. After this, participants were asked questions related to their personal experience as interior designers. Answers to each of these questions gave context to the data regarding meanings and perceptions of sustainability.

The second set of questions was open-ended and was meant to elicit the designers' perceptions of sustainability as well as the meanings they attached to sustainable interior design. Participants were asked to relate their experiences with sustainable interior design practices. How often had the participants used sustainable design strategies? What sustainable strategies had they used? Was sustainability an important issue to them and, if so, why? Why did they pursue sustainable design strategies? Questions were asked regarding the types of sustainable design projects,

average size, and budget. Each participant answered questions related to their opinions of sustainable interior design practice and why they choose to pursue sustainable design decisions. Participants were also asked about their perception of their ability to practice sustainability. Questions regarding ability included such topics as whether they felt they had proper training and information, the level of support they received in their workplace, and client interest.

The last set of questions addressed the participants' future intentions toward sustainability. Did they believe they will continue to practice sustainable interior design strategies? Why or why not? Did they expect sustainability to become more or less important to their practice or to their clients? What advantages and disadvantages did they see in sustainable strategies, both for their clients and for their interior design businesses?

In keeping with the laddering interview technique, participants were asked to explain answers that do not initially convey meanings. When a participant gave an answer regarding perceptions, opinions and/or motivations, the researcher asked why the participant felt this way or perceived this to be so. This technique helped each participant articulate meanings and perceptions to a specific degree. Because laddering interviews can be time-consuming and exhausting to participants, however, care was taken to ensure that the laddering questions were only asked following answers that could benefit from clarification and for those questions which pertain to the issues of meanings and perceptions. Due to the open-ended nature of laddering interviews, only a short set of prepared questions was asked, as it was expected that participants might have lengthy answers for many questions, especially those in the second set of questions.

Sampling Techniques

A small participant sample was purposefully selected for this qualitative and phenomenological study. Participants were selected intentionally for their ability to inform the central research questions being studied due to their personal experience with the phenomenon being researched (Creswell, 2007). Snowballing techniques were also utilized in order to select potential subjects for this study. Snowball sample selection allows researcher to identify appropriate participants regarding the phenomenon in question (Creswell, 2007). Subjects identified as potential participants for this study were chosen due to their experience with sustainable interior design strategies. Such purposeful sampling ensured information-rich cases that resulted in a data set that could be analyzed to glean in-depth information and meanings. The intention of subject selection within qualitative research is to select participants who are best suited to help the researcher form an understanding of the research questions (Creswell, 2009). In order to ensure the suitability of the participants, each participant was chosen purposefully for his or her experience with the phenomenon being studied.

Due to time and geographic constraints, a small sample size of interior designers was anticipated. Eleven subjects, all sustainable interior designers, were chosen as participants. The set of interview participants included seven interior designers who focused primarily on commercial projects, one who focused primarily on residential projects, and three who worked in both residential interior design and small-scale commercial interior design. There was a heavier reliance on commercial interior designers, as it has been previously found that the majority of sustainable design is being

practiced by commercial designers (Kang & Guerin, 2009A). Each participant lived and practiced in Colorado, primarily in the Denver metropolitan area, so that face to face interviews could be conducted.

"Sustainable" interior designers were defined as those who have worked on at least one interior design project that could be readily defined as sustainable (i.e. a project that used sustainable strategies to enhance the design). Several of the participants chosen as a representation of sustainable interior designers were LEED accredited or had worked on at least one LEED certified project. This was not considered a practical determination for residential designers, however, due to the lack of a significant number of LEED certified residential projects in the proposed sample area. Therefore ReGreen and Energy Star project experience was also considered a viable means of determining sustainable interior designers. It was not presumed that all interior designers who had not worked on a LEED, ReGreen, or Energy Star certified project did not take sustainability into consideration during the design process, however.

In order to identify potential participants, investigators asked for suggestions from industry contacts that were assumed to be acquainted with sustainable interior designers. Other potential interview participants were chosen through their affiliations with USGBC, ASID, and/or IIDA. Several participants also suggested potential participants, who were contacted by the investigator, which allowed the researcher to also identify potential participants through snowballing. Potential participants were first contacted via email in order to gauge interest in the study as well as availability. Each potential participant was assured of the confidentiality of his or her answers and informed that participation is voluntary. Those potential subjects who were interested in participating

contacted the researcher indicating their willingness to be interviewed. Interested participants were then contacted via email in order to discuss availability as well as to allow the researcher to answer participants' questions and address concerns regarding the study. For those who agreed to participate in the study, an interview time and location was scheduled via email or during a subsequent phone call.

Care was taken to ensure the confidentiality of each participant's responses. This will protect participants from possible professional repercussions should any answers be offensive to potential clients or employers. It was also hoped that confidentiality and one-on-one interviews would ensure against social desirability bias. With the exception of the signed consent forms, no documentation created in this research contains participants' names. Also, questions asked in both the survey and interviews were designed to exclude identifying information, such as job titles or employers', clients', and coworkers' names.

Data Analysis

This research is considered an exploratory study, as the intention was to find themes that could potentially be studied individually and in greater detail through both qualitative and quantitative research in the future. The motive of this study was primarily to understand the meanings attached to the experience of sustainable interior design as well as interior designers' perceptions of sustainability. Therefore a phenomenological approach was used.

This study used Means-End Chain theory and Laddering interview techniques. Means-End Chain Theory, often used in combination with laddering interviews, is a

psychological or "micro" approach to uncovering individual subjects' values, and the attributes subjects identify with certain products (Reynolds & Gutman, 1988). The intention of this technique was to elicit the relationships and associations between attributes, consequences, and values that participants had regarding certain products or services (Reynolds & Gutman, 1988). MEC assumes that there is an indirect relationship between a product's attributes and the consumer's values that is met through the outcomes or consequences a consumer expects to achieve by consuming that product (Mort & Rose, 2006). MEC interviews help the researcher to understand how a product's attributes are linked to perceived consequences and how these consequences fulfill the interview subject's values (Kaciak & Cullen, 2006). In MEC, it is the interview participants, who are the focus of these interviews (Reynolds & Gutman, 1988). Laddering interviews and MEC were used by the researcher in order to understand not only what attributes, consequences, and values were related to a product or service by participants, but why these attributes, consequences, and values were perceived to be personally relevant to the participants (Reynolds & Olson, 2001).

MEC has been proven to be a suitable method for understanding a wide range of topics related to marketing (Kaciak & Cullen, 2006). During MEC interviews, researchers discover the attributes a subject identifies with a certain product or product class, then asks why these attributes are important to the subject in order to discover the consequences and values that the subject associates with the product's attributes (Kaciak & Cullen, 2009). It was expected that Means-End Chain theory would allow this study to assess not only interior designers' attitudes toward sustainable design, but also the values

behind those attitudes. Inductive data analysis was performed and resulted in information in the form of themes that can be used as a basis for further research on this topic.

To date, research regarding the meanings interior designers connect to sustainable design strategies has not been found in the existing literature. Nor is there available research pertaining to practicing interior designers' motivations for or perceptions of sustainability, though research regarding interior design faculty members' perceptions of the teaching of sustainable design strategies has been found (Crane & Waxman, 2009). As the meanings, motivations and perceptions could be uncovered using MEC, it was an appropriate theory for an exploratory study such as this.

Interviews were digitally recorded, then transcribed and coded into hierarchical ladders of attributes (see Figure 2 in Appendix A). These attributes lead to the consequences the participants expected to see as a result of the attributes. The consequences lead to the values that motivate participants to practice sustainable design. The ladders were then content-analyzed in order to find any recurring themes between participants' responses. Attributes, consequences and values that appeared to have the same meanings were coded into one master code in order to combine responses that were essentially the same into themes. After the results of the laddering interviews were coded, they were arranged into Hierarchical Value Maps, or HVM (see Figure 3 in Appendix A). Information from the HVM were organized into an Implication Matrix (see Table 1 in Appendix A) in order to show the number of times each element corresponded to each other element. This illustrated which relationships and themes were most common across all of the participants.

Trustworthiness of the Study

The issues of validity and reliability were addressed in several ways. The following methods of verification were incorporated into the study in order to ensure the validity of this research.

Clarification of Researcher's Perspective

First, the researcher acknowledged a bias toward environmental sustainability and green interior design as an active member of the Colorado USGBC who was working on a multi-family residential project that was in the process of becoming LEED certified at the time of this research. However the researcher did not wish to impose, directly or indirectly, her opinions onto her research subjects. The researcher also did not want to influence her subjects to answer interview questions in a way that may have been inauthentic. All of the interview participants were interior designers who practiced sustainable design strategies therefore it was reasonable to assume that some of the subjects would have motivations similar to those of the researcher. However it was assumed that there may be some who designed sustainably for other reasons, such as to satisfy clients who asked for sustainable design, or because their employer directed them to do so.

The researcher asked questions in such a way as to not intentionally lead subjects to answer "correctly", but honestly. Interview questions were primarily open-ended, as it was expected that this would lead to information the researcher might not otherwise have considered. Most importantly, during the interviews, the researcher did not discuss her own experiences, perceptions, and motivations with subjects to avoid pressuring them toward the "right" answers. Also, due to the potential for social desirability bias,

interviews were conducted with each subject individually. In accordance with the tradition of phenomenology, the researcher attempted to suspend judgment regarding the reality of the phenomenon and refrained from drawing conclusions until data had been analyzed and such judgments and conclusions could be founded on the certainty of data (Creswell 2007).

Reflective Journal

Secondly, the researcher maintained a reflective journal throughout the data collection and analysis process. A self-reflective journal documented the researcher's reaction to participants' experiences and perceptions, and also included the researcher's questions and speculations, as well as emerging conclusions and interpretations (Creswell, 2007). This journal recorded the researcher's experience and thought process which could also help the peer review committee and other researchers to understand this study's findings, as well as how the researcher arrived at the study's conclusions (Willis, 2007). Additionally, the contents of the journal can be used by the researcher and peers in order to cross-reference data analysis and interpretations (Creswell, 2007).

Member Checking

Member checking was also used to validate the findings. Subjects had the opportunity to review a draft of the initial data analysis in order to ensure the credibility of the conclusions. Also, member checking allowed participants to review the researcher's conclusions as they emerged (Willis, 2007). This process allowed study participants the opportunity to inform the researcher of their views as to whether or not the researcher's interpretations are correct (Creswell, 2007). The incorporation of member checking ensured that the interview data is both accurate and complete.

Peer Review

Lastly, this research study was peer-reviewed by an advisor throughout the research process. The peer review process provided external checking and evaluation of the research process in order to ensure the researcher's honesty as well as to clarify methods and interpretations (Creswell, 2007). Peer reviews are standard in published scholarly articles. However, when incorporated into the research process, peer reviews offer suggestions regarding data collection and analysis methods and can be used as a sounding board for emerging interpretations and conclusions (Willis, 2007). The peer review process also ensured that the study's findings will resonate with readers (Creswell, 2009).

Audit Trail

Reliability was addressed through the use of an audit trail maintained by the researcher throughout the research process. This trail consisted of a chronological account of all research activities, including interviews, transcription, coding of data, analysis procedures and interpretation of data (Creswell, 2009). The researcher's work was documented, and a record was kept of when ideas and interpretations began to form. Additionally, a record was kept of how these ideas were supported, and by what data, as well as how the ideas were expanded and refined (Creswell, 2007). The audit trail could be reviewed and evaluated by peers and other researchers in order to understand and/or verify the sources used to support the findings of this study.

Limitations

One limitation was the use of a relatively small sample size pulled from one geographical area, as this was an exploratory and qualitative study. Themes were identified that can be used in further research. Due to the use of a purposeful sample

rather than a non-probability sample, the results of this study are not generalizable to national or international populations. However the phenomenological tradition accepts the idea that there can be no universals and instead attempts to view concepts through the local context (Willis, 2007). As almost no research of any kind on this topic has been found to date, an exploratory study within the phenomenological approach was an appropriate method of research for this study.

FINDINGS

The purpose of this study was to determine what motivations and perceptions practicing interior designers have of sustainable interior design strategies. This chapter will describe the findings resulting from both the demographic surveys and the participants' interviews of this study. This chapter will also include an overview of the themes that emerged from the participants' responses. Each participant will be referred to by an assumed name to maintain confidentiality and anonymity.

Context

A total of eleven subjects participated in this research study. Participants were selected through purposeful sampling. The technique of purposeful sampling was chosen in order to ensure that participants would be able to inform the central research questions due to their direct, personal experience with the phenomenon being researched (Creswell, 2007). The phenomenon researched in this study is the practice of sustainable interior design strategies. Potential participants were therefore identified based on their lived experience with the practice of sustainable interior design strategies. Only those interior designers who had practiced sustainable interior design strategies and who were both previously unacquainted with the researcher and located in the greater Rocky Mountain area were identified as potential subjects.

Each potential participant was initially contacted through an email which included an explanation of the intended research, an invitation to participate as a subject in the research, and the investigators' contact information. Each potential participant was asked

to respond to the invitation email, provided he or she was willing to participate in the study. Those who responded with a willingness to participate were selected as participants. Each participant was then contacted with a second email from the investigator. The second email included an informed consent form, a short demographic survey, and instructions regarding contacting the investigator with times, dates, and locations convenient to the participant for the purposes of scheduling an interview. Most interviews were scheduled via email though some participants preferred to contact the investigator by phone in order to schedule an interview time and location.

At the conclusion of their interviews, a few participants offered names of colleagues they felt would be beneficial additions to the study. This sampling technique, known as snowballing, allows the researcher to find participants who are known to others to be information-rich cases regarding the phenomenon in question (Creswell, 2007).

Each interview was conducted individually in order to prevent potential social desirability bias. The majority of the interviews were conducted in the evening, and in public spaces such as a conference room, café, or coffee shop. During interviews, participants were asked a series of open-ended questions regarding their experiences, perceptions, opinions, and motivations regarding the practice of sustainable interior design strategies (See Figure 3 in Appendix B). Participants also returned completed demographic surveys to the investigator at this time. Consent forms were signed by the participant and investigator prior to the start of each interview.

Demographic Findings

All of the eleven participants were current interior design practitioners living and working in the greater Denver, Colorado metropolitan area. While the sample group was

primarily female, three of the eleven participants were male. The participants represent a wide range of ages; three participants were in their mid to late twenties and three were in their early to mid thirties. Two participants were in their early forties and the remaining participants were age fifty or older.

Education and Experience

The majority of the participants held a bachelors degree in interior design with only one who attended an undergraduate architecture program. Two earned their associates degrees in interior design. One participant earned a masters degree in construction management in addition to her interior design bachelor degree. One participant declined to indicate her level of education on the survey.

The participants represented a wide range of employment opportunities and years of experience. Four participants were employed by large firms with one hundred or more people. Three worked as individual consultants. Two were owners or partners in small businesses. Two participants worked for medium sized firms, which was defined for the purpose of this study as a company employing between twenty-five and ninety-nine individuals. None of the participants in this study were employees by a small company.

At the time of the interviews, most of the participants had spent their entire interior design careers within the same specialty area of design. The majority in this study specialized in one or more areas of commercial design. Two participants focused on schools and other learning environments. Three participants focused on large-scale commercial projects, primarily offices or industrial spaces. Two participants considered

sustainability to be their area of specialization. One subject specialized exclusively in residential interior design while the remaining participants worked in both residential and small-scale commercial interior design.

The level of experience ranged from less than one year of practice to thirty years in interior design. Five participants had five or fewer years' experience and four had been working for eleven to thirteen years. The remaining participants had been practicing interior designers for more than twenty-five years (See Table 2 in Appendix C).

Certifications, Licensure, Accreditations, and Affiliations

Four participants had passed the NCIDQ exam and four others expressed their intentions to take the NCIDQ exam in the future. Three had become LEED Accredited Professionals (LEED AP). Three more had become LEED Green Associates (LEED GA). All of the LEED GAs, along with three other participants, intended to become accredited as LEED APs in the future. The minimum level of experience among NCIDQ certified interior designers in this study was six years. However passage of the LEED GA exam does not appear to be dependent on professional experience, as most of the LEED GAs in this study had fewer than three years of experience. In addition to the intent to become LEED accredited and NCIDQ certified, one subject indicated having obtained ReGreen Trained certification.

The majority of the participants were members of the USGBC. Four participants were members of ASID and three were members of IIDA. Two participants did not indicate any professional affiliations, and one was a member of Women in Design

(WID). Four participants indicated multiple memberships. Of these participants, two were members of both IIDA and the USGBC, one was a member of ASID and the USGBC, and one participant was a member of both ASID and IIDA.

Interview Findings

Each interview was digitally recorded, then transcribed into a word processing document for further review. During review of the transcriptions, various themes emerged. Themes relating to motivations were coded using Means End Chain Theory Hierarchical Ladders (see Figures 5 through 16 in Appendix C). In addition to the hierarchical laddering themes regarding participants' motivations, several themes emerged regarding participants' perceptions, experiences, and future hopes for sustainable interior design strategies.

Hierarchical Laddering and Coding Decision Rules

Responses regarding subjects' motivations were arranged into hierarchical ladders in order to determine specific motivating factors. For instance, one participant, Sue, mentioned her preference for specifying natural products. This became the first step in a hierarchical ladder. Sue explained that she believed natural products are more durable and require less maintenance than other products. This became the second step in her ladder, which ended in the terminal step of "less negative impact on the future" (see Figure 5 in Appendix C). Sue's ultimate goal for specifying natural products was to lower her negative impact on the future of the environment.

Once each interview had been coded into Hierarchical Ladders, the terminal steps in the ladders were compared in order to determine various common motivation themes

and a few outlier responses regarding motivations. The findings in each of these ladders were arranged into an Implication Matrix (see Table 3 in Appendix C). There was notable overlap between the participants' responses and many answers that were worded one way by one participant and in other ways by other participants were determined to be similar enough to be considered the same concept. For instance, answers such as, "it's the right thing to do," or "it would be wrong not to…" were coded under the item "Moral Imperative". Items on the Implication Matrix deemed "Terminal" were items which represented the highest level of specificity within a given hierarchical ladder. Most participants discussed several different ideas and concepts related to their motivations during their interviews, thereby providing answers capable of being coded into multiple ladders. Several participants answered in deep detail, thus providing answers capable of being coded into complicated, multi-branched ladders. Other participants spoke in a more direct manner. These sets of answers often resulted in more linear, less complicated ladders. Once the Implication Matrix itself was analyzed, a set of sixteen items were identified. These items were then grouped into seven motivation themes, five of which had sub themes. Two items did not seem to be closely related to any other items, and were therefore left as outlier motivational findings.

Motivation Themes

Motivation Theme 1: Health Concerns

Health was one of the most commonly mentioned positive concepts that related to a motivation for designing sustainably across the entire data set. Eight of the eleven participants mentioned aspects of health, whether discussing the health of the

environment, the planet, or building occupants. Related concepts such as happiness, well being, and quality of life were also discussed by three participants. "Healthy Environments" was mentioned in seven ladders and was the terminal theme in one ladder. "Healthy People" was included in five ladders. In two of those ladders, "Healthy People" was the terminal result. In total, the general theme of health was mentioned in twelve ladders representing seven participants' motivations. One participant took the concept of health a step further, indicating that his terminal goal was to ensure his clients' happiness.

Participants were also concerned with the potential negative health-related impacts of unsustainable built environments on building occupants. The prevention of Sick Building Syndrome was mentioned, as was the protection of occupants who suffer from maladies such as Multiple Chemical Sensitivity. Several participants mentioned their attempts to improve interior environmental quality, specifically air quality, through the use of low-VOC or VOC-free products whenever possible. It was generally believed by most participants that the use of sustainable materials, finishes, and products could result in interior environments that had fewer negative impacts on occupant health, thus allowing occupants to feel healthier, and to discourage additional environmental complaints.

May, one of the eldest and most experienced participants in this study stated her perception that sustainable interior environments are supportive of human health. Tara, the participant with the most interior design experience, stated, "I've been in the industry long enough to know what a sick building is." She explained that she had often suffered from headaches during site visits to projects that were not designed with sustainable goals in mind. Due to these adverse experiences, she considered the health of the contractors

involved with a project to be as important a design consideration as the health of the end-users. Nina, whose end-users include college students as well as faculty and staff, believed that students' health should be one of her primary concerns. Students, she explained, do not have the opportunity to choose their classroom environments. Mindy, the only ReGreen Trained participant in this study, wanted to ensure that she was designing spaces that are healthy for inhabitants and felt that healthy built environments was the "...the cause behind sustainability." She mentioned that should she have children in the future, she would not want them to inhabit spaces that could make them ill. Bill, an employee at a large Denver, Colorado based design firm, considered the design of healthy environments as part of his goal to think not only of himself, but also of others and stated, "I don't ever want to be responsible for someone getting sick."

Additionally, two participants took the idea of health as a sustainable design goal one step further. Ben, an architecture school graduate who had been working as an interior designer for large scale corporate and institutional projects, noted that healthier work environments can keep employees happy and that several of his clients pursued sustainability partly as a means of improving their employees' quality of life. Mike, who had started his own residential design firm after completing his interior design program, stated his perception that, in addition to supporting occupant health, a home that is more sustainable and efficient "seems to kind of make the occupants happier."

Motivation Theme 2: Planet

"Protecting the Future" was the terminal motivation in four subject's ladders. "Protecting the Environment" was the terminal motivation for three ladders, and was

included as a step in an additional five ladders. These sub-themes were mentioned a total of eight times. The related sub-theme of "Efficiency or Use Fewer Resources" was included in three ladders. "Less Waste or Pollution" was terminal in only one ladder, but mentioned in three others. Each of these sub-themes was considered closely related and therefore combined as one motivation theme of concern for the planet, which was expressed by several participants.

Sue believed that "design has to evolve" in order to have a lesser impact on the earth and future generations. In addition to offering her clients sustainable design solutions, Ann, a small business owner focusing primarily on corporate and government design, tried to recycle as much as she could and believed the decision to pursue sustainability was "easy if you have kids," implying her perception that she was protecting the future of the environment.

Regarding the environment, Ben stated, "People often disregard how much a little bit helps," and that interior designers can and should design in such a way as to "try to keep it as clean as we can." Beth considered specifying sustainable products part of her "due diligence" as an interior designer. Tara believed the pursuit of sustainable interior design strategies were part of her goal of being "a responsible human being to our planet" and Nina stated her perception that each of her design decisions would have a lasting effect on the environment. Bill summed up the idea of practicing sustainable interior design strategies in order to have a positive impact on the world by saying, "There's a lot of power in being an interior designer."

Motivation Theme 3: Personal Goals

Some motivation themes that emerged from the ladders were less concrete as compared to the themes previously discussed. For instance, the esoteric sub-theme of "Make the World a Better Place" was the terminal motivation of three ladders. Most subjects mentioned concepts of personal responsibility throughout their interviews. When coded into ladders, these responses were grouped into the theme, "Moral Imperative", a theme which was the terminal motivation in two ladders, and was a step in five additional ladders. Four participants felt that sustainable interior design can help to make the world a better place.

Additionally, several subjects' responses indicated a belief that sustainable interior design strategies are simply smarter, or result in a better project. When discussed as a motivating factor, these responses were coded into the theme, "Better or Smarter Design". Three ladders terminated in this theme, while four more included it as a step. Overall, the majority of participants indicated that they had pursued sustainable design strategies partly because they felt sustainable strategies would help them to achieve their personal goals. For instance, Nina mentioned her perception that "…it's really rewarding to… provide for them a space that's healthy and sustainable but on their tight budget." After discussing several of her strategies for pursuing an environmentally responsible lifestyle, Tara stated that she tries to practice as an interior designer, "the same things that I was saying in my personal life."

Personal Responsibility

Ben felt that we should "Protect Mother Earth as long as we can," and Bill, who was a LEED GA studying for his LEED AP exam, was appalled by the environmental destruction he saw in the world. Tara and Ann each discussed ways in which they were attempting to become more environmentally responsible in their own lives. Tara believed in purchasing quality products and keeping them as long as possible, including owning the same car for fifteen years. Ann accepted a challenge to try having a "zero waste home" and concluded that becoming aware of how her family's habits at home affect the environment had increased her awareness in the rest of her life, which encouraged her to become more environmentally responsible in her design practice as well.

Seven participants expressed the perception that sustainable interior design can protect the environment, while a majority of participants specifically mentioned the ability of sustainable interior design to conserve resources and energy. The majority of participants mentioned the perception that interior designers can protect the future by pursuing sustainable design strategies. Sue stated that she didn't believe interior designers could "keep designing mindlessly" because sustainable interior design strategies would have "less impact." Mindy believed she was doing "a better thing for the world" by practicing sustainable interior design strategies. Beth said regarding sustainable interior design strategies, "Hopefully it'll make the world a better place".

Tara, who tried to eliminate wastefulness in her own lifestyle as well as in her interior design practice, stated her hope that one day there is no longer a need for LEED,

as she believed that sustainable interior design is something the industry should pursue at all times simply because it is the responsible thing to do. Ben echoed Tara's thoughts regarding LEED, stating that, because he knew he should be pursuing sustainable solutions anyway, his project teams and clients "don't really need that plaque."

Beth mentioned that she felt good about pursuing sustainability in her projects, even when not directly supported by the clients, because it was "the right thing to do." Bill believed that it would be selfish not to consider how his decisions can impact other people as well as the environment, and that sustainable interior design is "for the greater good". Linda expressed the belief that it was her responsibility to act on her knowledge regarding sustainability. Regardless of whether she always felt supported in her pursuit of sustainable design strategies, Linda stated she "can't just ignore that there are sustainable strategies." May, who was an active member with a leadership role in the USGBC, also felt that her knowledge of sustainable interior design carried with it a responsibility to pursue sustainable interior design strategies and accepted only those clients willing to build sustainable projects.

Both Linda and May felt that sustainable design was part of their triple bottom line, as it helped to support not only the environment but also end-users and the community. Mike also considered the community in which he lived, choosing to support his local economy through the specification of local products whenever possible as one of his sustainable design solutions. It was his perception that, "Somebody involved in the process, somewhere along the line, usually benefits from sustainable design."

Self-Driven Sustainable Practices

Most of the participants in this study expressed their willingness to pursue sustainable design strategies even when not asked to do so by their clients, colleagues, or educators. For example, even though making sustainable design decisions was not required of her, Sue began learning about and implementing as many sustainable strategies as she could while in college and believed interior designers now have no excuses for failing to pursue sustainability. She chose to work for her current employer because she believed they held similar environmental values and pursued sustainable design strategies throughout her career, explaining, "I've always geared my career to it." Ann chose in her business to implement as many sustainable strategies as possible into each of her projects and stated that the only difference between projects in which the client had requested sustainability and in which the client had not, was the fact that client-driven sustainable projects included more documentation. May, who was self-employed, decided to only accept clients who shared her goals of sustainable design projects. This was a business practice that Bill wished his employer would adopt, lamenting that his company was "a big boat to keep afloat" and therefore accepted clients regardless of their environmental intentions. Tara pursued sustainable strategies "daily" because she felt a sense of responsibility to do so. Beth also believed that specifying sustainable products was the right thing for interior designers to do, whether or not clients requested them. And Bill went so far as to state that, when clients were not directly supportive of sustainable interior design, he and coworkers at his firm would "sneak it in".

The four youngest participants in this study seemed willing to take their own sustainable ambitions a step further. Most participants stated a willingness to push

hesitant clients toward sustainability or to provide sustainable design solutions without being asked. However, four participants implied that they would stake their careers on sustainability. Nina, Mike, Mindy, and Linda each mentioned an unwillingness to work for employers who were not specifically supportive of their sustainable interior design goals. Mike, a small business owner, believed that one day soon sustainable strategies will be "the only way that houses are built." When asked how often he pursued sustainable design strategies in his practice, Mike stated that he would "incorporate everything I can."

Like Mike, Mindy also became self-employed directly out of college. She was working as an independent consultant in both residential and small-scale commercial interior design at the time of her interview. Mindy had been involved only with sustainable projects and believed she would continue to practice sustainable design strategies in the future. If faced with the prospect of working on her own or for an employer that did not believe in sustainable interior design, Mindy stated that she would choose not to work for that employer. Nina, who was employed as a designer in a college campus facilities planning department, believed she would eventually work for a design firm that focused specifically on sustainability. In her response to a question regarding her intentions toward the continued practice of sustainable interior design, she stated, "I don't want to be an interior designer unless I can do some kind of sustainability."

It is possible that Nina and Mindy were not making idle threats. For example, Linda, who earned a graduate degree in construction management in addition to her interior design degree, grew so frustrated at the lack of support she perceived for

sustainability from various coworkers and employers that she eventually left interior design in order to become a LEED and sustainability consultant to clients in the design and construction industry. Linda also expressed her perception that, as more environmentally aware interior designers enter the profession, sustainable interior design will become more widely accepted because, "when they get into the workforce they're asking what their companies are doing to be green or what are their green practices," which may push employers toward the pursuit of sustainability.

Motivation Theme 4: Client Goals

"Client Satisfaction", which included motivations such as ensuring client sustainability goals are met, was terminal in three ladders and mentioned in a fourth. The related concept, "End-User Productivity" appeared only once, but as a terminal motivation. Two other client-driven motivations, "Durability or Quality" and "Return on Investment" were each mentioned in two ladders. A few participants felt that they had been involved in projects where clients were supportive of sustainable design strategies because environmentalism was, as Bill stated, "at the root of what they do." And Sue discussed energy efficiency and life cycle cost savings as client goals, stating that many of her clients "see the long-term savings," that can result from sustainable design.

Client-Driven Sustainability

Ben stated that his first exposure to sustainable interior design was approximately five years prior to this study at a client's request. This client was interested in learning what their options might be for having a greener building. Ben and his coworkers investigated possible sustainable solutions, though many were not implemented due to

higher costs. Since that time, Ben had become a LEED AP, continued to learn more about sustainable design strategies and had chosen sustainable solutions for his clients whenever possible. Tara also initially pursued sustainability because a client asked her to do so. Her first exposure to sustainable solutions was ten years ago while working on a student center at a public university in Colorado. One strategy she and team members chose was bamboo, because it is considered a renewable product. Tara learned from the resulting construction delays that bamboo must first be acclimatized to areas with low humidity, and declared such on the job learning experiences to be an important part of the learning process she continues today. Ann and Bill also mentioned client sustainability requirements within the last decade as their first exposures to green interior design. Overall, the majority of participants in this study had been exposed to sustainable interior design strategies while in college. However the participants who were first exposed to sustainable interior design strategies through clients appeared to be just as committed to the protecting environment as those whose first exposure happened while they were students.

First Costs and Return on Investment

Linda perceived the promotion of traditional interior design over sustainable interior design to be "an ignorant response," to clients' financial concerns and that she felt designing with concerns of first-costs' overriding a client's potential return on investment was "backwards". Sue had experienced success encouraging clients to build sustainably designed buildings because many of her clients understood that a more efficient building would be more cost effective to operate. Mike also felt he had success encouraging his clients to implement sustainable strategies by explaining their potential

savings in energy costs. Linda noted that her clients were often willing to pay more for natural products once they realized that those products would last longer and cost less in maintenance than less environmentally friendly alternatives. She had found success in convincing hesitant clients to pursue sustainability by showing them life cycle cost analysis proving the long-term cost savings of going green.

In addition to energy and life cycle cost benefits, Ben, Tara, and Nina had experiences with clients who were willing to spend more in order to have healthy built environments because they knew the improved health of their employees would translate into higher productivity. Ben explained that his clients were often interesting in implementing any design strategy that "keeps employees happier." Nina stated her belief that "natural just creates a more productive space." Tara mentioned that her clients were interested in learning about, "anything they can do to make their employees feel better."

At the time of her interview, Mindy was involved in the design of a small office in which the clients themselves wanted to pursue LEED certification on a tight budget in order to "prove that green isn't necessarily more expensive and to kind of bust that myth". She had also found that the ability to explain the financial benefits of sustainable design can help to convince many budget-conscious clients to pursue sustainable strategies. While Mindy acknowledged that, for many clients, the decision not to choose sustainable design strategies came down to money. Other clients, however, were interested in sustainability and were willing to "do what they have to do to get there."

However several of the participants also had experiences with initial budget concerns ultimately outweighing the benefits of sustainable interior design. For example,

Tara related a scenario in which interior designers might be pushed toward cheaper products. She explained that marble could be found locally, but that it is often cheapest to have marble cut in China. While she believed shipping marble to and from China to be environmentally irresponsible, the fact that it can be cheaper to do so than to have the cutting done locally is often the clients' winning concern. Beth lamented that value engineering had often undone many of the sustainable decisions she had made. When asked about her perceived level of client support, Beth stated that she thought clients believe in sustainability, but weren't always willing to pay for it. "It depends on the client," Beth explained, "a lot of it comes down to money." Like Beth, Nina and Ben also felt that clients were generally interested in hearing about sustainability yet only implemented sustainable design solutions when their construction budgets allowed for it. Nina went so far as to say that there had been times when she and her coworkers nearly lost clients because the clients seemed to feel the designers were pushing them too far regarding sustainability. Ben believed that, among his clients, about three quarters would ask about sustainable solutions and that, "Fifty percent are really interested and maybe twenty-five percent actually do it."

In contrast to the other subjects' experience, Linda, who at the time of her interview, was working as a sustainability consultant. As a consultant, Linda worked primarily with clients who were interested in sustainability at the start of the design process, though she also mentioned budget as sometimes having a negative impact, explaining that, "it's very much cost driven". And, having heard from colleagues that there were still clients who did not prefer to spend more in the pursuit of sustainability,

May considered herself lucky to be able to specialize in sustainable design and work only with clients who intended from the beginning to pursue sustainability within their projects.

Client Marketing Concerns

LEED was mentioned by several of the subjects as being an effective marketing strategy both for clients and for interior designers or design firms. Ben alluded to a lack of dependency on LEED certification for those clients who already pursued sustainability as an integral part of their business philosophy, but also mentioned that LEED certification and sustainable design were often used as a marketing strategy by other clients. Mindy believed the USGBC had been effective at marketing LEED as a format for creating sustainable designs and that companies could use certification as a, "badge to say, 'Hey we're sustainable'." Bill's initial exposure to sustainable design happened when a client asked his firm to pursue LEED as part of their then-new strategy to include their sustainability efforts in their marketing. He admitted that his own employers (and many competing firms) had used sustainable design as a way to market their design services. Bill had also found success encouraging clients to pursue sustainable strategies by presenting it as "an appropriate marketing strategy". He explained his perception of why some clients market themselves as sustainable by asking, "How can you defend other environmental issues if you don't have a space that's environmentally sensitive yourself?" Ben stated his perception that some of his clients were, "beginning to understand the value of being able to say, 'We're sustainably designed' or, 'We're on that green path'."

Tara acknowledged that sustainable design was used by many as a marketing tool though she hoped in the future it would be universally pursued for its own sake and, therefore, no longer considered a form of marketing. One other participant had a unique experience regarding sustainable-minded clients. Mindy spoke of a non-profit client that requested a LEED certified office space, not to use it to market themselves as green, but to prove that sustainable design can be done inexpensively. In a sense, this client's goal was to market sustainability through their office space, rather than market their organization by showing off their sustainable space.

Motivation Outliers

Two motivations within the ladders did not appear to easily fit with any of the emerging motivation themes. For instance Mindy expressed her perception that there is a gap between interior designers who pursue sustainability and those who do not and wanted to bridge the gap through her efforts to design sustainable projects. When organized into a hierarchical ladder, this terminated in the motivation, "Make Green the Standard." While several subjects expressed the hope or belief that sustainable strategies would eventually become the norm within interior design, only Mindy expressed as a motivation her intention to affect that change from within the industry.

The second of these two outlier responses was, "Help Neighbors". This was the terminal motivation in a ladder for Mike, who felt that sustainable interior design is better for the local economy, and therefore the people who live in his region. While several subjects expressed a preference for specifying local or regional materials due to their

perceived lower environmental impact, only Mike expressed his concern for specifically supporting the people who manufacture and install local materials.

Themes Concerning Participant Perceptions

Themes regarding the participants' motivations were coded into hierarchical ladders. However, remaining themes were instead organized into themes without the use of ladders, as hierarchical laddering is considered best suited for themes regarding motivation (Kaciak & Cullen, 2006). In addition to the motivation themes, several notable themes regarding experiences, perceptions, strategies, and hopes emerged from the both the interview data and survey data. All eleven participants had positive perceptions, some stronger than others, of their own abilities to make appropriate sustainable interior design decisions. Though each participant felt confident in his or her abilities to effectively practice sustainable interior design, there were several different explanations given to support this perception. Most participants' explanations for the perceived strong ability to practice sustainable design strategies were due to their education or training, while other participants perceived their work experience to be the reason for their confidence in practicing sustainable interior design. Additionally, most participants discussed their perceptions of colleagues, clients, and various sustainable design strategies.

Perceptions of Education

Seven participants mentioned that their first encounter with sustainable interior design was during their undergraduate interior design education, though only three had positive perceptions regarding the state of sustainable design in their own formal

educations. Ben stated in response to a question regarding his perception of the effectiveness of his education and training on his ability to practice sustainable interior design, "From a scholastic perspective, no; from an experience perspective, yes."

Formal Education Regarding Sustainability

The three youngest participants, Mike, Mindy, and Nina each had approximately one year of experience at the time of their interviews, having recently finished their interior design programs. Nina and Mindy attended the same small art college where they both took advantage of the option to pursue an emphasis in green design. As part of their green emphasis requirements they took courses specific to sustainable interior design that taught them, as Nina explained, "…philosophy of sustainability and green design." Additionally, their subsequent studio course work included sustainable strategies. Mike earned an associate degree in interior design after first studying architecture. He felt that his interior design program was "just starting to really put the information out there," regarding sustainability. While his design program did not have a separate class or emphasis in sustainability, he felt he had been encouraged to investigate green design solutions and implement them in his class projects. Mike perceived that the encouragement to pursue sustainable solutions in class projects combined with the perceived lack of formalized education on sustainability had prompted him to learn how to look into sustainable possibilities on his own, for which he acknowledged a need in his residential design practice.

One participant, Sue, first became exposed to sustainability during college not through her interior design major, but through her minor in construction management

which she perceived to be, "a little bit more progressive with sustainable design than the interior design department was." Sue, who finished school approximately five years prior to this study and who was working at an interdisciplinary firm focused primarily on educational and civic projects, felt that there was not a strong enough emphasis placed on sustainability within her interior design department at the time of her education. She expressed the hope that this had changed in the years since, but credited her education in construction management and travels during college for introducing her to sustainability and teaching her about the importance of making green decisions in her interior design projects.

May credited one of her design professors and a memorable assignment involving Buckminster Fuller's Geodesic Dome for her early exposure to sustainable interior design. Linda, an interior designer employed as a sustainability consultant at the time of her interview, credited an outside lecture given by an architect visiting from Norway with opening her eyes to simple design strategies that could be employed to increase a project's sustainability. Linda explained that the visiting lecturer had "…put it in a way that made it seem so obvious". Both Linda and May pursued sustainable strategies in their coursework and subsequent practice since their initial exposures to sustainable design, even though they did not perceive such effort to be an expectation of their instructors.

Continuing Education Regarding Sustainability

Nearly all of the participants held the perception that learning on the job had been helpful, with two participants, Tara and Bill, mentioning that they believed they had also

learned a great deal from their own mistakes. Five participants mentioned their perception that attending seminars and conferences had been valuable educational experiences. Linda specifically mentioned regular attendance at USGBC's annual GreenBuild conference as a helpful form of continuing education. Several participants stated that they had learned from other people, either on the job or while traveling to or learning about other countries.

The majority of the participants also stated their perception that studying for the LEED exams had been a positive educational opportunity. Mindy also felt that working on a LEED project had been a useful learning experience, expressing her perception of the value of being able to "actually see all of the credits in real time rather than just, like, studying and seeing the reference guide." The overall perception appeared to be that learning on the job, working with knowledgeable colleagues, participating in continuing education opportunities, and studying for LEED exams were effective means of becoming educated about sustainable interior design strategies.

Need for Critical Thinking and Individual Investigation

Several participants in this study discussed the need for interior designers to perform their own investigations into the sustainability of various strategies and products as well as suppliers' manufacturing practices and green claims. For example Tara stated that an important part of her on the job learning experience had been to identify which sustainable products to specify, as she perceived not all green products to be well developed or properly tested. Ann and Bill also mentioned the need to learn which sustainable products to use as they, too, had encountered materials and finishes that were

marketed as green but were not durable or long-lasting. Ann explained of some products that had been marketed as sustainable, "They hadn't perfected the mix yet," and such products, "didn't last." And Bill explained that if interior designers, "don't do the background research," they could "actually be doing more harm than good."

While five participants felt they had learned about sustainable interior design from manufacturers and representatives, the remaining participants stated a need for interior designers to do their own research on products and manufacturers. Beth, an experienced designer who was working part time as a consultant while weighing her employment options against the possibility of starting her own business full time, also expressed the need to learn about products on her own. She believed that designers could not take manufacturers' claims of sustainability at face value as one manufacturer would claim that they were green while their competitors were not, while those same competitors would claim to be the greenest. Beth stated that, "There's a lot of misleading information out there."

Bill also perceived that a knowledge of product origins is important to interior designers, specifically noting that products from some foreign countries may be more or less sustainable than similar products from other foreign countries and some manufacturers may offer both sustainable and unsustainable products while promoting all of their products as green. Beth summarized her perception of the importance of individual investigations into products and materials by stating that interior designers need to "weed out or filter" manufacturers' claims in order to learn the truth.

Bill also related a story that, for him, best captured his reasons for taking time to investigate manufacturers thoroughly. As part of his attempt to select sustainable interior finishes for a law firm, Bill had chosen glass from a Chicago glass provider that he knew to be an organizational member of the USGBC. He therefore assumed this glass provider would offer only sustainable products and processes. It was only after installation that Bill discovered the glass had been manufactured in Denver, shipped to Chicago, Illinois for etching, and then shipped back to the Denver job site. He was disappointed at the higher than expected amount of embodied energy the glass represented and determined to question manufacturers' claims of sustainability in future projects. Bill admitted that, "If I'd known that to begin with, I probably would've changed my design strategy."

Need for Client Education

Linda stated her perception that educating clients about sustainability was part of an interior designer's responsibilities. She believed that an interior designer should remain open-minded to client concerns and learn how to address clients' financial hesitancy in a manner relevant to the client. Linda's perception of clients was that they were interested in saving money. Therefore informing clients of how sustainable design would ultimately help their cost savings efforts could often convince such clients to build green. She stated, "If you can show them how sustainable design will save them money, they'll be more on board."

Bill also perceived client education to be an important part of his job as an interior designer, stating, "We have to teach our clients why it's important." Mike mentioned having had positive experiences with client education and felt that, among his residential

clients, "…a lot of baby boomers are just really receptive to the information." Sue had found success in convincing clients to pursue sustainable design strategies by explaining that such strategies could result in lower maintenance and energy costs. However, she also stated her perception that educating clients is one of the most difficult aspects of pursuing sustainable interior design solutions.

Nina related her perception that clients would often decide to spend more to have a sustainable project if the designer explained to the client that a sustainable environment could increase employee productivity. She also mentioned that, once she had taken time to explain the benefits of sustainable choices to many of her clients, "they really get into it." Tara also believed that her clients were generally willing to learn about any strategies, including those that are sustainable, that would improve their employees' health and productivity. Ben felt that, while not every client implemented his suggested sustainable solutions, most were open to learning about them, especially those clients who wanted to promote employee productivity and quality of life.

Experiences with client education varied among the participants in this study. However, most participants noted that client financial concerns were still an important issue, either as a deterrent to the pursuit of sustainable strategies, or as a means of convincing clients concerned with ROI to pursue sustainable interior design solutions. For example, Nina perceived financial concerns to be the cause of most of her clients' hesitation for pursuing sustainability. She explained that, in trying to educate clients, "You can't necessarily try to tell them it's the right thing to do, because they might not believe in it," but that explaining that sustainability is the most economic choice can be an effective argument. Nearly all of the participants had spent some of their time

educating clients on the financial benefits of sustainable interior design strategies, and most felt that this was worth the time as it often encouraged hesitant clients to implement sustainable design strategies.

Nearly all of the participants felt that educating clients on the benefits of sustainable interior design often resulted in increased willingness on the clients' part to pursue sustainable design strategies. The majority of participants mentioned the perception that public awareness about sustainable interior design strategies has increased, or will increase in the future, the market trend toward sustainable interior design. Four participants mentioned the perception that explaining the higher return on investment (ROI) of sustainable design strategies versus unsustainable strategies can encourage clients to pursue sustainable designs. As Sue stated, "You have to help them understand it's… the smart choice, economically."

Public Awareness

There appears to be general agreement among the participants in this study that clients who had been educated regarding the various environmental and economical benefits of sustainable interior design strategies were more likely to implement sustainable strategies. However several participants also mentioned aspects of public awareness. For instance, May concluded her interview by stating the need among interior designers, "We have to educate the general public" on matters of sustainability in order to ensure that new interior design students would be passionate about sustainable design. Sue believed that her clients seemed to be getting savvier about the environment and therefore more open to hearing about sustainable design strategies. Ann noted that her

clients in higher education were becoming more willing to pursue sustainable interior design strategies because college students were becoming more environmentally aware. Ann believed that growing public awareness among incoming college students had pressured some of her clients in higher education to, "…do what the students believe in." Linda also saw a growth in consumer education in sustainability and perceived end-user and customer awareness to be a driver in the increased willingness among her clients to pursue sustainable design strategies. Ben and Bill believed that one reason they were seeing a growth in the popularity of sustainable design among their clients is the fact that more corporations were beginning to understand that the ability to claim they were sustainable was a marketing opportunity in a society increasingly aware of environmental concerns. Bill called sustainable interior design, "an appropriate marketing strategy" for clients whose customers and employees were environmentally aware.

Nina believed that the market's awareness of the importance of sustainable built environments had not yet become saturated, but that it was "getting there." Unlike May, who complained of Home and Garden Television's (HGTV) "star power", Nina felt that the media had a positive influence on environmental awareness among the general public. However Nina did express concern regarding her perception that the growing acceptance she saw for sustainable interior design may have a geographic component, explaining, "I don't know if it's just Colorado." Mike echoed this in his remarks that he hadn't been exposed to sustainability until after he moved to Denver and that he had not noticed very much sustainability when he was on the East Coast. Bill also noted that the majority of his exposure to sustainable interior design had happened only after he moved to Denver.

Not all of the participants in this study felt that public awareness was driving clients toward increased implementation of sustainable design at the time of their interviews, however. May, for example, perceived the media, especially HGTV, to have a negative influence on public perceptions of sustainable interior design. She felt that HGTV promoted the idea that designers simply "paint and redecorate" without taking time to explain what a good sustainable built environment really was, nor what good sustainable interior design strategies really were.

Several participants felt that, beyond just the misunderstanding of what sustainable design was among the public, there were also several negative stereotypes that may have been hindering widespread adoption of sustainability. Mindy felt clients needed to understand that there were economic as well as environmental benefits to sustainable interior design so that they would realize sustainability was not an environmental movement meant to "ruin everyone." She also stated, "Being stereotyped is definitely a disadvantage." Sue mentioned what she perceived to be the negative public perception that sustainable design was for tree huggers and consisted primarily of "…building stuff with hay." Beth perceived that, until recently, most sustainable finishes were considered too "neutral and earthy" for many of her clients. Mindy related her concern over negative public perceptions of sustainability when she explained that she had been called a hippy while promoting sustainable interior design solutions. This may not be perceived as a negative stereotype among only clients and the public. When asked if he believed sustainability to be an important issue to him personally, Bill defended his environmental efforts by stating, "I'm not a hippy, but still, it's still pretty important."

In general, the majority of participants perceived a positive growth in public awareness regarding sustainability. Each of these participants also shared the perception that a growing awareness among the public could drive, or already was driving, more clients to implement sustainable design strategies. However, many participants also perceived negative opinions or misconceptions of sustainability among the public, which they believed had prevented some clients from pursuing sustainable goals.

Perceptions of Experience

Four of the participants in this sample had their first exposure to sustainable interior design when a client inquired about sustainability. Nine participants indicated that the pursuit of sustainable interior design is usually or always self-driven. However a majority of participants perceived their pursuit of sustainable design strategies to be often or usually client-driven.

All eleven participants agreed that sustainability is important to them personally. Nearly all of the participants mentioned aspects of personal responsibility toward the environment during their interviews. Each participant expressed a preference for sustainable interior design strategies, and several indicated that they had, at some point in the past, begun to practice only sustainable design. As May stated regarding sustainable interior design, "It's my focus. It's the only way I practice design now." Two participants stated that they had chosen their current employer because of they felt it was a company that encouraged their pursuit of sustainable interior design strategies. For instance, Sue's perception was that sustainability was "at the heart and root" of her

employer's mission. Several others expressed the belief that they would make future career decisions based on their personal sustainability goals.

Supportive Colleagues

Bill and Ben described their employers as being very supportive of their efforts to learn about and pursue sustainable design. Both felt that this was due, in part, to being employed in organizational cultures that encouraged employee growth and continuing education. Ben believed that his organizational culture took pride in, "knowing what's out there and being able to have resources," regarding sustainability. He also stated his perception that his employer was "very encouraging about, you know, continuing education." Bill added that he believed sustainability had become a part of his employer's marketing strategy. Bill's perception was that, among his coworkers, the belief that all projects should be sustainable, "that's the feeling of eighty-five percent of the firm." Nina, Sue, and Tara also expressed a high perceived level of support from coworkers for their pursuits of sustainable interior design. Linda felt that, while her previous work experiences had been less positive, her current employer's culture was generally supportive of her sustainable goals.

Neither Mike nor Ann commented extensively on the influence of their colleagues. As small business owners, both likely had greater control over their organizational culture than other participants. However, Ann did state her perception that among her colleagues, "I think sustainable design is highly supported." At the time of their interviews, Beth, Mindy, and May worked as independent consultants. However, unlike Mike and Ann each had several comments regarding their perceptions of their colleagues. Beth who had just over a decade of experience in interior design and had

only recently begun to work as a consultant, stated her perception that her "colleagues believe in, you know, sustainable design." While they did not have coworkers to discuss, each felt that their project team members were generally supportive of their efforts to practice sustainable interior design. May, who worked as an independent consultant at the time of her interview, stated that her professional community through her involvement with the USGBC gave her the opportunity to speak with and learn from a wide range of supportive design professionals. Mindy expressed her perception that her professional acquaintances may have been supportive of her in part because she was new to the discipline of interior design, having graduated from college approximately one year prior to her interview.

The majority of participants perceived their colleagues to be generally supportive of sustainable design strategies and several participants expressed their perception that their colleagues encouraged their pursuit of sustainability. In addition to co-workers and industry peers, five participants mentioned a high level of perceived encouragement and support from employers, specifically. For instance, when discussing her perceived level of support for sustainability from her employer, Sue stated, "The sky's the limit." Overall, most participants expressed the perception that interior designers are generally supportive of sustainable interior design strategies.

Unsupportive Colleagues

Colleagues were generally cast in a positive light in this study. Only one participant did not indicate having the perception that her colleagues had been supportive of her in her pursuit of sustainable strategies. Linda held the perception that her former

employers had an "old school" attitude toward the environment and had actively discouraged her pursuit of sustainable interior design strategies. A few participants expressed frustration regarding contractors who were unsupportive of sustainability. One participant, Mindy, expressed her perception of a gap between interior designers who pursue sustainable design strategies and interior designers who do not, stating, "Bridging that gap has been really hard."

Linda's experience was notable for being by far the most negative regarding her perception of her colleagues' lack of support for sustainable interior design. She described former coworkers and supervisors as being discouraging and unsupportive of sustainable design strategies. Linda stated that she had found working for people who did not want her to discuss sustainable options with clients who did not specifically ask for them, "extremely frustrating." She felt that her former supervisors actively discouraged her from offering sustainable design services when clients did not broach the subject first. Linda felt this approach was backwards. She believed that it was an interior designer's responsibility to inform clients of available sustainable design solutions because clients had various other areas of professional experience and therefore could not be expected to be knowledgeable about sustainable interior design on their own.

Ben also expressed frustration with colleagues who did not support sustainable design goals. However, unlike Linda, his frustration was with contractors who had what he called a "good old boy mentality" rather than coworkers. Ben had worked with contractors who actively complained about learning new techniques and who expressed their disagreement regarding the importance of sustainability. Beth implied negative experiences with contractors as well when she stated that her sustainable materials

selections were often value-engineered out of projects. Tara did not express frustration with contractors, but did state her perception that, "There's a lot we have to do to educate our contractors," regarding sustainability in order to ensure a sustainable project's success.

Mindy expressed an opinion that was unique among this sample of participants. She felt that it was several practicing interior designers and fellow students who had been unsupportive of her interest in sustainable interior design. Unlike Linda, who had dealt with discouraging coworkers and employers, or Ben and Beth, who perceived hesitancy among contractors, Mindy's perception was that she had experienced a lack of support from peers and role models while in school. Mindy perceived a gap between interior designers who believed in sustainability and those who did not. She stated that, while it was not her intention to "throw anyone under the bus," she felt that her questions at student ASID meetings regarding sustainability initiatives were met with general disinterest and expressed her perception that the interior designers she knew in that organization would rather encourage her leave them for the USGBC than continue hearing from her regarding the issue of sustainable interior design.

Overall, most of the participants in this study felt that most individuals with whom they worked at the time of this study were generally supportive of sustainable interior design solutions. However, several expressed a perceived lack of support, either in the past or at the time of the interview, from specific colleagues. In general, the participants hoped to see sustainability grow in popularity among their peers and related industry professionals.

Sustainable Interior Design Strategies

Almost all of the eleven participants mentioned that one of their typical approaches to the pursuit of sustainable interior environments was the specification of green materials, products, and finishes. While not all participants clearly identified what they perceived a green material to be, several did take steps toward defining their idea of a sustainable product.

Sue specified natural products when she could and tried to choose materials that had recycled content or that could be recycled when no longer in use. Sue and Ann tried to include low-VOC products where appropriate. Bill specifically mentioned the choice of Forest Stewardship Council (FSC) certified wood and stated his perception that non-certified wood and veneers should not be specified because, "…you have no idea where that veneer is coming from." Ann and Tara believed that in order to be sustainable, a product must be durable and of high quality. They both expressed the perception that, even if a product is manufactured sustainably or contains natural or ecologically responsible content, it is not truly sustainable if it wears out and ends up in a landfill a few years after installation. Ann also expressed her perception that initial sustainable product offerings had not been well-made or properly tested but, "they're getting better."

Tara, Mindy, Bill, Linda, and Mike indicated a preference for not only green materials, but local or regional materials as well. Linda described the choice of local materials as her "own internal reference" for specification. Linda also believed materials should be chosen not just on the basis of how sustainable they were in and of themselves, but also by how much or little waste would be generated by their use during construction.

Several participants also discussed design solutions that went beyond finish and materials selections. For instance, Sue perceived that her knowledge of LEED guidelines had helped her to consider how her designs would affect the overall building design as well as allowed her to incorporate an understanding of HVAC and other building systems into her design solutions. May, Mike, and Mindy also discussed a whole-building or integrated team approach in terms of designing for energy efficiency and sustainable building envelope. Mindy expressed her perception that commissioning was an important design step, as it enabled the design team to ensure, "that all of the systems are working properly." Linda believed that thoughtful space planning was imperative to the success of a sustainable project. Nina tried to specify the most energy efficient appliances and lighting fixtures possible. Mike also considered energy efficiency in his projects. And Ben had designed for water efficiency as well as energy efficiency.

Daylighting concerns were mentioned by several participants, including Ben, Sue, Nina, and Mindy. Ben had pursued passive cooling as well as the inclusion of "light shelves to bring the light into the space." He, Linda, and Ann also discussed the re-use and recycling of materials removed during demolition on remodeling projects. Linda stated her preference for "reusing as many interior walls as possible." Ann discussed her concern for "how we throw away trash, how we recycle metals, everything on the jobsite."

In addition to reuse, recycling, material, and product choices, five participants mentioned the importance of ensuring good indoor environmental or indoor air quality. For instance, several participants specifically mentioned the importance of limiting VOCs within their interior design projects. As Ann stated, "We just asked a client yesterday if

they wanted to spec, you know, VOC free paints." VOCs were of concern to several of the other participants as well. Sue discussed her preference for low-VOC paints. May believed she should ensure, "…that indoor environmental quality is designed in such a way that it supports human health." Ben expressed his perception that finding low-VOC products was "getting easier." And Tara had experienced poor jobsite conditions where, "…volatile organic compounds come out and… give you a terrible headache."

The majority of participants stated that they used sustainable design strategies every day. Several subjects used sustainable strategies in most of their projects, while others pursued sustainability whenever possible, often depending on the client. When faced with clients who do not share their goals, two participants indicated they still would pursue sustainability in that client's project as far as they felt possible. Other than one participant indicating having come close to losing a client in by pushing them too hard toward sustainable strategies, no negative aspects of using sustainable design strategies in their jobs were discussed by participants. While a few participants described their experiences with sustainable interior design strategies to be frustrating, most participants felt that their overall experiences had been positive, with Ben stating his perception that it had been, "…interesting to learn about the different ways to help."

Perceived Barriers to Sustainable Design

Nearly all of the participants in this study expressed negative perceptions and experiences with one or more aspects of sustainable interior design. Most of the negativity was directed at other individuals, such as clients and product representatives. Nina felt that her experience with sustainable interior design had been difficult, "because

the client, they care about money." Ben, Tara, and Ann also had negative perceptions regarding LEED and/or the USGBC, specifically in terms of the costs associated with accreditation and/or certification. All but one participant, May, expressed their perception that money is still an issue for clients who do not pursue sustainability for the sake of sustainability.

Four participants expressed their frustration with others at least once during their interviews. Over half of the participants believed that clients' hesitation to pursue sustainable strategies inhibited their ability to design sustainable interiors. An equal number of participants perceived contractors as often standing in the way of the implementation of green design, with Beth specifically blaming contractors' value-engineering efforts for prohibiting her from implementing some sustainable solutions. Four participants believe that educating others on the benefits of sustainability was too time consuming. While each participant expressed a personal willingness to pursue sustainable design strategy, most participants also shared the perception that other people have at times prevented them from achieving sustainable design goals.

In addition to clients, colleagues, and contractors, manufacturers and their representatives were perceived to be sometimes standing in the way of sustainability. Four participants expressed the perception that manufacturers and representatives still participate in greenwashing, which can be defined as the spread of misleading information regarding a company or product's negative environmental impact (Whitemyer, 2008B). Bill stated his perception that manufacturers' statements about product sustainability represent a "biased perspective that may or may not be legitimate." Tara also expressed her perception that manufacturer claims cannot be trusted by

explaining, "I have manufacturers who come in, 'Oh, this is green,' you know, and then to find out that it's, like, one percent of something that they did the right way but the other ninety-nine percent they're still dumping things down the river."

A majority of the participants also expressed the perception that there are still not enough appropriate, durable, well-tested sustainable materials and finishes available. The perceptions of industry peers and clients regarding sustainability were also mentioned by several participants as a deterrent to clients' willingness to pursue sustainable design. Four participants felt it was the "newness" of sustainable interiors and three felt it was the persistence of negative stereotypes, such as the perception that many people view sustainable design as belonging only to tree-huggers and hippies.

Overall, most participants perceived financial concerns and lack of public or client awareness of the environment or misunderstanding of sustainable design strategies to have a negative impact on their ability to pursue sustainable interior design strategies. However several participants also perceived manufacturers and colleagues as barriers to their sustainable interior design efforts.

Perceptions of Organizations, Certifications and Accreditations

Participants were not asked to relate their perceptions of either the organization itself or the LEED certification and accreditation processes, however most participants in this study discussed their perceptions of LEED and the USGBC. The findings in this study relating to participants perceptions of the USGBC and LEED are mixed. Several participants expressed the belief that learning about LEED had helped them to become more aware of sustainable design strategies and that the USGBC offered an opportunity

to be involved with a community of like-minded professionals. Other participants stated their belief that the LEED certification is too expensive for many clients and the accreditation process had become too expensive for many professionals. While a few participants expressed their perception that the USGBC had been effective at marketing sustainability, others expressed a suspicion that the organization had become too involved in making a profit.

Positive Perceptions

Most participants who had passed, or were studying in preparation for, a LEED accreditation exam expressed the perception that gaining knowledge of LEED guidelines was, in itself, an effective means of becoming more educated about sustainable design strategies. This opinion was wide-spread among the participants in this study. The majority of the participants agreed that learning about LEED had helped to expand their knowledge about sustainability, even among those who expressed hesitation toward the idea of convincing clients to pursue LEED certification. Sue explained that, because the sustainability movement was just beginning while she was an interior design student, she had "jumped on board" any educational opportunities she could find, including learning about LEED. May and Tara also credited the USGBC's educational opportunities such as CEUs, seminars, and workshops for some of their knowledge of sustainable interior design. While she did not mention the education she pursued while preparing to take LEED exams, Linda included seminars and repeated attendance at USGBC's annual GreenBuild conference in her discussion of her educational background in sustainable design. When asked if he had received any education regarding sustainable design strategies, Ben, who had been in practice for almost fifteen years, simply replied he had

because. “I’m LEED accredited.” Nina, who had passed the LEED GA exam but not yet taken an accreditation exam, also expressed her perception that the self-directed studying required of the LEED exams to be helpful sustainable design education. “I studied for months and months on that,” Nina explained, “so I guess that’s kind of self-education.” Mindy, a LEED AP also held the perception that her preparation for the LEED exam helped her to learn about sustainable design. She also felt that the documentation process required to have a project LEED certified was, in itself, a useful learning experience.

Sue added the fact that many of her projects sought government or grant funding that was dependent on the project’s ability to reach a certain level of LEED certification. Some of her educational clients, she explained, received a grant and, “That grant is based on… having to reach a certain LEED level or some type of sustainable design application.” Linda and Ann also expressed their perception that sustainable interior design strategies, including LEED certification, were becoming requirements on government buildings and other publicly funded projects. Ann stated that, among her clients, “Even the people that aren’t getting LEED certified because of the expense… want the projects done per the standards.”

Linda and Mindy both expressed the perception that, for individual interior designers, being able to quantify ones sustainable knowledge, such as by becoming LEED accredited, was becoming more important in the challenging job market. Linda perceived that sustainability was becoming important enough in the industry as to force interior designers to either, “be LEED AP or have the willingness to become LEED AP,” in order to compete. Mindy perceived that, in the challenging job market, “I think maybe sustainable interior design could help elevate somebody and help them get a job.” Both

Mindy and May, independent consultants, also credited their involvement with the USGBC for helping them not only to learn about sustainable interior design, but also to build and maintain a network of supportive colleagues.

In general, almost all of the participants had some positive perceptions of LEED and the USGBC. May, for instance, stated, "…it's amazing how much of a community that is," when describing the USGBC. Most participants felt that this organization and the rating systems and accreditation exams had helped them become more educated regarding sustainable interior design strategies. Additionally, several participants believed that LEED certifications could be an effective means of convincing clients who were concerned with marketing and public relations to build green projects. Overall, many of the participants expressed having one or more positive perceptions of the USGBC and/or LEED.

Negative Perceptions

While the participants appeared to generally agree that pursuing LEED accreditation or project certification could be effective as both a learning opportunity and marketing strategy for designers and clients, several participants also expressed having negative perceptions of LEED and the USGBC. Participants were not asked any questions that alluded to or mentioned LEED or the USGBC by name. Therefore these findings were considered both surprising and noteworthy.

Several participants discussed their perceptions that the LEED certification process had, at times, been a deterrent to clients who might otherwise have considered sustainable design. For instance, Ben expressed his concern that the cost of LEED

certification had scared off clients who equated all sustainable design with LEED, LEED with added expense, and therefore sustainable design with added expense. When asked to describe the disadvantages he perceives in sustainable design, Ben stated, "The USGBC, the accreditation process is expensive. I think that's probably the biggest disadvantage." He also stated his perception that he and his environmentally conscious clients did not need a LEED plaque, because they were implementing sustainable designs anyway. Ben believed that, among his environmentally responsible clients who ask for them, sustainable design strategies are part of, "…how they treat their employees, so they're not looking for the plaque." Bill and Tara, who both stated that their employer's culture encouraged sustainability within all projects regardless of certification, also mentioned LEED certification as an additional client expense.

Ben stated his belief that more clients would pursue certification and more professionals would pursue accreditation if the processes for both were less expensive and less complicated. This opinion was shared by Ann who stated, "I think more companies would get involved and do it if there was a way that, you know, that it was easier to document." Ben predicted that if LEED continues to be as expensive as it was at the time of his interview, the USGBC would eventually lose their place as the leaders of the environmentally responsible building design movement.

Tara stated her hope that LEED would cease to exist entirely in the eventuality that sustainable interior design becomes standard practice throughout the industry. One of Tara's frustrations with LEED was in regards to manufacturers' practice of creating products and materials that are designed to earn LEED points. Her perception was that many of these materials were less sustainable than comparable materials that had not

achieved a LEED specific approval and that specifying products just to gain LEED points was misguided and potentially counterproductive. Ann expressed the same argument against LEED when she stated that interior designers who specified products based solely on LEED's point system guidelines were "defeating the purpose."

Tara had possibly the harshest criticism of the LEED certification and accreditation processes when she referred to the non-profit USGBC as "a money-making organization." Both Ann and Tara were among the four subjects who most strongly expressed their sense of obligation and willingness to make personal sacrifices in order to protect the environment in their own lives as well as through interior design strategies. They were also two of the most experienced interior designers among these participants and both stated that they pursued sustainable design strategies every day, for every project. For these reasons, it is notable that both were critical of the USGBC, neither was LEED accredited and neither expressed a willingness to convince hesitant clients to pursue LEED certification.

Perceptions of the Future of Sustainable Interior Design Practices

When questioned on their perceptions and expectations regarding the future of sustainability within interior design, each of the eleven participants expressed the perception that the movement toward environmentally responsible built environments would continue to grow. Beyond that statement, most of the participants expressed several additional hopes and predictions for the future of the practice of sustainable interior design.

Sue perceived client enthusiasm for sustainable interior design solutions to be a growing marketing trend and hoped that, as more clients begin to understand the benefits of sustainability and as more sustainable products become available, more clients would push interior designers to pursue sustainable solutions for their built environments. She noted her perception that approximately ten years prior to this study, sustainability was not widely considered or discussed in interior design. It was Sue's perception that, as a discipline, interior design has lagged other design professions due to what she referred to as the "pomp and circumstance" of interior design. However, Sue hoped to see the profession of interior design lead the way toward improved sustainability in the future by "pushing the envelope".

May was glad to know that CIDA had formally adopted sustainable design education requirements for accredited interior design programs. She believed that increased public awareness of what true sustainable design is, compared with the false perception perpetuated by HGTV, would result in interior design students who were passionate about sustainability.

Ben had noticed the current adoption of sustainable guidelines by building departments and building codes. He considered sustainable design solutions as the right thing for interior designers to do, and believed sustainability was "definitely not going anywhere." Ben believed that sustainable design will eventually be a part of what every interior designer does and predicted that an as of yet unknown organization with lower costs and fewer complications would one day replace the USGBC as the market leader.

Tara believed that sustainability would fade as a marketing tool in the future, as it was her perception that sustainability would become more widespread and important. She hoped that one day there will no longer be a LEED certification process, because all designers would begin to pursue sustainable strategies in all of their projects. Tara perceived that there were "many ways to be sustainable" and that eventually one should be able to notice the corporations that believe in sustainability "the minute you walk in the door," without the need for plaques.

Like Sue, Ann had perceived a marked difference in sustainability within interior design in the last ten years. For Ann, the perceived difference was in the wider availability of quality sustainable products and finishes. She expressed the hope that this trend would continue. Ann also believed that the growing public awareness of environmental sustainability would continue to push more clients to pursue sustainable goals

Nina, who had only recently begun her interior design career at the time of this study, hoped to one day work for a firm specializing in sustainable design and stated that she would prefer to stop practicing interior design should it prove impossible to do so in a sustainable manner. However, Nina also believed that sustainability would become more important to the interior design profession in the future and that eventually the market would become saturated by sustainable design. She stated her hope that once products and techniques become more widely available and once clients become more educated, it would be easier to practice sustainable design strategies.

Mindy felt that practicing sustainable interior design strategies was one way in which an interior designer could stay on the cutting edge. She believed that, especially in the current economy, many people consider interior design to be a luxury. However she was hopeful that conditions would change. Mindy predicted that knowledge of sustainable interior design would help market those interior designers ahead of traditional interior designers when the recession ends.

Mike hoped to see sustainable design as the standard one day. Unlike Ben, he perceived permitting and building departments to be a deterrent to sustainable design. However, Mike also believed that once the public begins to understand the benefits of it, sustainable design would become the only method for designing houses.

Beth hoped to see sustainable interior design "make the world a better place." For her this would include less waste, resulting in smaller landfills. Beth also hoped to see more manufacturers offering more and better products. She hoped for more recycling and more recycled content in products in the future. Beth wanted the acceptance of sustainable design to grow to the point that everyone would pursue sustainability, regardless of costs, and that the industry and the public would come to regard sustainable design as the responsible thing to do.

Bill predicted that within five years no one would use the term "sustainable design" because everyone would be be pursuing sustainable goals and that, in ten years, sustainable interior design strategies would have become standard. Unlike Sue, Bill perceived architecture and interior design to be leading other industries in the

environmental sustainability movement. Like Beth, Bill hoped that the sustainable interior design practices would eventually result in less waste and smaller landfills.

Linda perceived the entire industry to be growing toward sustainability. She believed that current and future interior design students would be educated regarding sustainable interior design and that experienced professionals who prefer traditional interior design would not be able to "de-educate them" after they entered the profession. Linda was hopeful that the emergence of new design professionals, along with the retirement of older interior designers, would move the discipline toward sustainability. Linda also perceived more client interest in sustainability and believed that, especially in terms of government projects which typically demand sustainable design solutions, this trend would continue.

Summary

The participants in this study expressed a wide range of experiences, perceptions, motivations, and opinions. While there were a few outlying responses, such as the motivation to help ones neighbors through the implementation of sustainable interior design practices or the perception that colleagues stand in the way of sustainability, there was, overall, a great deal of consensus among the responses. For instance, all of the participants believe that sustainability is important and that sustainable interior design will continue to grow in the future. While the educational experiences varied among the participants, each participant perceived education, either formal or on the job, to be an important factor in their ability to practice sustainable interior design strategies. Additionally, all of the participants perceived their own ability to effectively pursue

sustainability to be strong. Different strategies were discussed by the participants, though most mentioned that they had usually tried to specify materials, products, and finishes they perceived to be sustainable. And while the level of personal commitment to protecting the environment appeared to vary among the participants almost every participant mentioned some aspect of personal responsibility during their interview.

All of the participants were asked to describe their thoughts on the future of sustainability within interior design. Many believed that sustainability would continue to grow, or become "part of our practice." Most participants also mentioned their perceptions of the direction of sustainability within interior design or their hopes for the future of sustainability in response to several previous questions as well. The majority of participants held the perception that sustainable interior design strategies would become more prevalent within the industry in the future. Four participants expressed the hope that it would one day become standard practice. None of the participants in this sample considered sustainability to be a fad or something that would one day become less common than it is now.

In general, there was a great deal of agreement among the participants on many topics, despite the differences in their experiences. There were many common perceptions and motivations, which resulted in the emergence of several themes such as improved health among building occupants, the protection of the environment, and the pursuit of personal and client goals.

DISCUSSION

Various themes that emerged from this study support the existing body of knowledge. In many ways the findings from this study appear to validate findings and themes within the existing literature. However, there are also findings that offer contradictions to the existing research and/or represent research that has not been found. All themes will be discussed in this chapter. In addition, after the conclusion, several future areas of research will be discussed.

Motivation Theme 1: Health Concerns

There is existing research that suggests concern for occupant health is the primary reason many interior designers choose to practice sustainable strategies (e.g. Nussbaumer, 2004). The majority of the participants in this study discussed their concerns for occupant health during their interviews. The concepts of happiness and/or quality of life were also discussed by several of the participants. Their concerns included the importance of indoor environmental quality that can impact the health of a built environment (e.g. U. S. Environmental Protection Agency, 1997, p. 4-5). Health does appear to be of significant concern to interior designers who pursue sustainability, according to the findings in this study. The majority of the participants in this study mentioned "health" directly at some point during their interviews, indicating that health may indeed be one of the major concerns for interior designers who pursue sustainability. Of those participants who did not specifically mention health, half discussed the importance of providing good indoor air quality, which is considered an aspect of healthy

built environments (e.g. Nussbaumer, 2004). The fact that the majority of participants in this study perceived health to be an important motivation for pursuing sustainable interior design strategies is consistent with existing research concluding that interior designers can have a direct impact on the built environment's ability to increase or decrease occupant health (e.g. U. S. Environmental Protection Agency, 1997, p. 4-5).

Overall, the findings in this study are consistent with previous research indicating that health is an important motivation for designers who implement sustainable design strategies in their projects (e.g. Nussbaumer, 2004). Almost every participant in this study expressed the perception that the health of their end-users is an important concern, and most participants were motivated to provide healthy environments.

Motivation Theme 2: Planet

There is existing research to suggest that interior designers who practice sustainable design strategies do so because they believe it will allow them to make a positive difference (Barber-Estores, 2010). Responses from each of the participants in this study seem to support this suggestion. For instance, one participant stated that she believed sustainability to be the direction that "design needs to go." Another participant expressed the hope that there will be more sustainability in interior design and a third mentioned a desire to provide for her clients a means for "sustainable living." Consistent with existing research, each of these participants discussed their own environmental goals, usually in the context of their perceived ability to conserve energy or resources.

Motivation Theme 3: Personal Goals

Personal Responsibility

Another theme in the existing literature is that of personal responsibility. There is research suggesting that interior designers who practice sustainable strategies may do so out of a sense of moral obligation or because they believe doing so enables them to have a positive impact on their world (e.g. Kang & Guerin, 2009A). Some researchers have suggested that designers may pursue sustainable design strategies out of their own, personal belief in the importance of protecting the natural environment (e.g. Barber-Estores, 2010; Steig, 2006). Each of the participants in this sample made at least one statement alluding to a sense of responsibility toward practicing sustainable interior design solutions. All of the participants in this study stated that sustainability was an important issue to them. And the majority of participants discussed aspects of their opinions and experiences that either implied or directly expressed their personal sense of moral obligation to protect the environment.

Also, it has been suggested that interior designers who possess an internal locus of control may be more likely than others to pursue sustainable strategies in their design projects (Barber-Estores, 2010). This suggestion is supported by this study. In addition to expressing a sense of personal responsibility for practicing sustainable interior design solutions, several participants in this study expressed a willingness to practice sustainability whether or not clients and coworkers supported their efforts to do so. Several participants expressed their intentions to provide clients with sustainable solutions, even if the client had stated that they do not want sustainable solutions. Four

of the eleven participants also stated an unwillingness to work for employers whom they perceived to be discouraging and unsupportive regarding sustainable interior design. Two of these participants claimed that they would prefer not to continue practicing interior design if they could not continue practicing it in a sustainable manner, and had already left interior design practice to become a sustainability consultant to interior designers and related professionals. The findings from this study suggest that interior designers who actively pursue sustainable interior design strategies do so primarily of their own volition, while also engaging in education and on the job learning as part of their goal of providing clients with what several termed "smart" design. Additionally, as the four participants who would refuse to work for a firm they felt did not support their sustainable goals were also the four youngest participants, it seems reasonable to posit that such unsupportive design firms may find themselves unable to attract and retain talented young designers in the future.

Overall, the participants in this study held the perception that the practice of sustainable interior design strategies would lead to a better future for the planet. Participants in this study took initiative for pursuing sustainable design strategies on their own because they felt a responsibility to do so, often without the direction of clients or colleagues. This is consistent with research indicating interior designers often practice sustainable design strategies because of their personal ethics (e.g. Kang & Guerin, 2009A).

Motivation Theme 4: Client Goals

There is evidence in the existing literature to suggest that some interior designers may pursue sustainable design solutions because their clients request it (e.g. Kang & Guerin, 2009A). The findings of this study suggest that client-driven sustainability goals could work as a catalyst in traditional interior designers' growth toward becoming sustainable interior designers. Most participants expressed concern for their clients' goals during their interviews and discussed their motivations for pursuing sustainable design strategies in order to achieve various client goals, independently of their motivations for pursuing their personal goals. The suggestion that client concerns may drive some interior designers toward sustainable interior design is supported by the findings of this study.

In addition to client-driven sustainable design, there are other client-related concerns regarding sustainable interior design strategies. For instance, all eleven participants in this study mentioned clients' budget concerns as a challenge or deterrent to their ability to implement sustainable interior design strategies. Tara acknowledged the perception that sustainable design could be more expensive, but perceived that, "…if you're really going to make a true commitment to the environment, you have to start somewhere." And several participants expressed their perception that sustainable design solutions often represent higher costs. While there is research to support the widespread perception that the implementation of sustainable design is more expensive than that of traditional design (e.g. U.S. Green Building Council, 2002, p. 16), there is also evidence suggesting that sustainable design can be implemented less expensively than traditional design (e.g. McDonald, 2005).

Existing research also suggests that client financial concerns can be a determining factor in the decision whether or not to build sustainable environments (e.g. Shiers, Rapson, Roberts, & Keeping, 2006). All but one participant in this study mentioned client financial concerns as a challenge to their goals to design sustainable projects. The only participant who did not mention the negative impact of sustainable design decisions on construction costs was a self-employed interior designer who accepted only clients who are pursuing sustainable design. Research suggesting that budget concerns can inhibit the growth of sustainable design is supported by the findings of this study.

However several participants noted that some of their clients pursued sustainable design because of the long-term financial benefits of doing so. Several participants discussed clients who understood the energy savings involved with sustainable interior design solutions. Several participants also expressed their perception that sustainably designed interior environments that support occupant health could also improve occupant productivity. This is consistent with existing research on the topic of the sustainable built environment's impact on worker productivity (e.g. Miller, Pogue, Gough & Davis, 2009). Even among participants who had not had experience with clients who wanted to pursue sustainable interior design due to their own knowledge of the benefits, many expressed that they had achieved at least some success in convincing hesitant clients to agree to sustainable design strategies by educating those clients on the potential return on investment. This is in keeping with the extensive existing research proving the cost benefits of sustainable design features such as energy efficiency and materials with lower life cycle costs as well as research regarding the relationship of productivity to the built environment (e.g. Moussatche & Languel, 2002). While the level of client enthusiasm

for sustainable interior design strategies perceived by these participants varied, it does appear that clients may be becoming a stronger force in the movement toward sustainable built environments, which is consistent with previous research suggesting that clients influence the decision to pursue sustainability (e.g. Kang & Guerin, 2009A).

Themes Regarding Perceptions

There have been found no existing research regarding the perceptions practicing interior designers have of sustainability or sustainable design strategies. The purpose of this study was to create an understanding of what perceptions interior designers may have of sustainable interior design. The findings regarding these perceptions are discussed below.

Perceptions of Education

Educational Exposure to Sustainability

There does not appear to be a great deal of consensus in the current research literature regarding the best practices or impact of sustainable education for interior design students. There is existing research that seems to suggest that treating sustainable interior design as a separate entity, such as an elective or stand-alone course or as an emphasis available to interested students is preferable (Kunkle-Tomasewski & Jones, 2005), while other research appears to suggest that sustainable design should not be taught separately from the design process or only to students who choose the option to learn it (Crane & Waxman, 2009). There is also research suggesting that learning about sustainability early in the formal education process is integral to becoming an environmentally responsible member of a given profession (e.g. Wallack & Webb, 2007).

With one exception, the findings in this study do not clearly uphold or refute most of these previous suggestions and conclusions regarding best practices for instilling a sense of environmental responsibility in students. Four of the eleven participants in this study did not mention any formal educational opportunities regarding sustainable design prior to their first on the job exposure, each initiated by a client. Despite not having exposure to sustainability in college, each of these subjects has since become a supporter of sustainability and has pursued sustainable interior design strategies as often as they perceived to be possible. Three of these four participants stated that environmental sustainability had become a personal cause to be pursued on every project, whether clients wanted it or not. Two discussed their attempts to practice sustainable habits in their lifestyles as well as in their interior design projects. This finding appears to contrast previous research suggesting that early exposure to sustainability, within the context of a formal education, is integral to the growth of a sense of personal responsibility toward the environment (e.g. Wallack & Webb, 2007).

Several researchers have suggested that exposing interior design students to sustainability while in school is an effective way of ensuring that many of those who enter the profession do so with the intent of practicing sustainable design strategies (e.g. Wallack & Webb, 2007). Four participants in this study did not have any exposure to sustainable interior design while studying interior design. The remaining participants first became exposed to sustainable interior design during college. However the depth and context of each participant's first exposure varied. Two participants partook of their program's option to study sustainability as an emphasis and took classes specifically designed to teach sustainable interior design. This type of curriculum has been promoted

by some academics as a preferred method of teaching sustainable interior design (Kunkle-Tomasewski & Jones, 2005). Other subjects who were first exposed to sustainable design solutions during college did not have courses specifically designed to teach sustainable interior design. Instead they credited specific professors, visiting lecturers, or individual assignments for their initial exposure to sustainable interior design strategies. This is in keeping with research that suggests a sense of personal responsibility toward the environment can result from the influence of a teacher or other environmentally aware role model (e.g. Arnold, Cohen, & Warner, 2009).

Of those participants who first became exposed to sustainability in college, experiences varied. Two attended stand-alone sustainable design courses and then chose to obtain a "green emphasis" that mandated the implementation of sustainable strategies in their subsequent coursework. This appears to support previous suggestions that sustainability should be treated as a special subject within interior design (Kunkle-Tomasewski & Jones, 2005). However, findings from another participant's responses indicate otherwise. Mike felt that while no curriculum regarding sustainability had been formalized, his interior design program and instructors generally encouraged sustainability. He perceived that he was expected to learn and investigate sustainable strategies on his own and carried the habit into practice. This finding appears to support research suggesting that sustainability should not be taught separately from the remaining interior design curriculum (Crane & Waxman, 2009). Additionally, some participants learned about sustainability not from their interior design classes but from construction management classes. Two other participants were first exposed to sustainable interior design through contact with one influential lecturer or professor, which supports research

that suggests a role model can influence the growth of some individuals toward a personal commitment to environmental sustainability (Barber-Estores, 2010). Like the two participants who were expected by their professors to produce sustainable design solutions, each of these participants took it upon themselves to pursue sustainable design strategies in their coursework and subsequent practice.

While they held differing educational experiences, each of the eleven subjects perceived education to be an important influence on their ability to practice sustainable interior design strategies. There is research in the existing literature supporting the importance of education (e.g. Wallack & Webb, 2007) and a willingness to investigate issues and problems on one's own (e.g. Pile, 1995) regarding the success of sustainable interior design projects. The findings in this study are also consistent with existing research regarding the importance of education and individual investigation for the growth and success of sustainable interior design practices (e.g. Pile, 1995; Ruff & Olson, 2009).

However there is disagreement in the existing research as to which type of educational experience is more effective at encouraging students to become environmentally responsible. While all of the participants in this study perceive themselves to be environmentally responsible, there are wide differences in their educational experiences as well as in their perceptions of those experiences. It is therefore unclear, from this study, whether exposure to sustainable interior design during an interior design program is necessary for the production of environmentally responsible interior designers. More importantly, as CIDA has already mandated the inclusion of

sustainability in accredited interior design programs, it is unclear whether it is better to teach sustainability as a class or emphasis or if teaching it as an expectation in all interior design projects is more effective.

Additionally, not all of the participants were first exposed to sustainable design strategies while in college, but during their careers when asked to design a sustainable project by a client. It should be noted that the youngest of the four participants who were first exposed to sustainable interior design through client requests, was in his mid-thirties at the time of his interview. All four of these participants obtained their formal design educations a decade or more before CIDA declared that sustainability must be integral to accredited interior design programs. Interestingly, each of these four participants also stated that sustainability was an important personal issue and each discussed aspects of personal responsibility toward protecting the environment. Despite initially pursuing sustainable solutions at the request of a client, each of these designers had subsequently developed the personal belief that he or she had an obligation to pursue sustainable design whenever possible. This appears to contrast existing research (e.g. Ruff & Olson, 2009; Wallack & Webb, 2007) that suggests the early introduction of sustainability within formal education is necessary for the growth of personal responsibility toward protecting the environment.

Need for Critical Thinking and Investigation

Interior designers who are willing to investigate issues, problems, and potential solutions are said to be more capable than other designers of creating environmentally responsible designs (e.g. Pile, 1995). The idea that interior designers should do their own investigations regarding issues and problems in order to produce sustainable design

solutions was discussed by several participants and fits into the theme of Education, as it relates to on the job learning. There is research to suggest that interior designers are more likely to be successful implementing sustainable interior design strategies if they are willing to do their own investigations into potential design solutions or if they possess an internal locus of control (Barber-Estores, 2010). Almost every participant in this study discussed the importance of questioning manufacturer claims, learning from their own experiences or mistakes, studying for accreditation exams, or taking part in seminars, workshops or other forms of continuing education. Many of the participants stated the perception that manufacturer claims regarding sustainability could not be trusted at face value and several subjects discussed their negative experiences with specifying unfamiliar products that proved unsuitable. Each participant expressed, in some manner, the importance of continuing to learn more about sustainable interior design solutions. Suggestions in the existing literature regarding the need for interior designers to do their own investigations, think critically, and follow their own locus of control are supported by the findings of this study.

Client Education and Public Awareness

While no studies have been found in the existing literature regarding the effect of client education on the success of sustainable design, it has been found that clients who are educated about sustainability are more capable of making informed decision than those who are not (Wilms, 1982). Several of the participants in this study indicated that their clients who understood the environmental, social, and/or financial benefits of sustainable design were more likely than other clients to implement sustainable interior design strategies. This finding supports the existing research.

The idea that educating one's clients on the benefits can have a positive effect on sustainable design implementation was not found to be a theme within the literature review. However it is consistent with the research regarding an educated public, and most of the participants in this study related their experiences with convincing hesitant clients to build green by taking time to educate these clients on the various benefits of sustainable design.

Much of the existing literature suggests that clients can hinder a designer's ability to implement sustainable design strategy (e.g. Barber-Estores, 2010). Several participants related their perception that clients, usually those concerned with budget, often deterred them from pursuing sustainable strategies. Other participants noted that clients' negative perceptions of sustainability, ranging from a fear of the unknown to the idea that sustainability is for tree-huggers, inhibited their ability to implement sustainable strategies.

However, there is also existing research suggesting that sustainable built environments can be a powerful marketing tool for the companies that build and occupy them (e.g. Schlange 2009) and that sustainable design can have a positive return on investment for the client (e.g. Moussatche & Languel, 2002). Several participants in this study stated that some of their sustainable projects were client-driven. Some participants had clients who understood the financial benefits of pursuing sustainability. Other participants had experience with clients who considered sustainability to be one of the core values of their organizations, and therefore wanted to pursue sustainable design solutions for their built environments. Several participants discussed client concerns regarding end-user health, productivity and quality of life as well.

The findings of this study support existing research suggesting that clients sometimes inhibit the pursuit of sustainability (e.g. Barber-Estores, 2010). However these findings also support conflicting research conclusions that suggest clients sometimes drive sustainability in interior design (e.g. Kang & Guerin, 2009A). As none of the existing literature appears to suggest that all clients always inhibit (or encourage) sustainable design, the findings of this study do not refute previous research regarding clients' influence on the decision whether to pursue sustainable interior design strategies.

Perceptions of Experience

Colleagues

The growth of low-saliency concepts such as sustainability is most dependent on peers and professional networks (Koski, 2010). However, employers and organizational culture have not been found to be significant predictors of interior designers' inclinations toward the practice of sustainable design (Kang & Guerin, 2009A). The participants in this study had a great deal to say on the topic of their colleagues. Much of these statements were positive, which stands in contrast to existing research that suggests colleagues may prevent designers from pursuing sustainable design strategies (Cassidy, 2003). However, several participants did not feel their colleagues had been supportive of their efforts to implement sustainable interior design strategies. Some participants seemed to feel that, at times, other colleagues could be discouraging and frustrating, which does support the existing research suggesting colleagues can inhibit sustainability. This finding appears to support the research concluding that colleagues may inhibit sustainability (Cassidy, 2003). However the majority of the participants in this study

indicated the perception that their colleagues with whom they worked at the time of their interviews were generally supportive and encouraging of sustainability. This finding, along with the responses of participants who credited coworkers, employers, and industry peers with their growth toward environmental responsibility, appears to support the conclusion that peer networks are integral to the growth and dispersion of sustainability (Koski, 2010). Several participants expressed the perception that their employer culture or colleagues had benefitted them in their pursuit of sustainability. However, participants' work experiences, perceptions of colleague support and company culture varied widely. Therefore it is unclear whether the conclusion that employers and organizational culture is not a factor in an interior designer's level of commitment to the environment is supported.

There is no research in the existing literature regarding interior designers' perceptions of colleague support for sustainability. Due to the wide variations among participants' responding, the findings of this study offer no clear conclusions regarding interior designers' perceived level of support from colleagues or employers. For instance, most participants perceived their colleagues within interior design to be generally supportive of their efforts to pursue sustainable design strategies. Several participants mentioned perceived support for their environmental goals from employers as well. However, not all participants felt their colleagues were directly encouraging of their sustainable strategies, and not all participants appeared to believe their colleagues were as interested in or likely to pursue sustainability as themselves.

One participant felt that she had been actively discouraged in her pursuits of sustainable interior design solutions. She found this experience so frustrating that she

eventually quit designing in order to become a sustainability consultant to interior designers and related professionals. Other participants also expressed frustration with colleagues' perceived lack of support. However, the colleagues these participants found frustrating were not coworkers or employers but contractors, student peers, and industry role models. Other than the suggestion that unsupportive employers may experience increased difficulty recruiting and retaining sustainable interior designers, there are no clear conclusions evident in these findings regarding interior designers' perceptions of colleague support.

Strategies

Most participants stated their willingness to specify sustainable products and finishes for their clients. While the personal connotations of what sustainable products and finishes are seemed to vary from one participant to another, each considers this to be integral to the design of sustainable built environments. Concerns of daylighting and indoor environmental quality were also prevalent. Implementing whole building design or integrated project teams were also mentioned as effective strategies for sustainable design. Sustainable materials selection (e.g. Moussatche & Languel, 2002), daylighting (e.g. McDougall, Nordmeyer, & Klaassen, 2006), and energy efficiency (Yohanis & Norton, 2006) have been researched in the existing literature. Most of this research has focused on how sustainable materials have impacted building occupants or on life cycle costing. There is no known research regarding interior designers' perceptions of or motivations toward pursuing these sustainable strategies, however. Therefore the findings in this study regarding interior designers' preferred sustainable design strategies

begins to provide an understanding of the perceptions and motivations regarding the implementation of those sustainable interior design strategies.

Five participants mentioned designing for daylighting and five mentioned incorporating energy efficiency into projects. A few participants stated that they had tried to ensure high water efficiency and three participants stated or implied that working on an integrated design team is an effective strategy for designing sustainable interiors. Two participants mentioned the re-use of building materials during remodels. Only one participant mentioned, "We've got to figure out Cradle to Cradle. And one other participant indicated that thoughtful space planning itself can have a positive impact on the sustainability of an interior design. A wide variety of sustainable strategies was mentioned by the participants, though most of the overlap in responses was in regards to sustainable materials and finish specifications.

When discussing their work experience, all of the participants mentioned their preference for specifying sustainable materials and products in their projects. However not every participant clarified their personal definition of sustainable products. A majority of participants mentioned using products made of renewable, recycled, or recyclable content or that were recyclable at the end of their usable life. In addition to the pursuit of recycled, renewable and recyclable options, five participants looked for local materials, four chose materials that were durable and long lasting and two pursued products made of natural materials. The specification of materials with regards to environmental responsibility has itself received a notable amount of attention in the existing literature (e.g. Moussatche & Languel, 2002).

There is no known research regarding interior designers' perceptions of various sustainable design strategies. However, the existing literature does contain conclusions regarding the validity of several strategies, such as daylighting (e.g. McDougall, Nordmeyer, & Klaassen, 2006) and energy efficiency (e.g. Yohanis & Norton, 2006), and the specification of long-lasting, environmentally responsible finishes (Moussatche & Languel, 2002). Each of these suggestions is supported by the findings of this study.

Perceptions of Organizations, Certifications and Accreditations

There were no studies found in the existing literature regarding interior designers' perceptions of sustainable design professional organizations. Nor has there been found existing research regarding interior designers' perceptions of the various certifications for sustainable buildings or accreditations available to interior designers who choose to pursue sustainable design strategies. While no interview questions were asked specifically regarding USGBC, LEED, or other sustainable organizations, certifications, or accreditations, most participants in this study chose to discuss these topics. There appears to be a mix of positive and negative perceptions regarding LEED certification and accreditation as well as the USGBC among this group of interior designers.

Positive Perceptions

Most participants held generally positive perceptions of LEED and the USGBC in regards to the educational benefits each provides. Two participants had clearly positive perceptions of the USGBC, as it represented to them their supportive professional community. Several participants considered the educational opportunities provided by the USGBC to be valuable in the pursuit of their goals to continue learning about

sustainable design strategies. Most of the participants stated the perception that following LEED guidelines or studying for LEED exams were helpful educational experiences. Overall, participants held positive perceptions of LEED and the USGBC in regards to the information they make available to design professionals.

Additionally, there were some participants who discussed having worked with clients who wanted to use sustainability as a marketing strategy and it appears as though these were among the clients most likely to pursue LEED certification. Participants who had experience working on government or other publically funded projects stated that LEED certification and sustainable design were becoming standard requirements for these clients. Taken together, these findings represent a positive perception of LEED as it relates to the ability to convince clients to pursue sustainable strategies.

Several participants also expressed their perception that LEED could be used as an effective marketing tool as well. A few participants agreed that the prospect of pursuing LEED plaques for clients to use in their marketing strategy could sometimes convince clients to pursue sustainability. And a few participants stated their belief that becoming LEED accredited could be an effective way for interior designers to market themselves or their services in a challenging job market.

Negative Perceptions

However several participants were critical of the costs of LEED accreditation and certification. Several participants complained that LEED certification and accreditation are too expensive. Some participants felt the costs of LEED certification and accreditation could possibly lead to the eventual downfall of or at least loss of

prominence for, the USGBC. Two participants believed that the costs of LEED certification deterred clients not only from certifying sustainable projects, but also from pursuing sustainable solutions in general. A different pair of participants expressed their perception that several products and materials approved for points under the LEED rating systems were actually inferior to comparable sustainable products and that following LEED in order to obtain points rather than as a general outline for sustainability could have a detrimental impact on a project's overall sustainability. The perception of these participants was that LEED does not always provide, or allow for, the most sustainable decisions possible.

In addition to critical perceptions of LEED, a few participants were critical of the USGBC as an organization as well. The USGBC considers itself to be the most effective organizational force for driving the construction industry toward sustainability (USGBC, 2010). Additionally, LEED is a set of standards, recognized internationally, for sustainable building certifications (USGBC, 2011). It is therefore noteworthy that several participants in this study each of whom consider sustainability to be personally as well as professionally important, are critical of this organization and its related certification and accreditation processes.

Several participants implied that they hope that there will eventually be no "sustainable" projects as everyone will be designing and implementing only sustainable solutions. One participant took this so far as to say that she hoped not to have a LEED someday. Most of these statements were made by participants who expressed criticism of LEED. However it is unclear if the perception that sustainable certifications and accreditations may eventually cease to be recognized as special is a contributing factor, or

result of, their negative perceptions regarding LEED. It is also possible that the prediction that sustainable certifications and accreditations will cease to be recognized in the future may be based on the participants' perceptions that sustainability will one day become standard practice in all projects, for all designers.

There were no questions asked of clients directly relating to their opinions and perceptions of the USGBC and LEED, which makes the prevalence of LEED and USGBC within subjects' answers interesting. It would appear that the USGBC has been effective in equating itself with sustainable built environments both among industry professionals and the general public. Some participants believed that clients afraid of spending more to gain LEED certification would not automatically rule out un-certified sustainable design were it not for their perception of the relative ubiquity of USGBC and LEED in the marketplace. This also brings up questions of greenwashing as some subjects felt LEED points did not always lead to the most sustainable possible solutions for a given project. Others expressed the perception that clients who pursue certification may be those clients who are more interested in using sustainability as a marketing strategy than as an overall business philosophy. The most interesting finding in this area appears to be the dueling perceptions of the USGBC and LEED. While some participants appear to appreciate both the organization and the certification and accreditation opportunities, others were critical. Most criticism was due to the costs of the certification and accreditation processes, which in a recession does not seem entirely surprising. However a few participants believed that these costs are detrimental to the USGBC and LEED in the long-term. One participant specifically stated his belief that the USGBC will cease to be a market leader because of their costs and another participant was so

disenchanted that she considered the USGBC to be a profit driven entity. Like perceptions of colleague support, the findings in this research regarding perceptions of LEED and the USGBC present no clear conclusions.

Perceptions of the Future of Sustainable Interior Design Practices

There is no known research regarding interior designers' perceptions of, or predictions and hopes for, the future of sustainability within interior design. In order to begin to address that hole in the existing knowledge, participants in this study discussed their opinions regarding the future of sustainable interior design. Each participant believed that sustainability would continue to grow as an important concern of interior designers. Most expressed their hope that sustainability would one day become standard, and a few expressed the belief that it will. While there is little consensus among the participants why sustainability in interior design will become more important in the future, everyone agreed that it will become more important.

Two participants held the perception that emerging interior design professionals will lead the effort toward increased sustainability within interior design. Existing research, however, has suggested that this cannot be assumed to be true. Youth have shown decreased levels of concern for the environment over the last several decades (e.g. Wray-Lake, Flanagan & Osgood, 2010), and environmentally conscious interior design faculty cannot assume that their students share their perceptions regarding sustainable design (e.g. Ruff & Olson, 2009).

A few of the participants seemed to believe the growth of sustainability will be driven by market concerns, especially regarding energy efficiency. These participants

indicated their perception that public concerns such as rising energy costs may contribute to the growth of sustainability in interior design. This is consistent with research regarding mechanical engineers that suggests energy will become the primary reason for increased implementation of sustainable building designs (Winters, 2010). Some participant believed that as more people become aware of environmental concerns, more clients and designers will push for sustainability simply out of a sense of personal responsibility toward protecting the environment. There is existing research regarding the paths some people take toward becoming environmentally aware and responsible (e.g. Arnold, Cohen & Warner, 2009).

Conclusions

The findings of this study begin to provide an understanding of interior designers' motivations for practicing sustainable interior design strategies and their perceptions of sustainability in interior design. Several themes have emerged from this study, and there are many commonalities among some of the participants' motivations and perceptions. These include such themes as concern for occupant health as a motivation to specify VOC-free finishes and the perception that sustainable interior design is a personal obligation.

However there are also notable differences among participant responses regarding topics such as their perceptions of LEED and the USGBC, which varied from participants who had only positive perceptions, to participants with primarily critical, negative perceptions. Additionally each participant indicated a preference for pursuing sustainable design strategies. However some participants indicated that this pursuit is a

daily occurrence for all of their projects, while others indicated that they were more likely to practice sustainability on a case by case basis, depending on individual client concerns.

Also some participants seemed to be primarily concerned with clients' health, while others seemed to consider the future of the planet and their projects' impact on the natural environment to be of primary concern. Other participants appeared to be primarily concerned with energy efficiency, life-cycle costs, or end-user productivity. While each participant perceived sustainability to be an important issue, there were varying motivations among the participants.

Each of the participants felt that it was their personal responsibility to pursue sustainable interior design strategies. Several participants indicated that this belief originated during or prior to their formal interior design education. Other participants indicated that their first exposure to sustainable interior design strategies happened while they were designing for a client who wished to pursue sustainability. Several participants mentioned that they pursued sustainable design whenever possible, though some of the participants stated that they pursued sustainability in all of their projects. And several discussed their pursuit of sustainability within their personal lives as well. Despite the differences in experience, commitment level, and education, each participant expressed the perception that sustainability will continue to grow in prominence within the interior design industry. Most participants perceived the future of sustainable interior design strategies to be promising, and several believed that one day all interior design projects will be designed using sustainable strategies. There was no general consensus as to what

might drive the interior design profession toward sustainability, however, as different participants offered different perceptions regarding the most important driver of sustainable design.

Many of the findings in this study support various suggestions and conclusions found in the existing research. While none of the findings in this study clearly disprove any of these existing conclusions, several findings appear to contrast with some of the previous conclusions and suggestions within the existing research. As there is general disagreement on several topics within the existing literature, however, this should not appear surprising.

Prior to conducting research for this study, it was presumed that interview participants would likely discuss such topics as client financial concerns, energy efficiency, and occupant health. These areas of concern have received a good deal of attention in the existing literature, therefore it seemed reasonable that practicing interior designers may also find them of interest in their practice. These assumptions proved true. For instance, several participants in this study discussed client financial concerns, either in the context of a perceived barrier for sustainability or a motivation. Some participants expressed the perception that, depending on the level of the client's educated regarding the financial benefits of sustainability, client budgets could act as both a barrier and a motivation. Several participants discussed energy efficiency as well. A few expressed their perception that rising energy costs would help drive the interior design profession toward sustainability. Others discussed their experiences with clients who were willing to build sustainably in order to save on energy costs, or previous successes in convincing hesitant clients to implement sustainable strategies by explaining their potential energy

savings. Additionally, most participants discussed occupant health as a motivation for pursuing sustainable strategies. While some participants mentioned health briefly during their interviews, most participants had several comments regarding their perceptions of the effects of the built environment on occupant health. Of those participants who discussed health, each perceived it to be an important interior design concern.

However there were three findings in this study that were notably surprising. No questions were asked during interviews regarding experience with or perceptions of LEED or the USGBC. It was not presumed that participants would mention or discuss either of these topics during interviews. As both topics are related to the phenomenon of sustainable interior design practices, it was also not presumed that neither topic would receive any participant attention. However, each participant mentioned either the USGBC or LEED certifications or LEED accreditations at least once during his or her interview. Most participants spoke at length about LEED and approximately half of the participants had negative perceptions of either the USGBC or LEED. All participants perceived themselves to be personally responsible for the environment and all perceived the pursuit of sustainability to be a regular part of their practice. Therefore it was notable and surprising that approximately half of the participants held negative perceptions of LEED and/or the USGBC.

Also, all eleven participants perceived their own ability to pursue sustainable design strategies to be strong, and all also perceived sustainability to be a personally important issue. As the experience levels among the participants varied greatly, it was a surprising finding that the entire sample expressed, without hesitation, confidence in their ability to practice sustainable interior design. The level of implied or expressed personal

commitment to the pursuit of green design strategies also varied among the participants. Several participants stated that they always pursue sustainability on all projects, while others stated their preference for using sustainable strategies, insofar as they were able to obtain clients' agreement to do so. Only a few participants discussed their commitment to sustainability not only in practice, but also as a life-style. Therefore it was surprising that each participant expressed their perception that sustainability is a personally important issue. It is possible that only those interior designers who felt personally committed to sustainability expressed interest in participating in this research, therefore eliminating the possibility for outliers. It is also possible that some participants may have perceived a bias toward sustainability by the researcher due to the topic of this study and answered certain questions in the manner they perceived to be correct or most flattering. It is possible that asking questions regarding personal commitment to the environment and perceived abilities in face to face interviews may not yield answers as authentic as possible and may best be asked in anonymous survey research.

Areas for Future Research

This study was exploratory in nature. The subject sample was small, limited to one geographical area and included only those designers who regularly pursue sustainable interior design strategies. For these reasons, there are several opportunities for future research.

- Interior designers who do not regularly pursue sustainable solutions could be interviewed to determine their perceptions of and motivations for sustainable or traditional interior design strategies. This would enable researchers to discover

how they differ from this sample in their perceptions of and motivations (or lack thereof) for sustainability. Findings from such a study could help educators develop educational opportunities specifically for those who are unfamiliar with, or who do not perceive a need for, sustainability. These findings could also help interior designers who practice sustainable design strategies to develop better arguments for convincing their peers to pursue sustainability.

- Participants from areas outside of Denver, Colorado could also be interviewed to determine if local culture was a factor in these findings. This is especially relevant as three of the eleven subjects implied that they believed local culture may have been a factor in some of their perceptions and experiences. All participants in this study lived and worked within a small geographic area, therefore the findings cannot be assumed to be generalizable. Therefore, similar research involving participants in other locations may help to determine which findings might be consistent across a wider geographic range, and which might not be consistent.
- A quantitative study could be developed using the findings from this study. The results could then offer some generalizable information.
- Further research could focus on residential designers in order to determine if their perceptions and motivations are similar to these participants'. Only one participant in this study specialized in residential design, and only three other subjects practiced residential design as part of their practices. Additionally, a

sample of only corporate interior designers, hospitality interior designers, etc. could be studied in order to determine what, if any, themes emerge within each specialty.

In addition to differences in participant samples, there are several themes emerging within this study's findings that could be individually explored in future research.

- Do the perceptions and motivations of interior designers who were first exposed to sustainable design during their interior design education differ from those who were first exposed to sustainable design in practice? There are no clear conclusions either within the existing literature or from these findings to indicate either job-related initial exposure or education-related initial exposure as resulting in an interior designers' commitment to the environment. Some existing research suggests that early exposure is imperative to the growth of environmental responsibility however the current findings neither support nor negate that suggestion.
- Do interior design graduates from programs offering sustainable design emphases have different perceptions, motivations, and experiences than those whose undergraduate education did not offer such emphases? Is either group more or less likely to practice sustainable interior design during class projects or during practice? Some interior design programs include an emphasis or special classes on sustainability. Others teach sustainability as either an integral or optional part of the design process itself. Neither the existing literature nor the current study provide clarity as to which approach is best suited to promoting sustainability among interior design students.

- Does an interior designers' perceived level of support from colleagues affect his or her decision making regarding, or ability to pursue, sustainable interior design strategies? If so, how? While each participant in this study expressed their perceptions of their colleagues' level of support for sustainable interior design, the depth and contexts of this support varied among the participants. Also, as there is little existing research regarding the effects of colleagues on a designer's ability to practice sustainable design solutions, research in this area would be a beneficial addition to the knowledge on sustainable interior design.
- What are younger (or emerging) interior designers' perceptions of more experienced interior designers, as related to sustainability? Several participants discussed their perceptions of their more experience colleagues, roll-models and coworkers. However, the findings in this study offered no clear conclusions on this topic. Knowledge of emerging professionals' perceptions and expectations could benefit both educators as well as practicing interior designers who wish to relate to, recruit, and retain younger interior designers.
- What are the perceptions of the USGBC and/or LEED accreditation and certification among interior designers? This could be split between USGBC members and non-members, LEED APs and GAs compared to designers without accreditations, etc. Nearly all of the participants in this study discussed their perceptions of LEED and/or the USGBC. Both positive and negative perceptions were expressed, and no clear patterns emerged regarding the relation of these perceptions to experience level, specialty, education, colleague support, client concerns or any other issues discussed in the interviews. There also did not

appear to be any relationships of positive or negative perceptions of the USGBC and LEED to any of the demographic survey findings.

- Research could also be performed to further illuminate interior designers' perceptions of sustainable products in terms of durability, quality, and appropriateness. Research could be done to discover interior designers' perceptions of manufacturers' production or shipping methods, etc. Several participants also expressed their concerns regarding greenwashing and manufacturers' practices. This could be studied further in order to determine how prevalent the perceptions of greenwashing are among interior designers. There were emerging themes among the findings, however there were no clear conclusions regarding interior designers' perceptions of products or manufacturers. While most participants stated their perception that interior designers should do their own investigation of product and manufacturer claims, several seemed to express their willingness to take manufacturers' at their word. Others stated their perception that manufacturers intentionally participate in greenwashing. Research focusing on interior designers' perceptions of manufacturers and products could clarify the understanding of this topic.
- In order to provide a richer understanding of individual motivations, each of the different motivating factors uncovered in the findings could also be studied further. While this study begins to provide an overall understanding of interior designers' motivations for the practice of sustainable interior design strategies, no individual motivation appears to be the largest or most common concern.

REFERENCES

Adler, T. (2009). Learning curve: Putting healthy school principles into practice. *Environmental Health Perspectives. 117*(10), 448-453.

Akkurt, C. T. (2009). *Learning about Sustainability from the Traditional Houses of Kuly, Turkey: a Case Study* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from: http://www.idec.org/documents/2009ConferenceProceedingsFINAL.pdf.

American Institute of Architects (2010). *Committee on the Environment*, Retrieved October 20, 2010 from: http://network.aia.org/AIA/CommitteeontheEnvironment/Home/Default.aspx.

American Society of Interior Designers (2010A). *American Society of Interior Designers*, Retrieved October 18, 2010 from: http://www.asid.org/Channels/.

American Society of Interior Designers (2010B). *Code of Ethics and Professional Practice*. Retrieved October 6, 2010 from: http://www.asid.org/about/ethics/.

American Society of Interior Designers (no date). *Designing Green*. Retrieved October 3, 2010 from: http://www.asid.org/NR/rdonlyres/FA0EEACD-530E-400B-A7B5-6A6BC4AA12F7/0/DesigningGreen.pdf.

American Society of Interior Designers (2010C). *Sustainable Design Council*, Retrieved October 18, 2010 from: http://www.asid.org/about/committees/sustaindesigncouncil.htm.

American Society of Interior Designers, & U.S. Green Building Council, (2008 & 2009). *About ReGreen*, Retrieved October 19, 2010 from: http://www.regreenprogram.org/about.

American Society of Interior Designers, & U.S. Green Building Council, (2010). *Education*, Retrieved October 19, 2010 from: http://www.regreenprogram.org/learning-programs.

Architecture 2030, (2010). *About Us*, Retrieved October 15, 2010 from: http://architecture2030.org/about/about_us.

Arnold, H. E., Cohen, F. G., & Warner, A. (2009). Youth and environmental action: Perspectives of young environmental leaders on their formative influences. *The Journal of Environmental Education, 40*(3), 27-36.

Associates III, & American Society of Interior Designers (2006). Turning green: A guide to becoming a green design firm. American Society of Interior Designers Article. Retrieved October 20, 2010 from: http://www.mbdc.com/detail.aspx?linkid=20&sublink=24.

Augenbroe, G., & Park, C.-S. (2005). Quantification methods of technical building performance. *Building Research & Information, 33*(2), 159-172.

Ballard, J. M., & Taylor, N. S. (2002). *Forgotten Lessons: Primitive Cultures' Thoughtful Approach to Shelter* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from: http://www.idec.org/pdf/02ConferenceProceedings.pdf.

Barber-Estores, L. (2010). Influences & techniques: The paths toward sustainability through design. M.S.D. dissertation, Arizona State University, United States -- Arizona. Retrieved October 5, 2010, from Dissertations & Theses: Full Text.(Publication No. AAT 1484910).

Bech-Danielsen, C. (2003). Ecological reflections in unbounded architecture. *The Journal of Architecture. 8,* 321-336.

Beecher, M. A., & Davies, B. (2002). *Shades of Green: The Philosophical Challenges of Ecological Responsibility in Interior Design Education and Practice* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from: http://www.idec.org/pdf/02ConferenceProceedings.pdf.

Berman, A. (2008). *Green Design a Healthy Home Handbook,* London: Frances Lincoln Limited.

Blackwell, A. F., Eckert, C. M., Bucciarelli, L. L., & Earl, C. F. (2009). Witnesses to design: A phenomenology of comparative design. *Design Issues*, *25*(1), 36-47.

Bobbitt, L. M., & Dabholkar, P. A. (2001). Integrating attitudinal theories to understand and predict use of technology-based self-service. *International Journal of Service Industry Management, 12*(5). 423-450.

Bordass, B., Cohen, R., Standeven, M., & Leaman, A. (2001). Assessing building performance in use 2: Technical performance of the Probe buildings. *Building Research & Information 29*(2), 103-113.

Brick, K., & Frostell, B. (2007). A comparative study of two Swedish-based tools for practical environmental evaluation of buildings. *Journal of Environmental Assessment Policy and Management, 9*(3), 319-339.

Cassidy, R. (2003). A report on the green building movement. *Building Design & Construction, November, 2003,* White Paper Supplement, 48 pages. Retrieved September 2, 2010, from: http://www.epa.gov/greenbuilding/pubs/about.htm.

Churchill, S. D., & Wertz, F. J. (no date). *An introduction to phenomenological psychology for consumer research: Historical, conceptual, and methodological foundations,* (Advances in Consumer Research Article). Association for Consumer Research, 550-555.

CIDA, (2008). Council for Interior Design Accreditation Professional Standards 2009. Retrieved March 4, 2010, from http://www.accredit-id.org/profstandards.html.

Cidell, J. (2009). Building green: The emerging geography of LEED-certified buildings and professionals. *The Professional Geographer, 61*(2), 200-215.

Cao, H., Vogel, L. M., Gam, H., & Farr, C. A. (2005). *Teaching Cradle to Cradle Design through a Science-based Case Study Approach* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from: http://www.idec.org/pdf/05ConferenceProceedings.pdf.

Cone, Inc. (2007). 2007 Cone cause evolution and 2007 Cone environmental survey. Retrieved August 18, 2010, from http://www.coneinc.com/files/2007ConeSurveyReport.pdf.

Crane, T., & Waxman, L. K. (2009). *Sustainable Design as Second Nature; Incorporating Sustainability into the Interior Design Curriculum.* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from: http://www.idec.org/documents/2009ConferenceProceedingsFINAL.pdf.

Creswell, J. W. (2007). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches, 2nd Edition.* Thousand Oaks, California: SAGE Publications, Inc.

Creswell, J. W. (2009). *Research Design: Quantitative, Qualitative, and Mixed-Methods Approaches, 3rd Edition.* Thousand Oaks, California: SAGE Publications, Inc.

Dator, M. S. (2010). Green building regulations: Extending mandates to the residential sector. *Environmental Affairs, 37*, 393-424.

Dong, B., Kennedy, C., & Pressnail, K. (2005). Comparing life cycle implications of building retrofit and replacement options. *Canadian Journal of Civil Engineering, 32*, 1051-1063.

Duncan, J. (2005). Performance-based building: Lessons from implementation in New Zealand. *Building Research & Information, 33*(2), 120-127.

Ecoimpact Consulting, LLC (2009). *Biography*, Retrieved October 18, 2010 from: http://www.ecoimpactsite.com/leadership_penny_bio.html.

Eichholtz, P., Kok, N., & Quigley, J. M. (2009). Doing well by doing good? Green office buildings. *Institute of Business and Economic Research and Fisher Center for Real Estate and Urban Economics*, 1-48. Retrieved August 27, 2010, from: http://urbanpolicy.berkeley.edu/pdf/EKQ_green_buildings_JMQ_010609.pdf.

Eisen-Brown, S. L. (2009). *Adaptive Reuse in Residential Studio: The 1st Step toward Sustainability from Theory to Practice* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from: http://www.idec.org/documents/2009ConferenceProceedingsFINAL.pdf.

Enck, H. J. (2010). Commissioning high performance buildings. *ASHRAE Journal,* 52(1), 12-18.

Energy Information Administration. (2003). *Annual energy review 2002*.

Farzam, S., & Todesco, G. (2010). Sustainability in cold climates. *ASHRAE Journal, 52*(1), 20-28.

Fay, R., Treloar, G., & Iyer-Raniga, U. (2000). Life-cycle energy analysis of buildings: A case study. *Building Research & Information, 28*(1), 31-41.

Fowler, C. W. (2005). Sustainability, health and the human population. *EcoHealth, 2*, 58-69.

Fowler, K. M., & Rauch, E. M. (2008). *Assessing green building performance: A post occupancy evaluation of 12 GSA buildings*. Richland, Washington. Pacific Northwest National Laboratory.

Friedman, G. (2010). Energy-saving dorms. *ASHRAE Journal, 52*(5), 20-24.

Garde, A. (2009). Sustainable by design? Insights from U.S. LEED-ND pilot projects. *Journal of the American Planning Association, 75*(4), 424-440.

Goering, J. (2009). Sustainable real estate development: The dynamics of market penetration. *Journal of Sustainable Real Estate, 1*(1), 167-201. Retrieved September 1, 2010, from: http://www.costar.com/josre/archives.htm.

Gordon, G. (2003). *Interior Lighting, 4th Edition*, Hoboken, New Jersey: John Wiley & Sons, Inc.

Green Building Certification Institute. (2010). *About GBCI.* Retrieved September 30, 2010 from: http://www.gbci.org/org-nav/about-gbci/about-gbci.aspx.

Hill, C. (2006). Whole Foods Market corporate headquarters Austin, Texas. *Journal of Interior Design, 31*(3), 62-63.

Horsley, A., France, C., & Quartermass, B. (2003). Delivering energy efficient buildings: A design procedure to demonstrate environmental and economic benefits. *Construction Management and Economics, 21,* 345-356.

Hungerford, H. R. (2010). Environmental education (EE) for the 21st Century: Where have we been? Where are we now? Where are we headed? *The Journal of Environmental Education, 41*(1), 1-6.

Hyllegard, K. H., Ogle, J. P., & Dunbar, B. H. (2003). Sustainability and historic preservation in retail design: Integrating design into a model of the REI Denver decision-making process. *Journal of Interior Design, 29*(1&2), 32-49.

Hyllegard, K. H., Ogle, J. P., & Dunbar, B. H. (2006). The influence of consumer identity on perceptions of store atmospherics and store patronage at a spectacular and sustainable retail site. *Clothing & Textiles Research Journal, 24*(4), 316-334.

International Interior Design Association, (2010A). *International Interior Design Association.* Retrieved October 18, 2010 from: http://www.iida.org/content.cfm/home.

International Interior Design Association, (2010B). *The mission and vision of the International Interior Design Association stands for the Future of Design.* Retrieved October 6, 2010 from: http://www.iida.org/content.cfm/vision-mission.

Iverson, D. M. (2010). Sustainable remedy for hospital. *ASHRAE Journal, 52*(4), 50-52.

Jennings, L., & Schomer, V. (2009). Green tips: A basic guide for commercial designers. Retrieved November 15, 2009, from http://www.asid.org/designknowledge/sustain/comm/.

Kaciak, E., & Cullen, C. W. (2006). Analysis of means-end chain data in marketing research. *Journal of Targeting, Measurement and Analysis for Marketing, 15*(1), 12-20.

Kaciak, E., & Cullen, C. W. (2009). A method of abbreviating a laddering survey. *Journal of Targeting, Measurement and Analysis for Marketing, 17*(2), 105-113.

Kang, M. (2004). The analysis of environmentally sustainable interior design practice. Ph.D. dissertation, University of Minnesota, United States -- Minnesota. Retrieved September 29, 2010, from Dissertations & Theses: Full Text.(Publication No. AAT 3154052).

Kang, M., & Guerin, D. A. (2009A). The characteristics of interior designers who practice environmentally sustainable interior design. *Environment and Behavior, 41*(2), 170-184.

Kang, M., & Guerin, D. A. (2009B). The state of environmentally sustainable interior design practice. *American Journal of Environmental Sciences, 5*(2), 179-186.

Kent, T., & Stone, D. (2007). The Body Shop and the role of design in retail branding. *International Journal of Retail & Distribution Management, 35*(7), 531-543.

Keoleian, G. A., Blanchard, S., P., & Reppe, P. (2001). Life-cycle energy, costs, and strategies for improving a single-family house. *Journal of Industrial Ecology, 4*(2), 135-156.

Koski, C. (2010). The greening of America's skylines: The diffusion of low-salience policies. *The Policy Studies Journal, 38*(1), 93-117.

Kuller, R., Ballal, S., Laike, T., Mikellides, B., & Tonello, G. (2006). The impact of light and colour on psychological mood: A cross-cultural study of indoor work environments. *Ergonomics, 49*(1), 1496-1507.

Kunkle-Tomasewski, K. R., & Jones, L. (2005). *Is Sustainable/Green Design Taught in FIDER Accredited Interior Design Programs?* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from: http://www.idec.org/pdf/05ConferenceProceedings.pdf.

Leaman, A., & Bordass, B. (2007). Are users more tolerant of 'green' buildings? *Building Research & Information, 35(*6), 662-673.

Liao, J. (2007). The power to save. *IIDA Perspective, Summer,* 48-53.

Lutz, R. J. (1991). The role of attitude theory in marketing. In H. H. Kassarjian & T. S. Roberson (Eds.), *Perspectives in Consumer Behavior.* (319-339). Upper Saddle River, New Jersey. Prentice Hall.

MBDC (2010). *William McDonough,* Retrieved October 20, 2010 from: http://www.mbdc.com/detail.aspx?linkid=20&sublink=24.

MacDonald, P. S. (2001). Current approaches to phenomenology, *Inquiry, 44*, 101-124.

Macy, S., & Asher Thompson, J. A. (2003). Residential design implication of consumers' recycling behaviors. *Journal of Interior Design, 29*(1&2), 17-31.

Majdalani, Z., Ajam, M., & Mezher, T. (2006). Sustainability in the construction industry: A Lebanese case study. *Construction Innovation, 6,* 33-46.

Marshall, H. E. (1987). Building economics in the United States. *Construction Management and Economics, 5,* S43-S52.

Marshall-Baker, A. (2005). *Teaching C2C* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from:http://www.idec.org/pdf/05ConferenceProceedings.pdf.

Martin, W. L. (2005). Going the distance: The impact of sustainability on programming and budgeting. *Cost Engineering, 47*(6), 10-11.

Martin, C. S., & Kroelinger, M. D. (2010). 2009 Accreditation requirements: Comparison of CIDA and NAAB. *Journal of Interior Design, 35*(2), ix-xxxii.

McDonald, R. (2005). The economics of green building in Canada: Highlighting seven keys to cost effective green building. M.A. dissertation, Royal Roads University (Canada), Canada. Retrieved October 5, 2010, from Dissertations & Theses: Full Text.(Publication No. AAT MR36607).

McDougall, T., Nordmeyer, K., & Klaassen, C. J. (2006). Low-energy building case study: IAMU office and training headquarters. *ASHRAE Transactions, 112*(1), 312-320.

McLean, P. (2009). The need for sustainability. *The American Biology Teacher, 71*(5), 267-268. Retrieved September 29, 2010 from: ProQuest Biological Science Journals. (Document ID: 1752976051).

Meacham, B., Bowen, R., Traw, J., & Moore, A. (2005). Performance-based building regulation: Current situation and future needs. *Building Research & Information, 33*(2), 91-106.

Miller, N. G., Pogue, D., Gough, Q. D., & Davis, S. M. (2009). Green buildings and productivity. *Journal of Sustainable Real Estate, 1*(1), 65-89. Retrieved August 20, 2010, from: http://www.costar.com/josre/archives.htm.

Mort, G. S., & Rose, T. (2006). The effect of product type on value linkages in the means-end chain: Implications for theory and method. *Journal of Consumer Behaviour, 3*(3), 221-234.

Moussatche, H., King, J., & Rogers, T. S. (2002). *Material Selection in Interior Design Practice* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from: http://www.idec.org/pdf/02ConferenceProceedings.pdf.

Moussatche, H., & Languel, J. (2002). Life cycle costing of interior materials for Florida's schools. *Journal of Interior Design, 28*(2), 37-49.

National Association of Home Builders (No Date). *Building Greener, Building Better,* Retrieved October 19, 2010 from: http://www.nahb.org/fileUpload_details.aspx?contentID=109435.

National Association of Home Builders (2010A). *Green Building, Energy and Water Efficiency,* Retrieved October 19, 2010 from: http://www.nahb.org/page.aspx/category/sectionID=206.

National Association of Home Builders (2010B). *National Green Building Standard,* Retrieved October 19, 2010 from: http://store.builderbooks.com/cgi-bin/builderbooks/874?id=DWCyYwFt&mv_pc=23?;;NAHB00.

National Council for Interior Design Qualification (2009). *The NCIDQ Credential: The Mark of a Professional,* Retrieved October 4, 2010 from: http://ncidq.org/pdf/MarkOfAProfessional.pdf.

National Council for Interior Design Qualification (2010). *About Interior Design.* Retrieved October 6, 2010 from: http://ncidq.org/AboutUs/AboutInteriorDesign.aspx.

National Kitchen and Bath Association (2010). *The NKBA: Sustaining Our Industry and the Environment,* Retrieved October 19, 2010 from: http://nkba.org/green/.

Nelson, A. J. (2007). The greening of U.S. investment real estate – Market fundamentals, prospects and opportunities. *RREEF Research, 57,* i-x, 1-47.

Network of the Hospitality Industry, (2010). *The Sustainability Directory,* Retrieved October 20, 2010 from: http://sustainablehospitality.org/index.asp?id=1458.

Niemeyer, R. A., Anderson, A., & Stockton, L. (2001). Snakes versus ladders: A validation of laddering technique as a measure of hierarchical structure. *Journal of Constructivist Psychology, 14,* 85-105.

Nordvik, V., & Robert Liso, K. (2004). A primer on the building economics of climate change. *Construction Management and Economics, 22,* 765-775.

Norton, P., & Christensen, C. (2008). Performance results from a cold climate case study for affordable zero energy homes. *ASHRAE Transactions, 114*(1), 218-229.

Nussbaumer, L. L., (2004). Multiple chemical sensitivity (MCS): The controversy and relation to interior design. *Journal of Interior Design, 30*(2), 51-65.

Office of the Federal Environmental Executive. (2008). *The federal commitment to green building: Experiences and expectations.* Retrieved September 4, 2010, from: http://www.epa.gov/greenbuilding/pubs/about.htm.

Owen, C., & Dovey, K. (2008). Fields of sustainable architecture. *The Journal of Architecture, 13*(1), 9-21.

Oxford University. (2007). *The compact Oxford English dictionary* (2nd ed.). New York, New York: Oxford University Press.

Pile, J. F. (1995). *Interior Design. 2nd Edition,* New York, New York: Harry N. Abrams, Inc.

Piotrowski, C. (1994). *Professional Practice for Interior Designers, 2nd Edition,* New York, New York: John Wiley & Sons, Inc.

Pyke, C., McMahon, S., & Dietsch, T. (2010). Green building and human experience. *U.S. Green Building Council,* 1-13. Retrieved September 1, 2010, from: https://www.usgbc.org/ShowFile.aspx?DocumentID=7383.

Rewi, A. J. (2006). Into the light. *IIDA Perspective, Winter*, 36-40.

Reynolds, T. J., & Gutman, J. (1988). Laddering theory, method, analysis, and interpretation. *Journal of Advertising Research, 28*(1), 11-31.

Reynolds, T. J., & Olson, J. C. (2001). *Understanding Consumer Decision Making.* Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc. Publishers.

Robinson, S. (2007). Greening retail. *Journal of Retail & Leisure Property, 6*(4), 287-290.

Roubach, M. (2004). Meaning, phenomenology, and being, *Inquiry, 47,* 189-199.

Ruff, C. L., & Olson, M. A. (2009). The attitudes of interior design students toward sustainability. *International Journal of Technology & Design Education, 19*, 67-77.

Schlange, L. E. (2009). Stake holder identification in sustainability entrepreneurship. *Greener Management International, 55,* 13-32.

Schneiderman, D., & Littlejohn, A. (2010). *Adaptive Reuse, Sustainability and Experiential Learning in and Industry Sponsored Interior Design Studio* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from: http://www.idec.org/documents/2010ConferenceProceedings.pdf.

Seppanen, O., & Fisk, W. J. (2005). A model to evaluate the cost-effectiveness of improving office work through indoor environmental control. *ASHRAE Transactions, 111*(2), 663-672.

Sev, A. (2009). How can the construction industry contribute to sustainable development? A conceptual framework. *Sustainable Development. 17,* 161-173.

Shiers, D., Rapson, D., Roberts, C., & Keeping, M. (2006). Sustainable construction: The development and evaluation of an environmental profiling system for construction products. *Construction Management and Economics, 24,* 1177- 1184.

Short, P. C. (2010). Responsible environmental action: Its role and status in environmental education and environmental quality. *The Journal of Environmental Education, 41*(1), 7-21.

Snyder, O. & Steig, C. (2005). *Teaching Creative and Appropriate Selection of Materials* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from: http://www.idec.org/pdf/05ConferenceProceedings.pdf.

Solovyova, I., Rashid-Ali, H., Ohlenbusch, D., & Clark, M. (2010). *Teaching Sustainability: A Hybrid Approach* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from: http://www.idec.org/documents/2010ConferenceProceedings.pdf.

Steig, C. (2006). The sustainability gap. *Journal of Interior Design, 32*(1), vii-xxi.

Strife, S. (2010). Reflecting on environmental education: Where is our place in the green movement? *The Journal of Environmental Education, 41*(3), 179-191.

Studio 2030 (2010). *Bios,* Retrieved October 20, 2010 from: http://www.studio2030.com/bios.php.

Sustainable Building Task Force, (2003). *The costs and financial benefits of building green.* Retrieved August 20, 2010, from: http://www.usgbc.org/Docs/News/News477.pdf.

Thompson, B. (2007). Green retail: Retailer strategies for surviving the sustainability storm. *Journal of Retail & Leisure Property, 6*(4), 281-286.

Torres-Antonini, M., Park, N.-K., & Hasell, M. J. (2009). *The Complexities of Educating for Sustainability in the Interior Design Studio* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from: http://www.idec.org/documents/2009ConferenceProceedingsFINAL.pdf.

Tucker, L. M. (2010). *Four Approaches to the Cradle to Cradle House Design Competition* (Interior Design Educators Council International Conference Abstracts). Interior Design Educators Council. Retrieved from: http://www.idec.org/documents/2010ConferenceProceedings.pdf.

Tzempelikos, A., & Athienitis, A. K. (2005). Integrated thermal and daylighting analysis for design of office buildings. *ASHRAE Transactions, 111*(1), 227-238.

U.N. World Commission on Environment and Development, (1987). *Our Common Future,* Retrieved September 28, 2010 from: http://www.worldinbalance.net/pdf/1987-Brundtland.pdf.

U.S. Department of Energy Energy Information Administration, (1998). *Impacts of the Kyoto Protocol on U.S. Energy Markets and Economic Activity.* Retrieved September 30, 2010 from: http://www.eia.doe.gov/oiaf/kyoto/pdf/sroiaf9803.pdf.

U. S. Department of Energy Federal Energy Management Program, (2003). *Sustainable Design in Federal Facilities.* Retrieved August 15, 2010 from: https://www1.eere.energy.gov/femp/pdfs/bcsddoc.pdf .

U. S. Environmental Protection Agency, U. S. Department of Energy. (2010). *About Energy Star.* Retrieved October 6, 2010 from: http://www.energystar.gov/index.cfm?c=about.ab_index

U. S. Environmental Protection Agency Green Building Workgroup. (2004). *Buildings and the environment: A statistical summary.*

U. S. Environmental Protection Agency, (1997). *An office building occupant's guide to indoor air quality.* Retrieved September 4, 2010, from: http://www.epa.gov/iaq/pubs/index.html.

U. S. Environmental Protection Agency, (2010). *Energy Star Overview of 2009 Achievements.* Retrieved October 6, 2010 from: http://www.energystar.gov/ia/partners/annualreports/2009_achievements.pdf.

U. S. Environmental Protection Agency, (2010). *The Federal Commitment to Green Building: Experiences and Expectations.* Retrieved August 15, 2010, from http://www.epa.gov/greenbuilding/pubs/about.htm.

U.S. Green Building Council. (2011). *Intro – What LEED Is.* Retrieved April 16, 2011 from: http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1988.

U.S. Green Building Council. (2010). *About USGBC.* Retrieved September 30, 2010 from: http://www.usgbc.org/DisplayPage.aspx?CMSPageID=124.

U.S. Green Building Council, (2002). *Building Momentum.* Retrieved October 4, 2010 from: http://www.asid.org/NR/rdonlyres/41D8F661-EF76-4061-BFD2-2980665B4C18/0/BuildingMomentum.pdf.

U.S. Green Building Council. (2008). *U.S. Green Building Council Strategic Plan 2009-2013.* Retrieved September 30, 2010 from: http://www.usgbc.org/ShowFile.aspx?DocumentID=4708.

Vakili-Ardebili, A., & Boussabaine, A. H. (2007). Design eco-drivers. *The Journal of Architecture*, *12*(3),

Wallack, C., & Webb, J. (2007). *Sustainability: An Exploration of Process and Project* (Interior Design Educators Council 44th Annual International Conference Proceedings). Retrieved from: http://www.idec.org/pdf/2007IDECProceedings.pdf.

Wargocki, P., & Djukanovic, R. (2005). Simulations of the potential revenue from investment in improved indoor air quality in an office building. *ASHRAE Transactions*, *111*(2), 699-711.

Warren, J. (no date). LEED ratings: A community goal, a community collaboration. *American Society of Interior Designers.* Retrieved October 3, 2010 from: http://www.asid.org/NR/rdonlyres/FA0EEACD-530E-400B-A7B5-6A6BC4AA12F7/0/DesigningGreen.pdf.

White, J. D. (1990). Phenomenology and organization development. *Public Administration Quarterly, Spring,* 76-85.

Willis, J. W. (2007). *Foundations of Qualitative Research: Interpretive and Critical Approaches.* Thousand Oaks, California: SAGE Publications, Inc.

Wilms, W. W. (1982). Soft policies for hard problems: Implementing energy conserving building regulations in California. *Public Administration Review, November/December,* 553-561.

Winter, M. (2002). The greening of design. *Human Ecology,* 30(1), 8-11.

Winters, J. (2010). Compelled to be green. *Mechanical Engineering, February 2010,* 42-45.

Whitemyer, D. (2007). The road to green. *IIDA Perspective, Winter 2007,* 9-15. Retrieved July 12, 2010, from http://www.iida.org/content.cfm/perspective-archives.

Whitemyer, D. (2008A). Designers are visionaries. *IIDA Perspective, Summer 2008,* 8-10, 14. Retrieved July 12, 2010, from http://www.iida.org/content.cfm/perspective-archives.

Whitemyer, D. (2008B). The green jungle. *IIDA Perspective, Winter 2008,*14-21. Retrieved April 16, 2011, from http://www.iida.org/resources/category/3/1/0/documents/1207_the-green-jungle.pdf.

Whitemyer, D. (2010). The power of alternative ideas. *IIDA Perspective, Summer 2010,* 13-18. Retrieved September 4, 2010, from: http://www.iida.org/content.cfm/the-power-of-alternative-ideas_1.

Wray-Lake, L., Flanagan, C. A., & Osgood, D. W. (2010). Examining trends in adolescent environmental attitudes, beliefs, and behaviors across three decades. *Environment and Behavior, 42*(1), 61-85.

Yeang, K., (1998). Designing the green skyscraper. *Building Research & Information, 26*(2), 122-141.

Yohanis, Y. G., & Norton, B. (2006). Including embodied energy considerations at the conceptual stage of building design. *Journal of Power and Energy, 220*(A), 271-288.

Zmeureanu, R., (2000). Cost-effectiveness of increasing air-tightness of houses. *Journal of Architectural Engineering, 6*(3), 87-90.

APPENDIX A

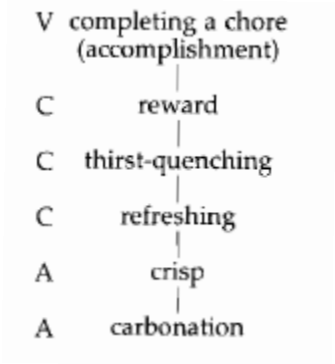

Figure 1: Example of a Ladder

Source: Reynolds & Gutman, 1988, p. 17.

Table 1: Example of an Implication Matrix

Source: Niemeyer, Anderson & Stockton, 2001, p. 97.

Content category	Superordinate constructs (%)	Subordinate constructs (%)	*Z*	*P*
Existential	17.5 (18)	1.9 (2)	3.71	.01
Moral	12.6 (13)	4.9 (5)	1.89	.06
Emotional	18.4 (19)	22.3 (23)	–.67	.51
Relational	12.6 (13)	34.0 (35)	–3.39	.01
Personal	29.1 (30)	21.4 (22)	1.33	.18
Intellectual	5.8 (6)	3.9 (4)	.71	.48
Specific interests	0.0 (0)	4.9 (5)	–2.24	.03
Concrete descriptors	3.9 (4)	6.8 (7)	–.91	.37

Figure 2: Example of a Hierarchical Value Map

Source: Reynolds & Gutman, 1988, p. 19.

APPENDIX B

Interview Questions

The first set of questions will address such topics as whether or not the participant has had exposure to sustainable interior design and, if so, what type of exposure has the participant had and when did that initial exposure take place.

1. So far in your career as an interior designer, have you had any experience with or exposure to sustainable design?

2. Do you recall the first time you were exposed to sustainable interior design? If so, approximately when did you first become exposed to sustainable interior design?

3. Could you describe the context of your first exposure to sustainable interior design?

4. What are some of the sustainable strategies you have used in your interior design projects?

5. Have you received any education regarding sustainable interior design strategies? If so, please describe them.

6. What types of sustainable design projects have you been involved with? For example: specialty, average size, and budget.

7. Please describe your overall experience with sustainable interior design.

The second set of questions will be open-ended and are meant to elicit the designers' perceptions of sustainability as well as the meanings they attach to sustainable interior design. Participants will be asked to relate their experiences with sustainable interior design practices.

1. How often have you used sustainable design strategies in your practice?

2. Is sustainability important an important issue to you?

3. If you feel that sustainability is important, why? In what context(s)?

4. What is your overall opinion of sustainability as it relates to interior design?

5. When/if you choose to pursue sustainable design strategies, why do you do so? (If not, why not? If/when applicable)

6. How do you perceive your ability to make sustainable design decisions?

7. Do you feel you have the proper education, training, or experience to effectively practice sustainable interior design strategies? Please elaborate.

8. What level, if any support do you feel you receive for the pursuit of sustainable interior design strategies? From employers/supervisors, colleagues/coworkers, and consultants.

9. Do you feel your clients are interested in sustainable interior design? Please elaborate.

The last set of questions will address the participants' future intentions toward sustainability.

1. Do you believe you will continue to practice sustainable interior design strategies in the future? Why or why not?

2. Do you expect sustainability to become more or less important to your practice and to your clients in the future?

3. What are some of the advantages you see to pursuing sustainable design strategies? Both for your clients and your interior design business.

4. What are some of the disadvantages you see to pursuing sustainable design strategies? Both for your clients and your interior design business.

5. Do you have any additional thoughts regarding the future of sustainable interior design?

Figure 3: Interview Questions

Survey Questions

The survey is demographic in nature and intended to elicit data that will provide context to subsequent interview data.

1. What is your gender?

2. What is your age?

3. What is your employment type?
    a. Employee at a large firm (100+ employees)
    b. Employee at a medium firm (25-99 employees)
    c. Employee at a small firm (1-24 employees)
    d. Independent contractor/consultant
    e. Owner/Partner at a firm

4. How many years have you been a practicing Interior Designer?

5. What is the highest level of education you have completed?
    a. Associates
    b. Bachelors
    c. Masters
    d. Doctorate

6. If you hold a Bachelors degree, was your Interior Design program CIDA (formerly FIDER) accredited?
    a. Yes
    b. No
    c. Unsure

7. In what area of Interior Design do you specialize? Check all that apply:
    a. Residential
    b. Hospitality
    c. Corporate
    d. Mixed-Use
    e. Institutional
    f. Other (please identify)

8. How many years have you been practicing within your current specialty?

9. Have you changed specialties during your career?

10. If you answered "Yes" to Question 9, how many specialties have you practiced?

11. Are you a member of any of the following professional organizations? Check all that apply:
    a. ASID
    b. IIDA
    c. NEWH
    d. NKBA
    e. USGBC
    f. Other (please identify)

12. Do you hold any of the following professional certifications? Check all that apply:
    a. NCIDQ
    b. LEED A.P.
    c. CKD
    d. ReGreen Trained
    e. Other (please identify)

13. Which, if any, certifications do you plan to pursue in the future? Check all that apply:
    a. NCIDQ
    b. LEED A.P.
    c. CKD
    d. ReGreen Trained
    e. Other (please identify)

Figure 4: Survey Questions

APPENDIX C

Table 2: Demographic Findings

Code Name	Gen	Age	Employment Type	Yrs of Practice	Edu. Level	CIDA?	Specialty	Prof. Org.	Certifications	Future Certs
Sue	F	31	25-99	5	blank^^	blank	Education	blank	blank	blank
May	F	52	Ind.	32	B	Y	Res, Hosp, MU, Sus	USGBC, ASID	LEED AP (BD+C), ReGreen Trained	LEED AP (ID+C)
Ben	M	42	100+	12	B	^No	Corp, Lab, Tech	USGBC	LEED AP	Architectural License
Tara	F	bk	100+	30	A	Y	Corp	ASID	NCIDQ	blank
Ann	F	50	Owner Partner	27	B	Y	Corp	WID	NCIDQ	LEED AP
Nina	F	25	100+	1	B	Y	*Corp	ASID	LEED GA	NCIDQ, LEED AP
Mindy	F	27	Ind.	blank	B	y	Res, Corp, Hosp, MU, Sus	USGBC	LEED GA	NCIDQ, LEED AP
Mike	M	28	Owner Partner	2	A	blank	Res	ASID, IIDA	blank	NCIDQ, LEED AP
Beth	F	40	Ind.	11	B	Y	MU, Corp, Inst	none	none	NCIDQ, LEED AP
Bill	M	34	100+	13	B	y	Corp, Inst	IIDA, USGBC	NCIDQ, LEED GA	LEED AP
Linda	F	32	25-99	6	M	y	Res, Hosp, Corp, Inst	IIDA, USGBC	NCIDQ, LEED AP	blank

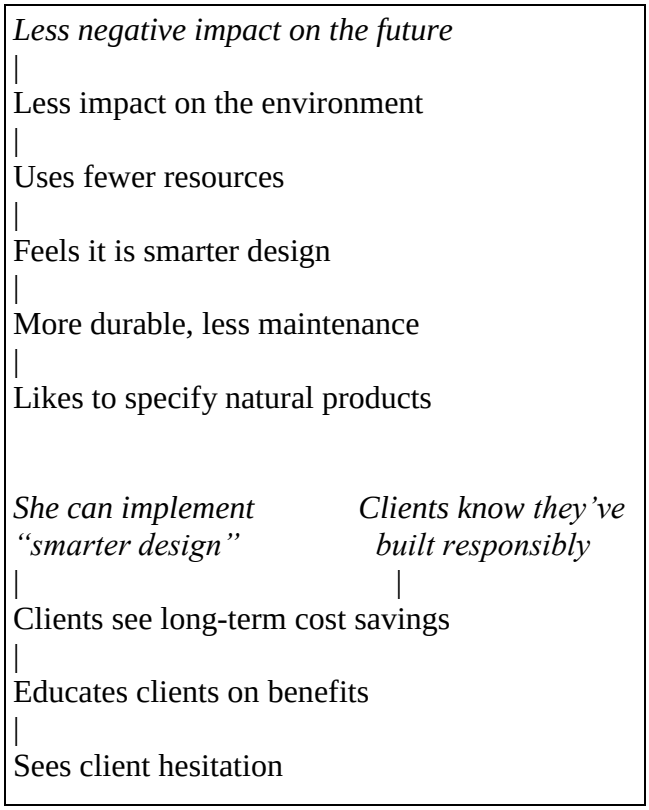

Figure 5: Hierarchical Ladders; Sue

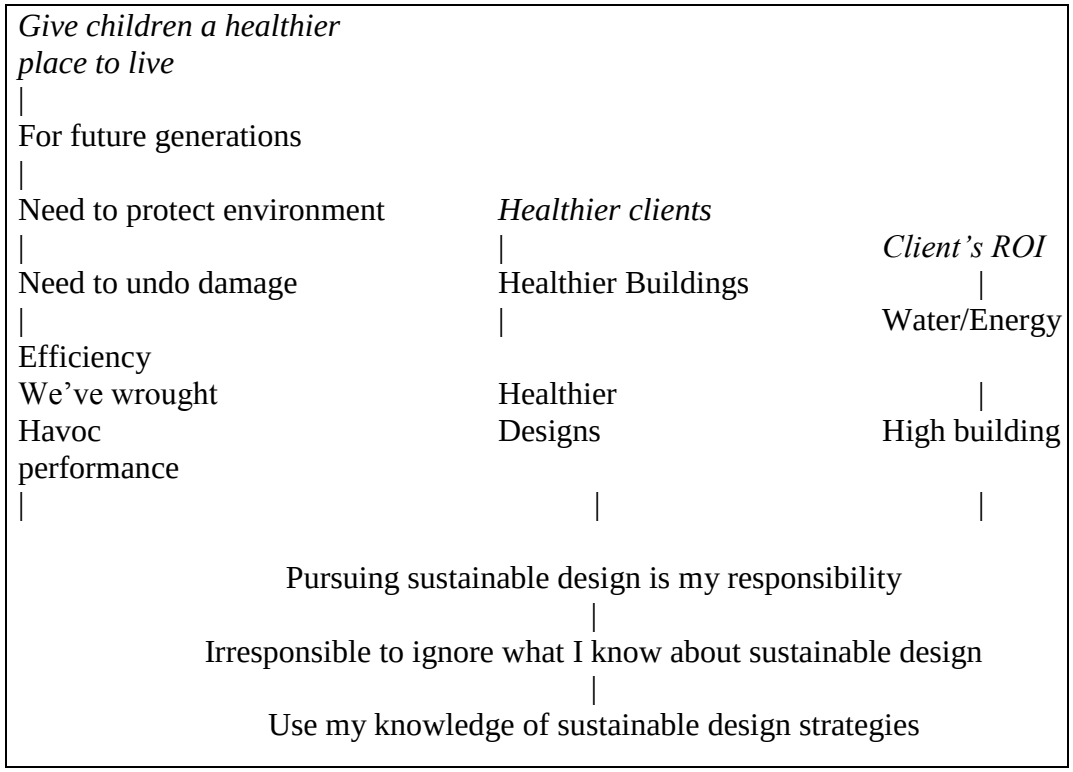

Figure 6: Hierarchical Ladder; May

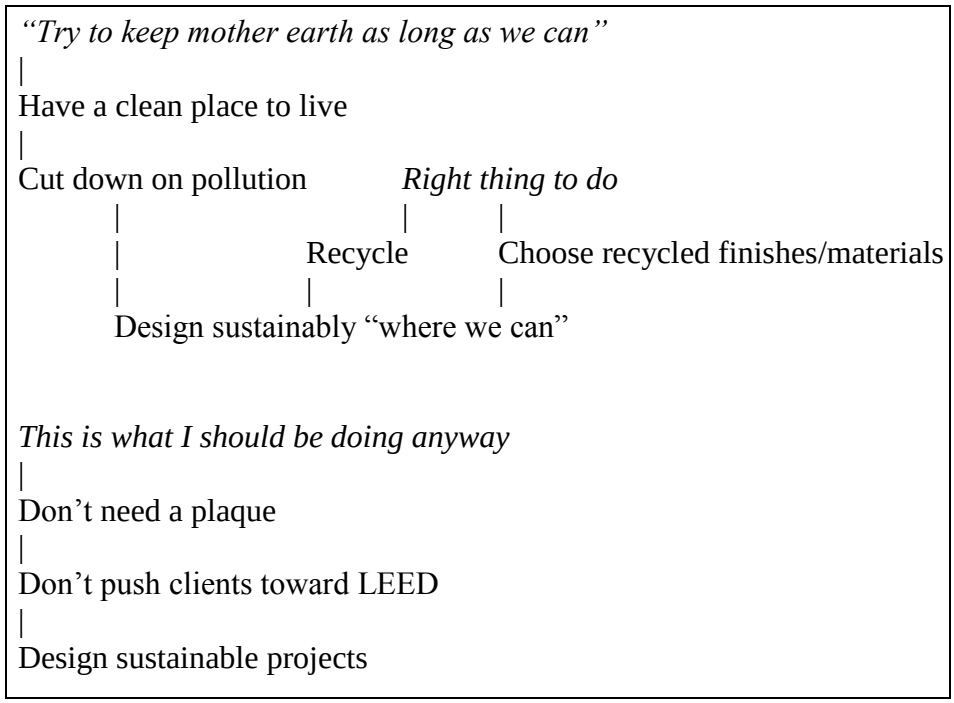

Figure 7: Hierarchical Ladders; Ben

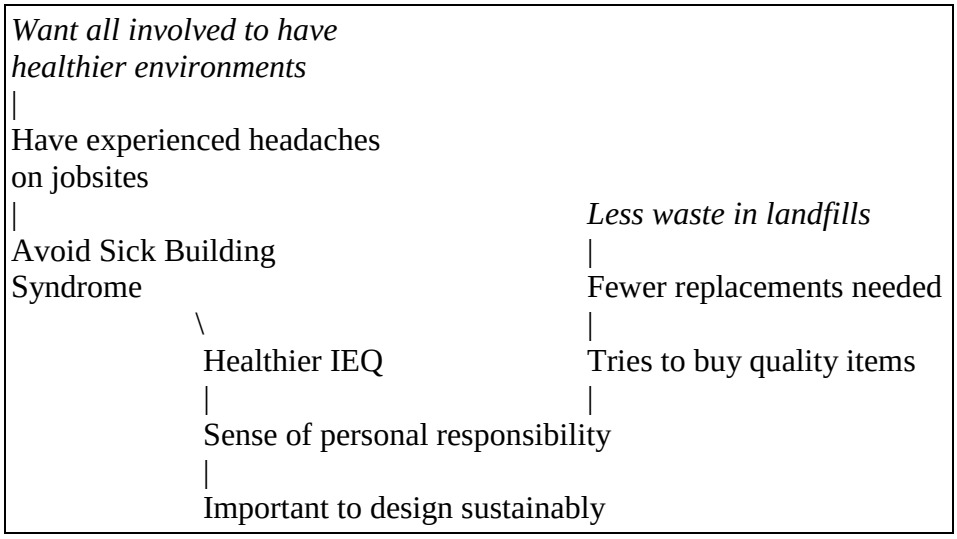

Figure 8: Hierarchical Ladder; Tara

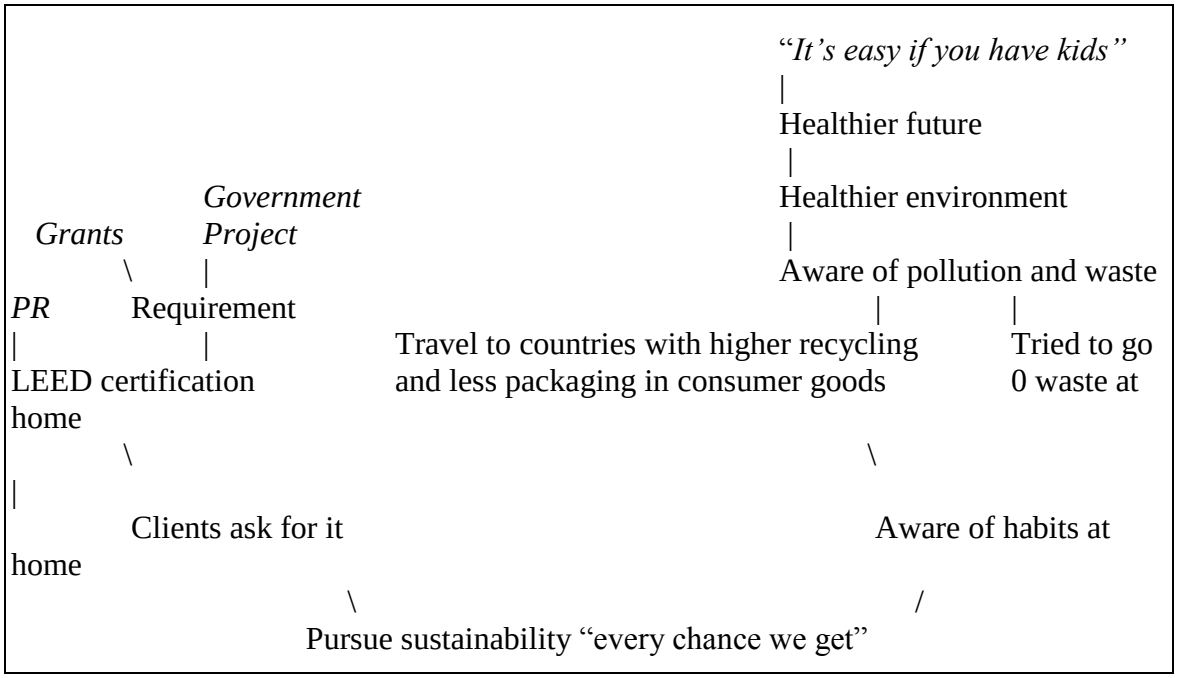

Figure 9: Hierarchical Ladder; Ann

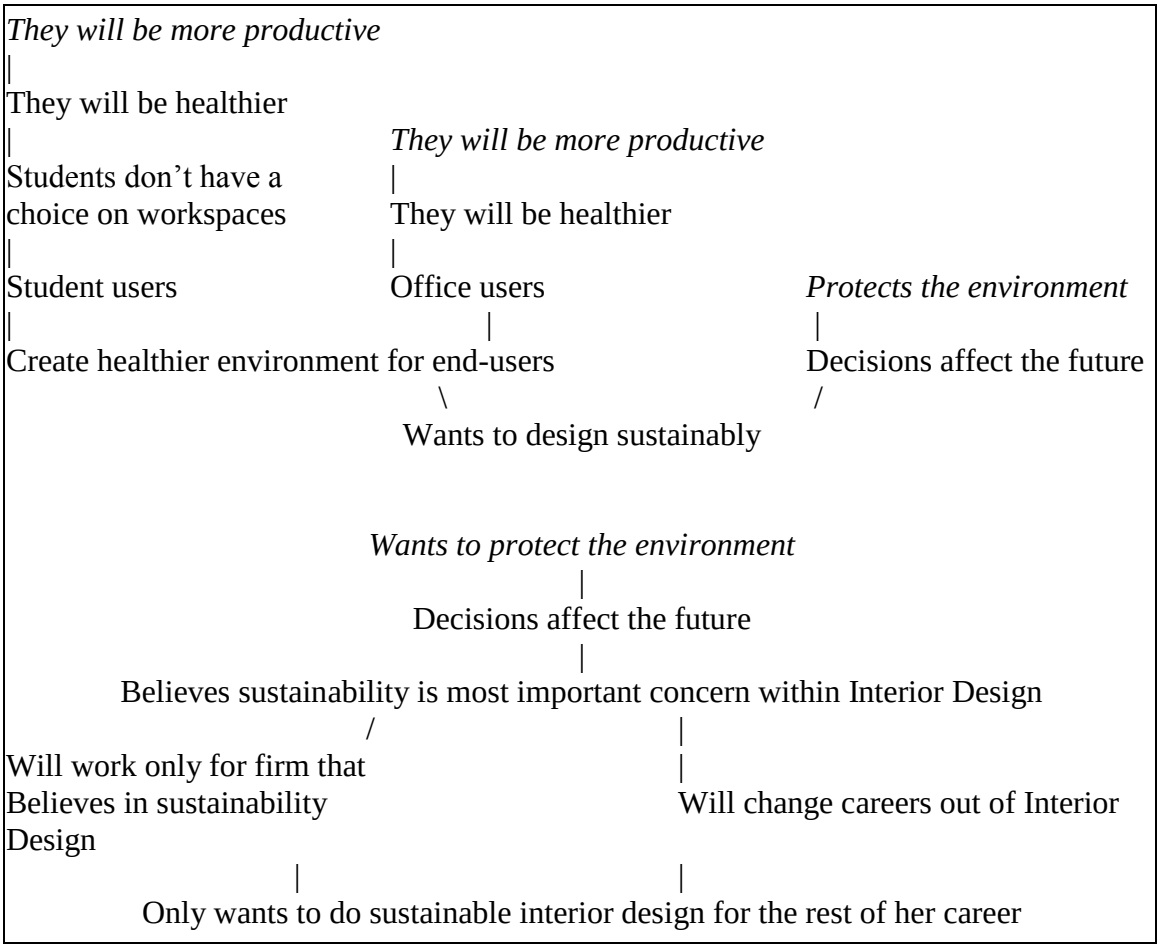

Figure 10: Hierarchical Ladders: Nina

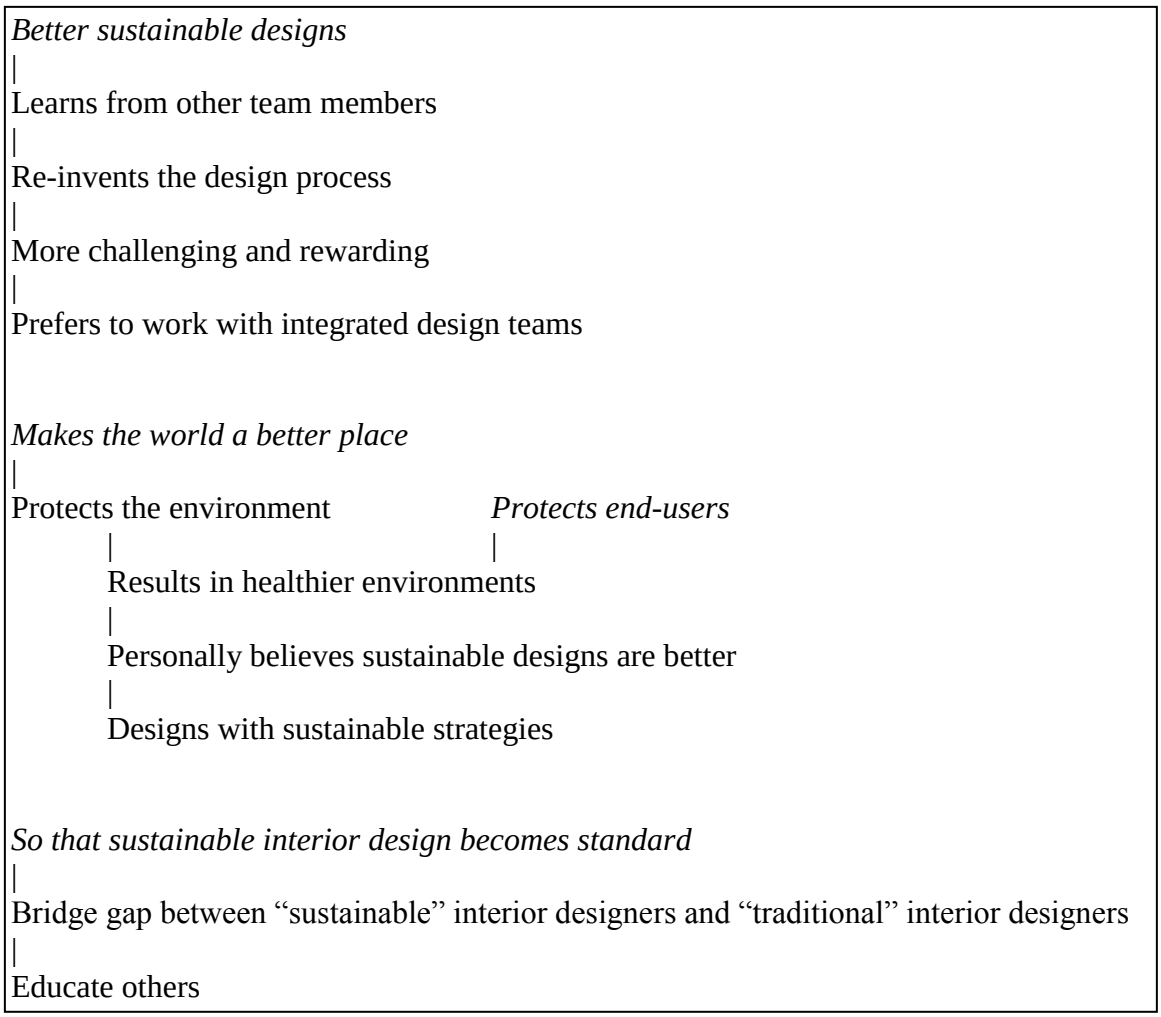

Figure 11: Hierarchical Ladders; Mindy

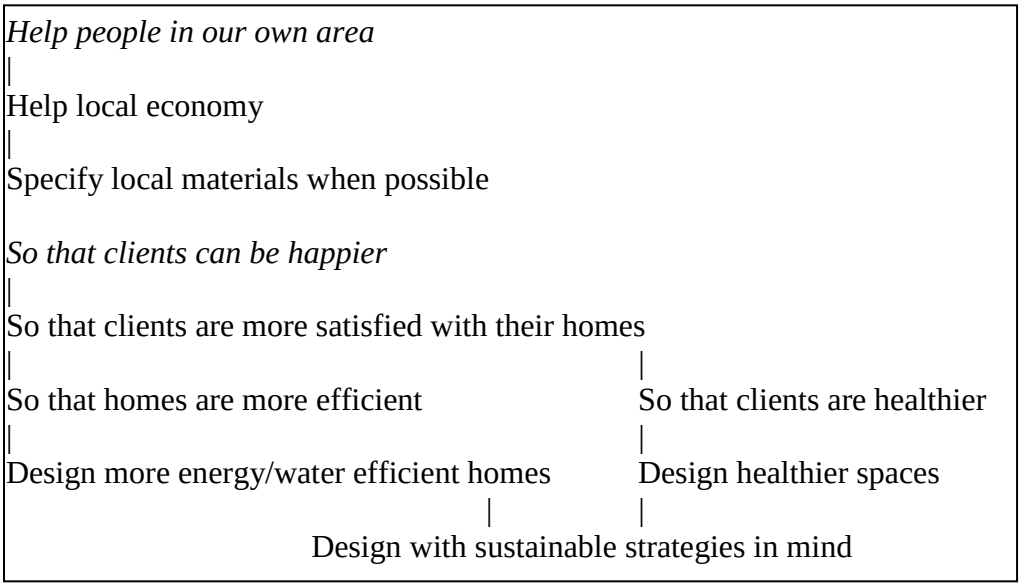

Figure 12: Hierarchical Ladders; Mike

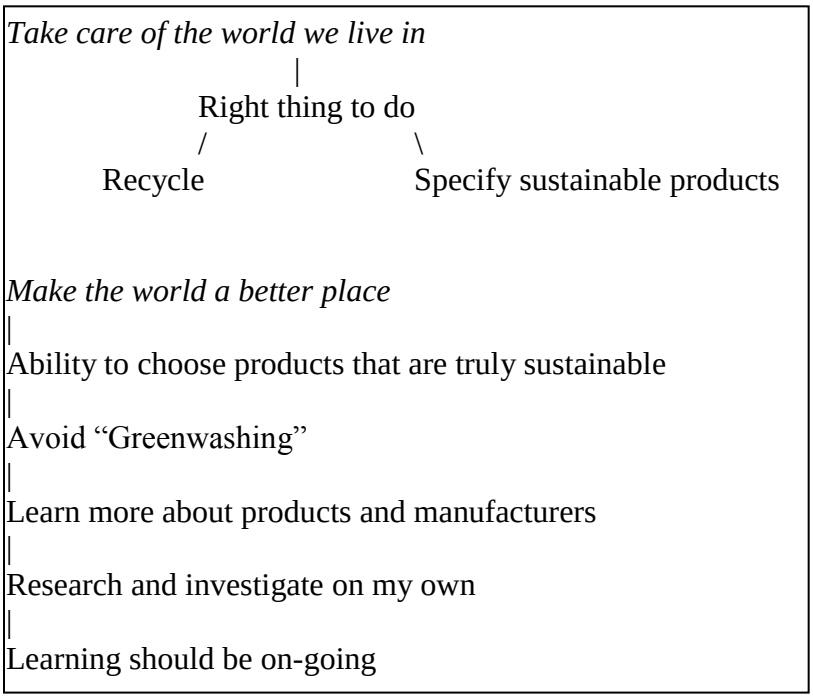

Figure 13: Hierarchical Ladders; Beth

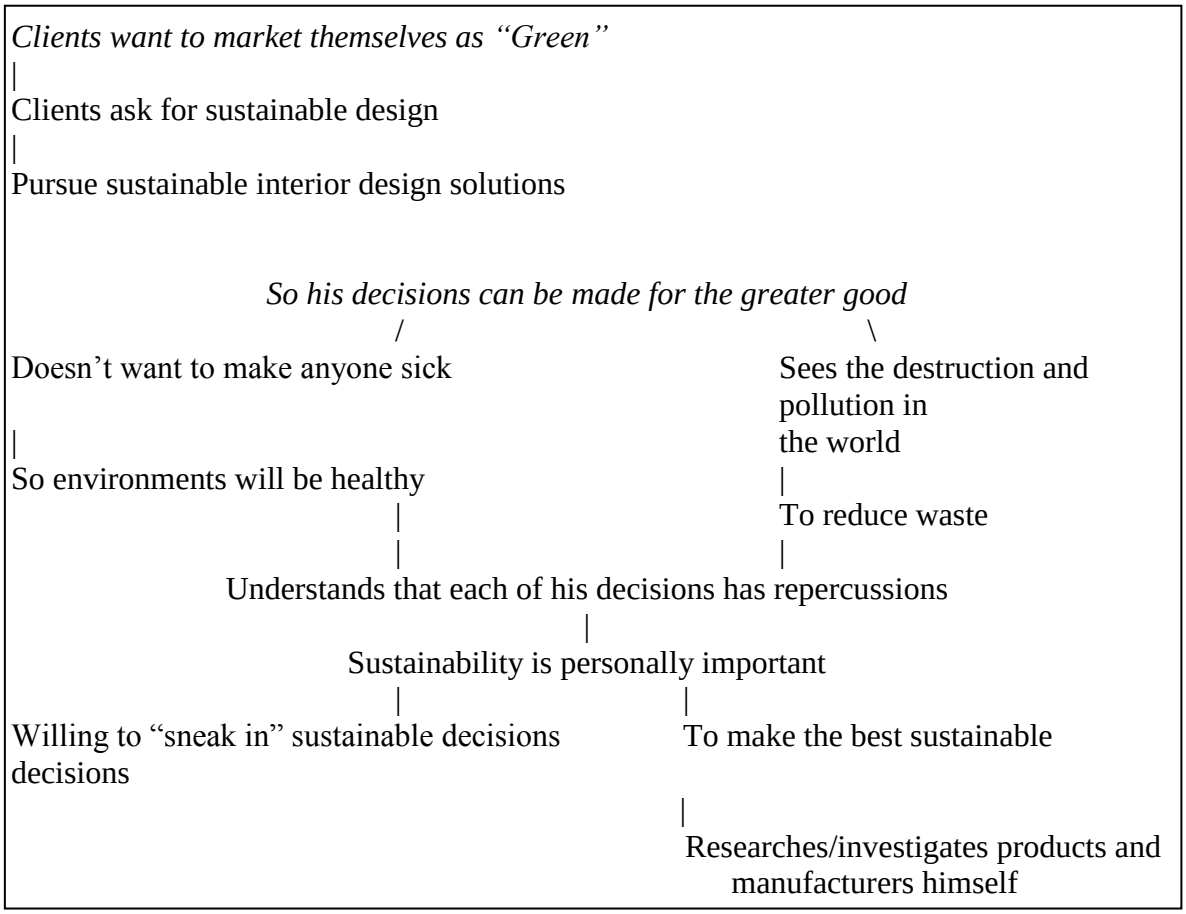

Figure 14: Hierarchical Ladders; Bill

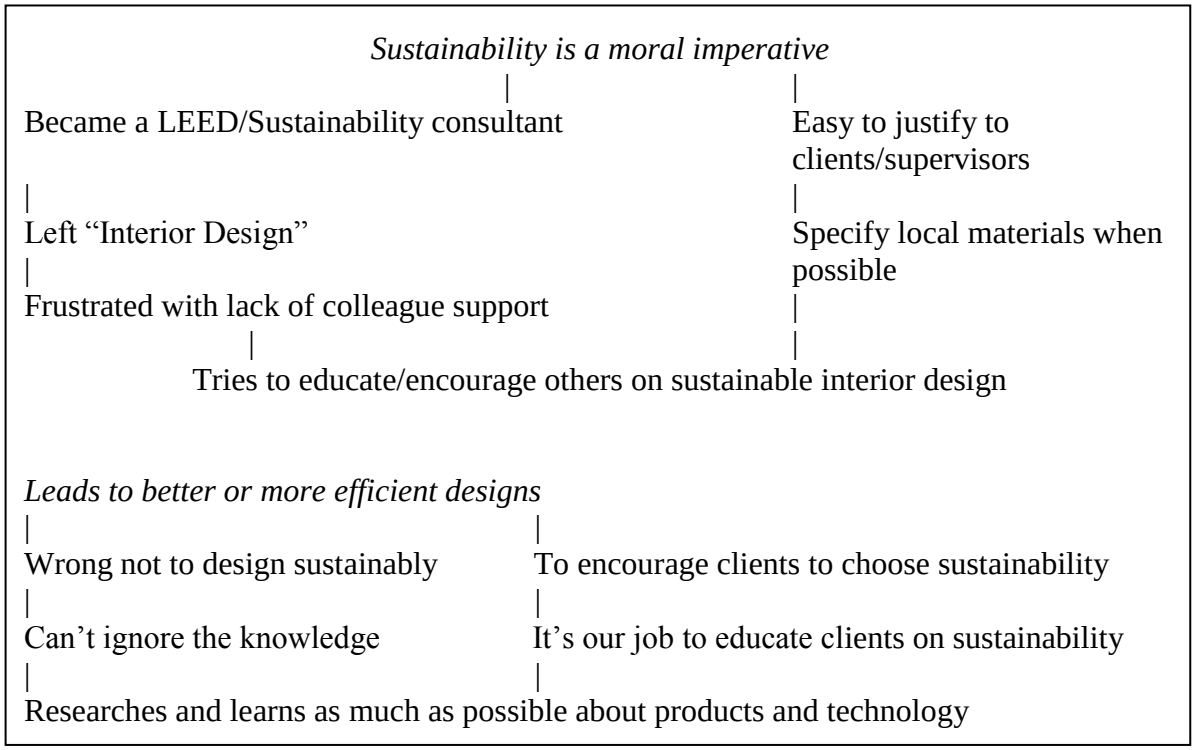

Figure 16: Hierarchical Ladders; Linda

Table 3: Implication Matrix

LADDER	THEME A	THEME B	THEME C	THEME D	THEME E	THEME F
Sue 1		4	1			
Sue 2			1	2		
May	2	3	2	1		
Ben 1		3				
Ben 2			1			
Tara	1	1	1			
Ann	1	2				
Nina 1	2	1		1		
Nina 2		1				
Mindy 1			1			
Mindy 2	2	1	2			
Mindy 3					1	
Mike 1						1
Mike 2	3	1				
Beth 1		1	1			
Beth 2			1			
Bill 1						
Bill 2	2	2	3			
Linda 1			1			
Linda 2			2			
TOTAL	13	20	17	4	1	1