EXECUTIVE SUMMARY

PURPOSE OF STUDY
The purpose of this project was to:

1. Understand how people with Intellectual Developmental Disabilities (I/DD) and Autism Spectrum Disorders (ASD) experience and interact with their environments to inform optimum design solutions and;

2. Provide design guidelines for architects and designers to help them create living and learning environments that enhance the quality of life for adults with I/DD.

RESEARCH SUMMARY
The number of individuals with Autism Spectrum Disorder (ASD) transitioning to adulthood is growing, and support for independent living has been instigated and focused on the creation of communities with “village” like atmospheres rather than institutions to help individuals with ASD transition from their homes more smoothly. This grounded theory research examined how people with I/DD use their senses to comprehend their physical surroundings and perform tasks of daily living. Content analysis of five intentional housing and work communities throughout the United States for this population was examined and analyzed to inform the design of optimum communities. Fifty-eight adults with I/DD and their support staff who lived, learned, and worked in these communities were observed and interviewed to capture the quality of the person-environment fit in these settings. New evidence revealed that the various sectors within the population have different environmental needs and tolerances. Six themes that respond to these differences were developed and operationalized into a neuro–considerate environmental design model that suggests guidelines for the design of residential and work environments that accommodate this group’s needs.

IMPLICATION HIGHLIGHTS
A new model was developed for designing interiors for neuro-diverse populations

1. Communicate
   • Previewing
   • Definable architectural forms and surfaces
   • Purposeful, meaningful spaces

2. Empower
   • Access to nature
   • Organize environment
   • Personal space
   • Safe waiting areas
   • Use of technology

3. Engage
   • Social connections, corridors, porches
   • Open and closed spaces for appropriate activities
   • Focal points

4. Accommodate
   • Control sensory sensitivities
   • Escape spaces
   • Memorable transition spaces
   • ADA compliance

5. Enrich
   • Cater to the senses
   • Sensory rooms
   • Opportunities for interaction

6. Encourage
   • Transparency (glazing)
   • Choice/previewing
   • Clear site lines
   • Ergonomic and Anthropometric furniture
NEURO CONSIDERATE DESIGN
MODEL FOR I/IDD

BACKGROUND
The transition to adulthood is challenging for all individuals, but even more difficult for individuals with Autism Spectrum Disorders (ASD). Entitlement to public education ends and choices must be made regarding education or vocational training, employment, housing, and social involvement. In the U.S., a projected 500,000 children with ASD are expected to reach adulthood within the next 15 years. Currently, there is a limited amount of appropriate housing to fill this need (Ahrentzen, 2009). Additionally, aging parents are concerned with how their children with ASD will function in society when they are no longer living (Weeks, 2009). To date, support for independent living (IL) has been instigated and maintained by caring charitable foundations, with particular focus on creating communities rather than institutions. They advocate “village” like atmospheres since research has shown these types of environments help individuals with ASD transition from their homes more smoothly. As young adults with high functioning autism can be trained to take some ownership for their care and that they can live independently with minimal supervision (Felece & Emerson, 2001), a better understanding of how people with I/IDD and ASD experience and interact with their environments is needed to inform optimum design solutions.

METHODOLOGY
Using a transactional approach that takes an event as its unit of analysis, this research examined the behaviors of adults with I/IDD living in communities that include housing, meaningful work opportunities, education, training, and social and cultural supports. Data was collected using the following tools:

- Content Analysis
  - Physical properties of communities including geographical location, overall property size, buildings on each site and their sizes, the spatial relationships, distances between each building, the use of each building, and room inventories
  - Operational practices, support services, and resident supports
  - Resident personal records – demographics, diagnosis, length of residency, and daily schedules
- Interviews using picture preference and observations of residents at home, work environment for performing jobs, learning environment for literacy, numeracy, art, and music class, therapy and counseling, and accessing spaces
- Interviews with support staff and administrators on community’s operational philosophy, policies, procedures and cultural norms, and (re-)design recommendations to spaces

KEY FINDINGS
The data collected was analyzed and developed into the Neuro Considerate Design Model for I/IDD. A prototype was developed to illustrate the model, in which the final stage was a charrette by design professionals to develop more prototype communities using this model. The model consists of six themes:

- **Communicate**: spaces should be designed for cognitive clarity, legibility (reduce clutter), predictability, consistency, coherence, meaningful experiences, and engaging the senses
- **Empower**: spaces should be clearly defined, purposeful, accessible, attainable, and flexible, should cultivate senses, provide choice, and support users to thrive and excel
• **Engage**: spaces should allow residents to respond rather than dictate, hold attention, be meaningful and purposeful, provide opportunities, be expressive and organized, and have some complexity

• **Accommodate**: spaces should celebrate diversities in perceptions and cognition, enable residents to respond rather than dictate, and accommodate for aging

• **Enrich**: spaces should engage the senses, provide opportunity and choice, provide exposure for inquiry, allow for residents to self-determine and make decisions, and incorporate technology

• **Encourage**: spaces should inspire individuality, be motivational, support dignity for residents to excel, succeed, develop, and grow, and match skills

**PUBLICATIONS**


**PRESENTATIONS**


RESEARCH TEAM BIO

Angela Bourne, Ph.D., is an interior design educator/professor with over 30 years of experience. She is also the president of Neuro-Considerate Environments, an Interior/Environmental Design company that specializes in the design of healthy environments for individuals with neuro-diversities. Her research and teaching pedagogy reflect her conscientious approach to developing effective and socially sustainable environments for people with cognitive challenges. The pragmatic approach she uses to conduct research and create therapeutic spaces is supported by the attention she gives to human behavior; particularly the sensorial experiences of people while engaging in spaces and their surroundings and the influence they have on well-being.

Kristi Gaines, Ph.D., is the director of the Graduate Programs in Interior and Environmental Design at Texas Tech University. She received her Ph.D. in Environmental Design with collaterals in Architecture and Education and has a combined 20 years of professional interior design and teaching experience. Her research focuses on the interaction between individuals with neuro-diversities and the built environment. She is a member of several professional organizations and has served on the Board for the International Interior Design Association Texas-Oklahoma Chapter.

Debajyoti Pati, Ph.D., received his doctorate degree in architecture from the Georgia Institute of Technology, and has over 23 years of experience in research, practice, and teaching in the United States, Canada, and India. He served as the vice president and director of research at HKS Architects, a leading international healthcare design firm, before moving to Texas Tech. Dr. Pati was voted among the 25 most influential people in healthcare design in 2009 and 2010. He also received the Best International Research Project award by the International Academy for Design & Health, Stockholm, in 2009 and 2010.