

**PERSONAL AND ENVIRONMENTAL FACTORS
PREDICTING COMMUNITY MOBILITY
OF YOUNG AUTISTIC ADULTS**

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ABSTRACT

Community mobility refers to an individual's ability to leave their home and navigate their surroundings to access essential services, employment, education, and social opportunities within the community. It is particularly critical for autistic young adults (AYA), as it directly influences their ability to engage and participate in their communities. Lack of mobility affects multiple aspects of life, including quality of life, loneliness, health, education, employment, and social activities. AYA encounter numerous personal and environmental barriers to community mobility.

AYA, professionals and caregivers of AYA report that personal and environmental factors influence community mobility. However, prior research in this area has focused on beliefs and opinions with limited empirical examination. In previous research, AYA, professionals and caregivers of AYA beliefs and opinions about factors influencing community mobility were explored through qualitative approaches, focusing on personal experiences and perspectives. While these insights are valuable, this study expands on previous findings by systematically testing these beliefs across different dimensions of community mobility. By using structured data collection and statistical analyses, the study aims to validate the identified factors, identify patterns, and provide evidence-based understanding of the factors that influence mobility.

Autism research has historically shown that beliefs and opinions, while valuable to inform, are not always accurate and require further evidence-based validation. Moving forward additional robust, empirical studies that systematically examine which personal or environmental factors are associated with dimensions of community mobility will

provide much needed additional insight into AYA community mobility. Using an evidence-based approach informed by the ICF framework, this study analyzes self-reported data from AYA to identify associations between environmental, and community mobility data from AYA. By applying data collection and analyses methods, this study advances understanding of the factors that shape community mobility beyond personal beliefs and opinions.

This study advances how community mobility is examined by adopting a more comprehensive definition to create a deeper understanding of this critical factor in the lives of AYA. Specifically, this study examines community mobility through four dimensions: frequency, sufficiency, satisfaction, and ease, and investigates how personal and environmental factors are associated with these dimensions.

This quantitative study used a cross-sectional design. A total of 162 AYA completed a survey assessing dimensions of community mobility, personal and environmental factors. Statistical analyses addressed the proposed research questions and included correlations, chi-square tests, one-way ANOVA and regression analyses to examine bivariate and multivariate associations between personal and environmental variables across the four dimensions of community mobility.

The results reveal distinct patterns across different dimensions of community mobility, with some dimensions showing stronger associations with specific personal or environmental factors. Findings indicate that multiple personal and environmental factors are differentially associated with various dimensions of community mobility. The dimension of ease was most frequently associated with personal factors, while frequency of mobility showed the most associations with environmental factors such as walkability

and crime rates. Employment, social support, and autism-related stigma emerged as the most frequently associated factors across multiple dimensions of community mobility. These findings suggest that each dimension of community mobility is distinct and should be considered when measuring community mobility. The results provide a foundation for person- and environmental-centered strategies aimed at enhancing mobility and improving the quality of life for AYA.

Keywords: Autism, Young Adults, Community Mobility, Personal Factors, Environmental Factors

For Samuel, Luke, and Mary -Thank you for inspiring me every day, helping me keep my priorities in perspective, and providing the best kind of distractions. I hope you've seen how important it is to set goals and work hard to achieve them.

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CHAPTER 1

INTRODUCTION

This dissertation examines the community mobility of autistic young adults (AYA) aged 18–30. It employs the International Classification of Functioning, Disability, and Health (ICF) to provide a structured approach to understanding the complex interactions between AYA and their mobility within the community.¹ Additionally, this study is informed by Webber’s Mobility Framework. Webbers’ mobility framework encouraged new research to establish the relative importance of mobility determinants in different mobility contexts.² Community mobility literature, measurements and models guided the identification of mobility dimensions.³

Autism is classified as a developmental condition characterized by challenges in social interaction, communication, and repetitive behaviors.⁴ It is defined as a spectrum disorder because its manifestations vary widely among individuals, ranging from nonverbal individuals with significant cognitive impairments to highly articulate individuals with exceptional skills in specific areas.⁵ This variability means that each autistic individual experiences the condition uniquely, with differing strengths and challenges.⁵ Transitioning to adulthood poses specific challenges for AYA.^{6,7} This period often involves the loss of support structures, navigating complex systems such as higher education, employment, and independent living. Transitions can be daunting due to social communication difficulties and the desire for routine and predictability.⁸ Many AYA face higher rates of unemployment and social isolation compared to their neurotypical peers, largely due to these challenges.^{9,10}

Community mobility is critical for community participation. It encompasses the ability to move around one's community using various transportation modes such as public transit, private transportation, walking, and biking.^{11,12} Community mobility is crucial for AYA as it directly affects their access to education, employment, social activities, and healthcare.¹³ Being able to move freely within the community enables individuals to attend school or work, engage in social and recreational activities, and maintain their health and well-being through access to medical services.^{11,14,15} The American Disabilities Act of 1990 prohibits discrimination in areas of public life, including transportation. The U.S. Department of Transportation (DOT) asserts that equitable access to transportation is a right for all individuals, including those with disabilities and other historically underserved populations.¹⁶ Safe and accessible transportation is a right for individuals with disabilities.¹⁶⁻¹⁸

The relationships between personal factors (personal demographic and body structure/function - PBSF) and environmental mobility determinants with different dimensions of community mobility were examined using the ICF framework. To achieve these goals, a self-report survey was used to examine various personal (PBSF) and environmental factors. Prior research has identified beliefs about personal (PBSF) and environmental factors that might impact community mobility among AYA from the perspectives AYA, caregivers of AYA, service providers and the autism research community. Prior research has identified that beliefs and opinions about autism are not always accurate and require further investigation to validate their associations.¹⁹ Prior research has not empirically examined the relationship between personal and environmental factors and community mobility, including how these factors may impact

various dimensions of community mobility, frequency, sufficiency, satisfaction, and ease among AYA. The complexity of how these factors interact remains unexplored. An evidence-based confirmation of the factors associated with community mobility across its dimensions will help achieve a deeper understanding of their dynamic relationships. This understanding is essential for guiding successful post-secondary transitions and developing effective travel interventions.^{20,21}

Personal (PBSF) and environmental factors relevant for AYA considered in this study were based on prior literature and associated theories (See Table 10). These personal (PSBF) included personal demographic factors, socio demographics and co-occurring conditions.^{1,22} As guided by the ICF, body structure/function are personal factors that encompass anxiety, support level, sensory sensitivity, executive functioning, self-efficacy, and self-determination.¹ Social communication was treated as a personal factor in this study. While the ICF classifies social communication as an activity due to its role in interactions with others, Webber's Mobility Framework includes social communication, as a personal determinant of mobility.² Environmental factors used in this study included transportation accessibility, social support, crime rates, population density, walkability, autism stigma, and perceived safety.^{1,2}

Interventions have been developed to support safe and independent travel for individuals with disabilities and other transportation challenges. Many of these programs target personal and environmental factors identified by AYA, caregivers, and professionals as influencing community mobility. Most focus on building skills needed to navigate transportation independently, which often involves personal factors like executive function and or strategies to decrease sensory sensitivities and anxiety. *Drive*

Focus is a technology-based tool for individuals with cognitive or sensory challenges that builds hazard perception, visual scanning, and decision-making skills.²³ *Ready to Ride* and the Kennedy Center’s *Chance to Ride* provide personal training for transitional-aged youth and individuals with intellectual and developmental disabilities (IDD), covering emergency preparedness, road safety, transit etiquette, and trip planning.²⁴ *Stroll Safe* targets older adults, focusing on fall prevention, safe walking, and awareness of built and social environments.²⁵ At the systems level, *Easter Seals Project Action* trains providers to improve ADA compliance and accessible transit, while *Project RITE* supports professionals working with youth with disabilities through travel instruction and school-transit partnerships.²⁶ Together, these programs highlight how current interventions attempt to address the barriers that impact community mobility.

Despite the importance of community mobility and to improve upon existing interventions, we need to better understand personal (PBSF) and environmental factors as predictors of the level of community mobility for AYA, although these factors are often identified as barriers or facilitators.²⁷ For example, the personal (PBSF) factor “sensory sensitivity” might make using public transportation overwhelming, while “social communication difficulties” could create challenges in navigating new environments or seeking assistance. Additionally, the “lack of accessible and reliable transportation options”, an environmental factor, can severely limit AYA mobility. These mobility barriers contribute to reduced community participation and quality of life for this population. In this study, personal (PBSF) and environmental factors were analyzed to determine associations and predictors of community mobility using data obtained from AYA. This analysis aimed to provide a comprehensive understanding of how these factors

interact with and impact community mobility across the four dimensions among AYA individuals.

Overall, this dissertation aims to advance the understanding of community mobility for AYA. The research objectives are to examine the relationships between personal (PBSF) and environmental variables within the specific dimensions of community mobility, frequency, sufficiency, satisfaction and ease. It first investigates which personal variables are associated with and most predictive of dimensions of community mobility. It next investigates which environmental variables are associated with and most predictive of dimensions of community mobility. Finally, it explores the relative contributions of both personal (PBSF) and environmental factors that effectively predict mobility outcomes. Identifying these associations and predictors is critical, as improving community mobility can enhance participation and health outcomes for AYA. Results of this study further our understanding of the complex dynamics involved in community mobility for AYA. The findings have practical implications for developing interventions and programs that address predictors of AYA community mobility. Community mobility provides AYA with more opportunities to participate in employment, leisure, and other social activities, thereby improving quality of life.

The International Classification of Functioning, Disability, and Health (ICF) framework recognizes personal factors as unique characteristics of an individual that shape how they experience functioning and disability.¹ The ICF framework also recognizes environmental factors as influencers of community mobility. This study applied the ICF framework and explored how personal (PBSF) and environmental factors

impact community mobility, providing a comprehensive understanding of the barriers and facilitators faced by Autistic Young Adults (AYA).

Autism characteristics, autism prevalence, and the uniqueness of AYA are described to provide context on the population and the factors that may influence their community mobility. This chapter briefly emphasizes the importance of evidence-based research in validating or refuting beliefs and opinions that have circulated within the autism community. It provides the definition of community mobility and explains how others have conceptualized community mobility through Beverly's 5A framework and existing literature. It identifies key dimensions of mobility and presents a comprehensive approach to defining these dimensions within the context of community mobility. Finally, this chapter discusses the importance of community mobility and its impact on the affected population.

Autism

Defining Autism

Autism was first recognized in 1947 by Leo Kanner as a unique disease different from schizophrenia.²⁸ Historically, autism was often misdiagnosed as childhood schizophrenia, particularly in the early 20th century. This misdiagnosis occurred because both conditions shared similar symptoms, such as social withdrawal and behavior patterns.^{29,30} Autism is characterized as a lifelong developmental disability caused by brain differences.⁴ Autism Spectrum Disorder (ASD) is a group of brain differences that affect communication, social interactions, and adaptive behaviors.⁴ These differences can arise from a genetic condition or unknown causes.^{5,31} Autism brain disorders affect three

main domains: social interactions, communication, and restrictive and repetitive behaviors (Figure 1).

The neurodiversity movement and many in the autism community prefer language that identifies autistic characteristics as natural and valuable variations instead of impairments.³² The

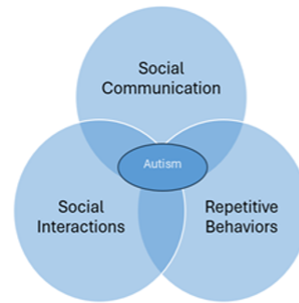


Figure 1. Domains. Domains Commonly Affected by Autism

neurodiversity movement emphasizes embracing neurological differences. It prefers to refer to ASD as a variation of human diversity rather than a disorder to be fixed. For example, instead of framing social communication as a deficit or challenge, it can be recognized as a distinct communication style that fosters authenticity, directness, and clarity in interactions. Similarly, rather than describing highly focused interests as restrictive, they can be seen as a unique strength that enhances skills such as memorization. Whenever possible, this dissertation will use preferred language, framing characteristics as natural and valuable rather than as challenges or deficits.

Autism Characteristics

The diagnostic criteria for autism according to the Diagnostic Statistical Manual 5th edition (DSM-5) requires a person to have persistent deficits in each of three areas of social communication and interaction: 1) social emotional reciprocity, 2) nonverbal communicative behaviors, and 3) developing, maintaining, and understanding relationships.⁴ In addition, a person must have at least two of four restricted, repetitive behaviors: 1) stereotyped or repetitive motions, 2) insistences on sameness, 3) highly restricted interests, and 4) hyper or hypo reactivity to sensory input.⁴ Each of these

categories may contain multiple subdomains that outline specific behaviors or symptoms used in the diagnostic process.⁴ These subdomains include 1) interpersonal relationships, 2) unawareness of person, 3) pre-occupation with objects, 4) striving to maintain sameness, 5) acute anxiety as a result of change, 6) abnormal perceptual experiences, 7) language delays, 8) distortion of movement, and 9) learning difficulties or islets of knowledge.⁴ The DSM 5th edition identifies management of executive functions as a critical factor for those with autism but does not include this in the DSM-5 diagnostic points.³³

Behavioral symptoms commonly associated with an autism diagnosis include uncommon eye-contact, atypical facial expressions, uncharacteristic social engagement and responsiveness, difficulty with peer relationships, lack of social awareness or empathy, poor language or communication skills, difficulty initiating social contacts through verbal or non-verbal means, rigid or unusual behaviors, and restricted interests.^{34,35} These behaviors vary in severity and observability among those with autism. In addition to these common symptoms or characteristics, other natural variations that may be unique to individuals or autism severity include intellectual disability, language impairment, unusual responses to sensory stimuli, challenging behaviors, and unique approaches to executive functioning.³⁶

Autism Prevalence

The term autism was identified following Kanner's (1943) recognition of a pattern of behaviors he observed in young children.³⁷ At that time, the prevalence rate of autism reported by Kanner's epidemiological study was less than 0.05% of children in the U.S.³⁸ Since then, studies have demonstrated a continuous global increase in children

diagnosed with autism^{35,39} Multiple meta-analyses, conducted at different points in time, have consistently found that autism prevalence has increased over the years. Fombonne (2003, 2005, 2009) identified the prevalence in children as 10 in 10,000 in 2003, 13 in 10,000 in 2005, and 20.6 in 10,000 in 2009.⁴⁰⁻⁴² More recently, these increases have been reported in the United States population data, with rates of 1 in 150 (0.67%) in 2001, 1 in 68 (01.47%) in 2010, and 1 in 54 (01.85%) in 2018.⁴³ Most recently, the Center for Disease control reported that 2020 data showed that approximately 1 in 36 (2.8%) children in the U.S. are diagnosed with autism.⁴³ The reported and observed increases in autism diagnoses are most likely the result of multiple factors including changes in diagnostic criteria, improved diagnostic practices, and increased knowledge and understanding of autism.⁴⁴⁻⁴⁷

Despite the evidence that the diagnosis of autism in children is increasing, there is a lack of prevalence research in adults.⁴⁸ Based on estimates and modeling, autistic adults currently represent approximately 2.2% of the U.S. adult population.⁴⁹ This number is anticipated to substantially increase based on the number of diagnosed children.⁵⁰ Increases in adult rates may also result from an improved understanding of autism, improved diagnostic criteria, and health professionals' awareness.^{46,51,52} Anderson et al. (2018) performed a systematic review of autism-related research studies and identified 2,857 research studies that investigated autism, of which only 21% focused on adulthood.⁵⁰ The limited research on autism in adulthood highlights a gap and the need to prioritize studies that focus on the lived experiences and perspectives of autistic adults.^{50,53,54}

Autistic Young Adults (AYA)

The increase in the prevalence of children diagnosed with autism means that the number of autistic individuals transitioning to adulthood is also increasing.⁵⁵ Young adulthood is a distinct life stage, generally defined as ages 18 to 30, though this range may vary across different sources.^{56,57} Young adulthood includes the important transition ages (16-24).^{49,58} Interruptions or delays in developmental milestones during young adulthood can have significant and lasting impacts on an individual's health and overall development.⁵⁹ The disruption of services during young adulthood can have significant consequences for health outcomes, as this period marks a critical transition where individuals move from pediatric to adult systems of care.⁵⁰ For all individuals, gaps in access to healthcare, social support, and essential services can lead to unmanaged chronic conditions, reduced preventive care, and increased mental health challenges.⁶⁰ For AYA these disruptions are even more pronounced as they often face difficulties in accessing appropriate healthcare providers, navigating complex service systems, and maintaining the structured supports that promote well-being.⁶¹

Additionally, disruptions in community mobility services, such as public transportation accessibility, paratransit availability, and structured travel training, can further exacerbate these challenges. Limited transportation options can reduce access to healthcare, employment, and social opportunities, leading to increased isolation and poorer overall health outcomes.⁶² For autistic young adults who may rely on predictable routines and specific supports for travel, disruptions in mobility services can significantly impact their independence, mental health, and participation in daily activities, reinforcing health disparities and limiting opportunities for community engagement.²⁷

Transition to adulthood is complex and not easily defined for any individual. The transition period is complete with objective and subjective milestones.^{63,64} Transition-age milestones often include college, employment, and independent living. This stage also involves key life decisions such as those about self-care, financial management, and long-term planning. Transitioning autistic adults have a number of adaptive challenges because of personal and environmental factors associated with their disorder.⁵⁰ Transition can be especially challenging for autistic individuals as it encompasses a critical time frame during which they lose services and supports they have received for years.⁵⁰ Prior studies have documented a sharp decline in services for transitioning individuals followed over 14 years during and after high school. This loss of services is often referred to as “falling off the services cliff”.⁶⁵ Federal policies have slowly recognized the challenges experienced by autistic adults during the transition period.⁶⁶

During young adulthood, individuals often lose some of their structured environments such as high school, transition programs, and post-secondary education.⁶⁷ Young adulthood is a challenging time for all populations and is marked by developmental uncertainty, changes in healthcare services, increased risk-taking, and rising mental health concerns.⁵⁰ This uncertainty arises from the difficulty of balancing new responsibilities, such as gaining independence, forming relationships, and making important life decisions, while still developing a clear sense of identity and direction.^{7,67} Many young adults begin to undertake adult responsibilities and are expected by family, educators, employers, and society to contribute to society.⁶⁸

AYA have poorer health outcomes when compared to neurotypical peers in many measurable areas such as mental health, self-efficacy, self-determination, and overall

quality of life.^{6,63,69} They can face higher rates of anxiety, depression, and suicidal ideation, often due to social isolation.⁷⁰ AYA may face challenges in expressing their mental and physical health needs and receiving appropriate care due to limited autism-specific training among healthcare professionals and the sensory-overwhelming environments of traditional hospitals and medical centers.⁶¹ Lower self-efficacy and self-determination can stem from systemic obstacles that limit independence, such as restricted access to education, employment, and transportation.⁷¹ These challenges contribute to reduced life satisfaction and healthcare inequities, emphasizing the need for inclusive policies, targeted interventions, and strengths-based support systems to improve long-term outcomes. Successful transition in adulthood requires collaboration at multiple level between interagency providers, schools, individuals, families, and the individuals.⁶⁸ Community integration, employment, community participation, and independent living all are domains critical for positive post-secondary outcomes.⁷² Community mobility is recognized as essential for success in each of these areas, yet there is limited research or guidance on best practices for supports and interventions for community mobility.⁷³⁻⁷⁵

Autism Myths and Truths: Understanding the Importance of Evidence-Based Knowledge

Evidence-based knowledge about autism is essential for shaping effective policies, support systems, and interventions. Many long-held beliefs about autism have been either debunked or validated through empirical research, influencing how autistic individuals are understood and supported.⁷⁶ This process involves systematically testing these beliefs through data collection, observation, and analysis, rather than relying on

anecdotal experiences or assumptions. By using these methods, researchers have been able to clarify misconceptions and provide evidence-based insights into autism.

Building on this foundation, this study aims to examine how beliefs and opinions about barriers and facilitators to community participation are associated with different dimensions of community mobility. Understanding these associations can help inform strategies to enhance mobility and inclusion for autistic individuals, ensuring that policies and interventions are grounded in both scientific evidence and lived experiences.

A familiar misconception is that autistic individuals lack empathy. Research has found that many autistic individuals may experience more empathy than neurotypical individuals, but differences in social communication and expression can make it appear otherwise.^{77,78} Many believe that autism primarily affects males. While autism has historically been diagnosed more frequently in males, emerging evidence suggests that females often engage in masking techniques, making their autistic traits less noticeable and leading to underdiagnosis.⁷⁹

Conversely, some beliefs about autism have been empirically validated. Research confirms that autism is a lifelong condition, but early intervention can significantly improve outcomes.⁸⁰ Additionally, sensory sensitivities are common among autistic individuals, and many experience challenges with executive functioning, such as planning, organization, and impulse control.⁸¹

Autistic young adults (AYA), caregivers, and professionals have shared various beliefs and opinions about community mobility, which is a crucial aspect of independence and social participation for AYA. While personal and environmental factors

have been recognized as potential barriers or facilitators to mobility, their specific impact has not been empirically validated. Examining opinions and beliefs to determine their validity may help challenge stigma, improve diagnosis, and promote neurodiversity-affirming approaches that enhance the quality of life for autistic individuals.

Community Mobility

Defining Community Mobility

Community mobility is broadly recognized across various disciplines as an essential component of daily life, enabling individuals to access opportunities for education, employment, recreation, and social engagement.^{82,83,84} The American Occupational Therapy Association (AOTA) defines community mobility as "moving around in the community and using public or private transportation, such as driving, walking, bicycling, or accessing and riding in buses, taxi cabs, or other transportation systems."^{85,85} The World Health Organization (WHO) defines community mobility as an individual's ability to move around their community. The WHO acknowledges that community mobility facilitates natural engagement in various life domains, including domestic, interpersonal, educational, occupational, civic, and leisure activities.⁸⁶ Public health initiatives, such as Healthy People 2030, recognize the importance of community mobility, highlighting the challenges individuals with disabilities face in navigating their communities and emphasizing the need to improve community access to enhance quality of life and overall well-being.⁸⁷

Community Mobility Historic Conceptualization

While existing definitions provide a foundational understanding of community mobility, they do not fully capture its complexity. Community mobility extends beyond just physical movement for community participation; it also encompasses social, psychological, and environmental factors that influence an individual's ability to navigate and engage with their surroundings. Given its multidimensional nature, community mobility has been historically conceptualized and measured differently across organizations, disciplines and individual opinions.⁸⁸

The Person-Environment-Occupation (PEO) model emphasizes the dynamic interaction between an individual (person), their surroundings (environment), and the activities they engage in (occupation) to determine overall participation and well-being.⁸⁹ In the context of community mobility, this model helps explain how personal factors (e.g., anxiety, executive functioning), environmental factors (e.g., transportation accessibility, safety), and the demands of travel-related tasks interact to influence an individual's ability to navigate their community independently. Understanding these interactions is important for identifying barriers and facilitators that impact community mobility and developing effective interventions to enhance participation. This model highlights how mobility is not only influenced by physical ability but also by environmental accessibility, social expectations, and personal motivations, further sharing how community mobility has been defined and measured differently across organizations, disciplines, and individual perspectives. Mobility justice perspectives focus on the equitable distribution of transportation resources, addressing social, economic, and environmental barriers that impact an individual's ability to move freely within their

community.⁹⁰ Together, these frameworks illustrate how personal abilities, environmental factors, and societal structures interact to shape mobility experiences.

In addition to the PEO model and mobility justice perspectives, other frameworks and classification systems offer their own unique conceptualizations of community mobility, each emphasizing different aspects of mobility and participation. One widely recognized framework is the Beverly Foundation's 5 A's, which defines availability, accessibility, accommodation, affordability, and acceptability as key components of community mobility.³ This framework has been used in policy and program initiatives, particularly in designing senior-friendly transportation systems.^{91,92} However, despite its adoption, it lacks empirical validation, raising questions about its effectiveness in fully capturing the complexities of mobility.

Beyond these frameworks, formal classification systems define community mobility from different approaches. The ICF categorizes community mobility within a broader framework of participation and activities, emphasizing how mobility supports engagement in various life domains.¹ It includes aspects such as navigating environments, accessing transportation, and participating in community and social life.¹ The AOTA's Occupational Therapy Practice Framework (OTPF)⁸⁵ classifies community mobility as an instrumental activity of daily living (IADL), highlighting its role in fostering independence through different transportation methods, including walking, driving, and public transit.

While both the ICF and OTPF acknowledge the significance of community mobility in life participation, the ICF emphasizes participation within community

contexts, whereas OTPF frames mobility as a functional skill necessary for daily living. These distinctions reflect the multiple components of mobility and suggest that community mobility is multidimensional.

A Comprehensive Approach to Community Mobility

Accurately measuring the multiple components of community mobility presents significant challenges. Traditional methods often focus on more objective metrics, such as the frequency or distance an individual travels, while neglecting subjective experiences like the ease of travel, satisfaction with mobility, and whether an individual's mobility meets their needs (sufficiency).⁹³ Tools such as Global Positioning Systems (GPS) and travel logs provide valuable objective data but fail to capture individuals' perceptions and feelings about their mobility experiences.^{11,94}

To address these limitations, emerging approaches have begun incorporating subjective experiences into mobility assessments, recognizing the importance of understanding how easily individuals can move, how satisfied they are with their mobility, and though less frequently and more implicitly, whether their mobility is sufficient to meet their needs. However, an analysis of existing mobility measures (Table 1) reveals that satisfaction and sufficiency are often inferred rather than directly assessed, as evidenced by their limited representation or absence.

Several assessments measure components of community mobility, either directly or indirectly. Many of the reviewed measures were included because they are among the most used or because they address different aspects of mobility, contributing to a more comprehensive approach. Measures like the Life-Space Assessment (LSA)⁹⁵ and the

UAB Life-Space Assessment⁹⁶ primarily focus on frequency and ease of movement. In contrast, tools such as the Community Integration Questionnaire (CIQ)⁹⁷ and the Craig Handicap Assessment and Reporting Technique (CHART)⁹⁸ assess social participation and integration, indirectly implying satisfaction and sufficiency through questions about community engagement. Similarly, functional independence assessments like the Instrumental Activities of Daily Living (IADL)⁹⁹ scale and the Physical Activity Scale for the Elderly (PASE)¹⁰⁰ examine an individual's ability to complete necessary activities, thereby reflecting sufficiency in meeting daily needs.

Some transportation-specific surveys, such as those used by New Jersey TRANSIT and Southeastern Pennsylvania Transportation Authority (SEPTA), directly ask about satisfaction with transportation modes and experiences. However, many community mobility assessments prioritize objective capabilities over subjective perspectives and do not address how individuals feel about their mobility and whether it meets their personal goals.

The measures listed in Table 1 illustrate that community mobility is a multidimensional concept that extends beyond mere physical movement to a location. It encompasses aspects of frequency, sufficiency, satisfaction and ease.

Table 1. Mobility Measures and Mobility Related Constructs

Measure	Concepts	Example Question
Life-Space Assessment (LSA) ⁷³	Frequency	In the past four weeks, how often did you leave your neighborhood? How frequently did you travel beyond your neighborhood? How difficult was it for you to reach places outside your immediate environment?
	Ease	Did you require assistance (from another person or an assistive device) when traveling to different locations? How often do you visit with friends or family members? Approximately how many times a month do you go shopping?"
Community Integration Questionnaire (CIQ) ⁷⁴	Frequency (sufficiency inferred)	Approximately how many times a month do you engage in leisure activities such as movies, sports, or dining out?" Approximately how many times a month do you visit friends or relatives?
	Ease	Who usually does the shopping for groceries or other necessities in your household? Items inquire about how often individuals engage in activities, such as the number of days per week they leave the house or nights per year spent away from home.
Craig Handicap Assessment and Reporting Technique (CHART) ⁷⁵	Frequency (sufficiency inferred)	Questions address the accessibility of the home environment and the availability of transportation, reflecting the ease with which individuals navigate their surroundings.
	Ease	Addresses how often an individual travels to different life-space levels (e.g., within the home, neighborhood, town, or beyond) over a specified period, typically the past four weeks.
UAB Study of Aging Life-Space Assessment ⁷⁶	Frequency (sufficiency inferred)	When you traveled to places outside your home, did you use any special equipment (e.g., cane, walker, wheelchair)?
	Ease	Participants rate each item on a scale from 1 (None at all) to 5 (An extreme amount), indicating the degree of difficulty experienced performing travel tasks.
Difficulty with Mobility Questionnaire (DMQ) ⁷⁷	Ease	How difficult is it for you to climb a flight of stairs without stopping? Participants evaluate the ease or difficulty with which they can perform each depicted activity.
Mobility Assessment Tool-Short Form (MAT-SF) ⁷⁸	Ease	Addresses independent travels on public transportation or drives own car. Participants are rated based on their level of independence
Instrumental Activities of Daily Living (IADL) Scale ⁷⁹	Ease	

Table 1. (continued).

Physical Activity Scale for the Elderly (PASE) ⁸⁰	Frequency	In the past 7 days, how often did you walk outside your home for exercise?
Community Ambulation Questionnaire ⁸¹	Frequency (sufficiency inferred)	In the past week, how many times did you visit a shopping center or mall?
	Ease	How challenging is it for you to use public transportation?
National Aging and Disability Transportation Center (NADTC) Survey	Satisfaction	Collects data on user satisfaction with various transportation modes, asking participants to rate their satisfaction with each method used in the past six months.
NJ TRANSIT Customer Satisfaction Survey	Satisfaction	Asks bus, rail, light rail, and Access Link customers to rate their satisfaction with over 40 service attributes on a scale from 0 to 10.
Transportation Customer Service Survey	Satisfaction	
PROMIS Satisfaction with Participation in Discretionary Social Activities	Satisfaction	Evaluates satisfaction with involvement in social activities chosen by the individual.
Meaningful Activity Participation Assessment (MAPA)	Satisfaction	Measures both the frequency and meaningfulness of activities, capturing subjective aspects of participation.

Identifying the Dimensions of Community Mobility

Recognizing complexity, the current study explored various components of community mobility and employed a comprehensive approach to develop both objective and subjective dimensions of mobility. Through exploration including reviewing existing measures and identifying recurring concepts, four key dimensions of mobility, frequency, ease, sufficiency, and satisfaction, were selected to capture the full spectrum of community mobility experiences. These dimensions emerged from an analysis of commonly used assessments and ensure a comprehensive approach to capturing the full spectrum of mobility experiences. Integrating insights from prior research and validated

measures provides a structure to assess mobility beyond traditional metrics, reflecting both objective and subjective aspects of mobility. Survey questions and assessment items consistently revealed patterns related to travel frequency,⁹⁶⁻⁹⁸ ease of navigation,^{101,102} whether mobility meets individual needs (sufficiency),⁹⁸ and overall satisfaction¹⁰³ with mobility experiences. By cross-referencing these findings with relevant literature, theoretical models, and established assessments, these dimensions were selected as dimensions of community mobility for this study. Table 2 presents the four key dimensions of community mobility, along with their definitions, measurement methods, and descriptive characteristics.

Table 2. Dimensions of Community Mobility

Term	Definition	How Typically Measured	Descriptives
Frequency	How often individuals leave home to engage in community activities.	Surveys, travel logs, GPS tracking.	Objectively determines mobility levels.
Ease	The level of effort required to move around, considering physical, cognitive, and environmental factors.	Self-report assessments, mobility scales, accessibility audits.	Identifies facilitators and barriers to mobility.
Sufficiency	Whether individuals feel their mobility meets their needs and wants.	Sufficiency can be inferred from survey questions about frequency of participation, missed activities, perceived barriers, reliance on others, and limitations in transportation options, indicating whether mobility meets an individual's needs. Surveys asking individuals if they feel they move enough, too little, or too much.	Assesses whether mobility enables necessary activities.
Satisfaction	Subjective contentment with amount of mobility.	Likert-scale ratings on satisfaction with mobility.	Reflects personal and environmental influences on mobility experience.

Community Mobility: Challenges for Vulnerable Populations

Understanding the comprehensive dimensions of community mobility provides a foundation for recognizing its impact on various populations, especially those facing unique barriers and challenges to community access. There is a foundation of studies that highlight specific transportation disadvantaged groups, the importance of mobility, and the factors impacting their mobility. Meyer (2014) examined predictors of community mobility in older adults using Webber's mobility framework.¹⁰⁴ The study highlighted the importance of mobility for independent life of the aging adult population. Meyer (2014) investigated associations and relationships between personal and community factors and mobility. The study identified the complexity of these relationships including the need to further identify how these relationships impact mobility and subsequently independence and quality of life. Wesslehoff's (2018) systematic review of stroke survivors identified a lack of transportation post-stroke that resulted in community mobility difficulties.¹⁰⁵ This systematic review compared community mobility of non-cognitively impaired individuals to that of stroke induced cognitively impaired individuals. The review highlighted the gap in community mobility measures and the need to understand the complex interactions between factors that impact mobility.¹⁰⁵ Another study, Brusilovskiy et al. (2020), focused on individuals with serious mental illnesses (SMI) and identified that geographical factors associated with mobility affected community participation. Some of these geographical factors included access, urbanicity and community resources.¹¹ The study found that greater mobility was related to more community participation. The discussion shared that policymakers should prioritize identifying ways mobility impacts community participation and health outcomes.

These studies highlight the link between community mobility and positive outcomes across various populations, particularly those considered most vulnerable.^{11,104,105} This research collectively identifies that there are complex factors contributing to community mobility that need further examination.^{11,104,105}

Community Mobility Intervention Targeting Personal or Environmental Factor

Efforts to improve community mobility for AYA have primarily focused on addressing barriers or enhancing facilitators through targeted interventions.^{17,106} Many interventions center around travel training, equipping individuals with the necessary skills to use specific transportation modes.²⁰ Interventions focused on factors that are presumed to influence mobility, often referred to as putative factors. These programs aim to address personal and environmental factors presumed to influence AYA community mobility. However, they were developed without first determining the associations and predictive factors influencing different dimensions of community mobility. Most community mobility interventions focus on personal factors such as executive functioning and transportation-specific training skills. However, they often overlook other important personal factors like self-determination, employment status, and level of support. Community mobility interventions for individuals with disabilities primarily address skills related to safe and independent travel, such as hazard perception, visual scanning, emergency preparedness, and transit etiquette. Programs like *Drive Focus* and *Ready to Ride* target cognitive, sensory, and developmental needs, while others like *Stroll Safe* focus on safe walking for older adults. Additional interventions support professionals and providers with training on ADA compliance, travel instruction, and community partnerships to enhance accessible transportation. Additionally, these

programs typically do not begin by assessing an individual's unique personal and environmental characteristics that may act as barriers or facilitators to mobility.

Identifying these individual factors remains a critical missing step.

Many travel training programs follow recommended best practices, including addressing emotional factors such as anxiety and fear and fostering natural support systems. However, most interventions primarily target ease or frequency of mobility while overlooking sufficiency and individual preferences for destinations.

While research has established evidence-based strategies to improve transportation-related skills for AYA with intellectual disabilities, these interventions are often limited to one specific skill or transportation mode.^{107,108} Many interventions primarily focus on cognitive and executive function skills essential for travel planning and problem-solving. Few, if any, explicitly incorporate empowerment characteristics such as self-determination or self-efficacy into travel training. While these personal traits may be indirectly addressed, they are not explicitly emphasized in existing programs. There is substantial research supporting training for individual modes of transportation, such as public transit or walking, but limited studies examine comprehensive interventions that address multiple skills and transportation methods.^{109,110} Many programs take a “one-size-fits-all” approach, which may not effectively address the diverse transportation needs, preferences, and challenges of AYA. Preliminary research suggests that travel training programs yield positive outcomes in skill development for individuals with disabilities.^{106,109,111}

Very few programs comprehensively address the human factors necessary for independent navigation of public transportation systems, such as self-determination,

perceived safety, executive functioning, and sensory processing.^{112,113} Some travel guides like Ride Wise and Chance to Ride emphasize the importance of social support networks in successful travel training, incorporating them as key components of their structured curricula.²⁴ Although research highlights the importance of social support for adults with autism when learning new skills, little is known about how social supports are embedded within travel training interventions. Table 3 presents community mobility interventions designed for individuals with disabilities, highlighting the specific skills and factors they address.

Table 3. Community Mobility Interventions for Individuals with Disabilities

Intervention	Intended Population	Areas/Factors/Skills Addressed
Drive Focus	Individuals with cognitive or sensory challenges	Hazard perception, visual scanning, decision-making, road awareness
Ready to Ride	Transitional-aged youth with IDD	Emergency preparedness, road safety, transit etiquette, trip planning
Stroll Safe	Older adults	Fall prevention, safe walking skills, built/social environment awareness
Kennedy Center Chance to Ride	IDD	Emergency preparedness, road safety, transit etiquette, trip planning
Easter Seals Project Action	Transportation providers, service agencies, communities	ADA compliance, accessible transportation, travel training, transit management
Project RITE	Transition professionals supporting youth with disabilities	Transition planning, travel instruction, student and family engagement, school-transit partnerships

Despite the availability of various community mobility interventions, there remains a need for programs that address the personal and environmental factors specific to AYA. These programs should be based on empirically tested associations with different dimensions of mobility. Current interventions often focus on isolated skills or single modes of transportation, overlooking critical human factors such as self-determination, sensory needs, and social support. Moving forward, it is essential to develop more comprehensive, person-centered interventions that are tailored to individual strengths, preferences, and barriers across multiple domains of mobility.

CHAPTER 2

REVIEW OF LITERATURE

Literature Search Criteria

A targeted, robust literature search was performed to discover existing studies that may in-full or in-part address AYA factors that influence or predict mobility. Although there is foundational research establishing the connection between personal (PBSF) and environmental factors with community mobility, there is a dearth of information on the relationships between specific personal (PBSF) factors and environmental barriers on mobility. There is limited understanding of the associations among these factors that may be associated with community mobility to develop prioritized and targeted interventions to support community mobility for AYA.

A literature review was performed to determine existing research that addressed AYA personal (PBSF) and environmental factors as predictors of community mobility. There were no studies found that specifically examined how personal (PBSF) and environmental factors might predict community mobility. The following databases were searched: Temple University Library's accessible subject-specific databases (58 articles), Google Scholar (31,009 articles), PubMed (4227 articles), Transportation Research International Documentation (TRID) (21 articles) and Transportation Research Information Service (TRIS) (490 articles). A comprehensive search was conducted in electronic databases using a combination of keywords and MESH terms related to autism, young adults, community mobility, and factors influencing mobility. The search terms were tailored to capture studies that explored both individual characteristics (personal

factors) and external influences (environmental factors) on community mobility in the context of autism. Table 4 identifies the key search terms included.

Table 4. Literature Search Terms

Topic	Search Terms
Diagnosis	autistic autism spectrum disorder ASD developmental disability cognitive function
Age Criteria	young adult adolescent transition to adulthood College Age Adult
Mobility	community mobility independent travel mobility transportation access
Environment	physical environment social environment

Inclusion criteria encompassed studies published in English, focused on AYA (aged 18-30 years), and that examined the influence of both personal (PBSF) and environmental factors on community mobility through quantitative, qualitative, and mixed-methods approaches. Exclusion criteria removed studies that focused solely on children or older adults, lacked a focus on community mobility or factors influencing mobility, and consisted of non-peer-reviewed articles, dissertations, or conference abstracts. No restrictions were placed on publication dates. Data extracted included study design, participant characteristics, key findings on personal and environmental factors influencing community mobility, and recommendations for interventions or further research. This search strategy aimed to identify gaps in the existing research and provide insights into the complex interactions between personal characteristics and environmental factors that affect community mobility for AYA.

The search yielded over 30,000 research articles. These article titles and abstracts were further screened for duplicates and their relevance to the target population and the relationships to mobility. Fifty- eight articles met the inclusion criteria for a full-text review. Only those research studies that addressed young adults and personal and environmental factors associated with mobility were included. The results identified 13 studies that met the inclusion criteria. Table 5 displays the articles reviewed after the screening removed duplicates and wrong populations.

Table 5. Summary of Articles Reviewed

Articles Reviewed (After duplicates and populations other than AYA removed)	58
# Ineligible Articles	
Not AYA	18
Ineligible Study design	6
Not personal and environmental factors for mobility	22
#Eligible Articles	12
ASD Community Mobility Broadly (Public Transportation)	8
ASD Community Mobility Private Transportation (Driving)	4

The literature review identified limited research on the specific issues autistic individuals face when traveling around their communities or effective strategies and supports that might be offered.¹¹⁴ Researchers have not yet thoroughly addressed the barriers and/or accommodations to make more autism-friendly environments, or transportation specific interventions.^{20,21,114,115} Dirix (2022), Lindsay (2017), Kersten (2020), and Pfeiffer (2020) all conclude that further research identifying barriers and facilitators to mobility is necessary. Information describing personal (PBSF) and environmental factors as perceived by the individual with autism is rare. Table 6 shares those studies that have included the AYA perspectives. Information about challenges and needs in public transportation is insufficient.²⁰ There is limited research specific to the barriers faced by autistic individuals and even less specific to the prioritized group of

transition age autistic individuals. The limited research that does exist in this area either focuses on surveys, often not self-reported, or qualitative methods with very small sample sizes.

Community Mobility: AYA Population

Few studies look at autism and community mobility. Research by Lubin and Feeley (2016), Pfeiffer et al. (2020), and Feeley et al. (2015) highlight the lack of independent community mobility as a major participation barrier for AYA.^{27,73,106} Research conducted by Crabtree (2017) emphasizes the significance of mobility for positive community participation outcomes among AYA.¹¹⁶ Lubin and Feely (2016) conducted focus groups with AYA and caregivers of AYA (N=41)²⁷ as part of a larger transportation study. The findings of the focus groups emphasized the importance of community mobility and its impact on independence and quality of life. All participants, AYA and caregivers, stressed the essential role transportation has in providing “meaningful opportunities” in their lives.²⁷ Pfeiffer (2021) investigated specific barriers and facilitators to public transportation, a component of mobility.²¹ Pfeiffer (2021) completed qualitative semi-structured interviews (N = 12) with young adults with intellectual and developmental disabilities (IDD) to identify barriers and facilitators for transition age individuals with IDD.²¹ Results identified 10 barriers and 10 facilitators of transportation, some of which overlap with the variables used in this study. Specifically, results identified person-related factors including anxiety, support level, executive function, and self-determination. Environmental barriers identified included safety concerns, access to transportation, stigma, and physical neighborhood factors. There was

overall agreement that transportation is critical for participation in key areas such as social and leisure activities, as well as work and school.²¹

To develop effective interventions and programs that address mobility barriers, it is necessary to gain insights into the needs and experiences of AYA. Pfeiffer et al. (2020) emphasize the need to understand mobility barriers specifically from the experiences of AYA.⁵⁰ The perspectives of those with lived experience should guide the design of interventions that decrease mobility barriers and enhance positive community participation outcomes. Understanding mobility barriers and facilitators faced by AYA and the strategies they use to overcome these barriers is important for researchers and practitioners as they develop interventions and improve programs that effectively address the needs of AYA.

Results Literature Search AYA Factors Influencing Mobility

Table 6 reflects a comprehensive overview of 12 studies that examined mobility challenges and experiences for young autistic adults. It highlights research focused on either public or private transportation modes. The studies use diverse methodologies, including quantitative surveys, mixed methods, qualitative interviews, and longitudinal studies, to explore how barriers, facilitators, and personal experiences shape transportation access for autistic individuals.

In the public mobility modes section, the table summarizes studies that investigate public transportation usage, and key factors such as accessibility, predictability, and the impact of transportation on quality of life. The private mobility modes section outlines research on the experiences of autistic individuals learning to drive, revealing common

challenges such as anxiety, adapting to traffic situations, and the need for structured learning environments. The table serves as a resource for understanding the range of mobility issues faced by AYA and the implications for supporting their independence through improved transportation options.

Table 6. Factors Influencing Community Mobility in AYA

Author(s) Year	Method	Sample	Objective	Key Findings
Public Mobility Mode				
eka et al., 2016	Quantitative - Survey	Young autistic adults and parents of young autistic adults (86% Age 18-30)	The study aimed to provide summary information on the travel patterns, needs, and barriers for autistic adults.	The study identified significant travel barriers faced by young autistic adults, emphasizing their reliance on others for transportation and the need for socially supported services to address their mobility challenges.
Bross et al., 2023	Mixed Methods	Dyads of autistic adults and caregivers of autistic adults (age 18-30)	The study sought to understand transportation challenges impacting community involvement from multiple stakeholder groups.	Accessible transportation was both a barrier and a facilitator, and there was a connection between transportation and quality of life without prompting.
Dirix et al., 2022	Qualitative hermeneutic phenomenological study	17 autistic individuals (age 18-30)	This study provided autistic individuals the opportunity to share challenges they encounter when using public bus transportation.	The study identified three key factors influencing public transportation challenges: creating predictability, limiting stimuli, and ensuring open and accessible communication.

Table 6 (continued).

Falkmer et al., 2015	Quantitative - Ranking Methods	Young adults with and without autism (Mean age 25)	The objective was to contrast the barriers and facilitators to transportation described by autistic and non-autistic adults.	Many similarities existed between groups, but crowds and transportation mode preferences were unique for autistic individuals.
Haas et al., 2020	Qualitative using Semi-Structured and Exploratory Interviews	Young autistic adults (Ages 18-30)	This study explored the experiences of autistic adults when independently using public transportation in a metropolitan area.	Themes such as anxiety, varying confidence levels, desire for independence, and managing strategies emerged when sharing experiences with using transportation.
Lubin et al., 2016	Qualitative: Focus Groups, Semi-Structured Interviews	Young autistic adults and caregivers of autistic adults (Age 18-30)	The study gathered first-hand experiences from autistic adults about transportation used and the issues or barriers encountered.	Autistic adults reported reliance on parents as a barrier to transportation, and many wanted to use public transportation or obtain a license for greater independence.
Pfeiffer, 2021	Qualitative	Young adults with IDD (Ages 24-34)	The study investigated mobility barriers and facilitators from the perspectives of those with lived experiences.	Mobility barriers and facilitators were identified, with some overlapping between the two.
Rezae, 2021	Reviewed literature and mobile app development	Young autistic adults and families of young autistic adults (age 18-30)	The study explored the challenges autistic adults face with public transportation to design and validate a mobile application to decrease these challenges.	The study ranked personal and environmental factors as significant barriers and validated a mobile application to address these challenges.

Table 6 (continued).

Private Mobility Mode				
Almberg et al., 2017	Qualitative - interviews and questionnaires	Participants with ASD or ADHD (Ages 16-22)	The study investigated factors supporting or hindering driving education for autistic individuals or ADHD who acquired a learner's permit.	The greatest challenges for autistic individuals were translating theory into practice and adapting to unfamiliar driving situations.
Chee et al., 2015	Q-methodology	Fifty young adults with ASD and fifty-seven typically developed adults (Mean age 21.8)	The objective was to understand the perspectives of drivers with autism spectrum disorder (ASD) to create effective mobility support and driver training programs.	Anxiety was found to be a significant barrier to driving for autistic individuals.
Cox et al., 2012	Cross-sectional study using an online survey	Parents/caregivers of adolescents/young adults with ASD (Ages 15-25)	The study surveyed parents and caregivers of autistic adolescents/young adults to better understand their driving experiences.	Parents reported that beginner autistic drivers struggled with interpreting other drivers' actions, handling unexpected changes, and maintaining attention during long drives.
Ross et al., 2018	Descriptive study using a questionnaire	Young persons with ASD, parents or caregivers, and driving instructors (Ages 17-25)	The study aimed to gather insights about the experiences of learning to drive from multiple respondents to enhance driver training programs.	Autistic drivers had good knowledge of traffic rules but struggled with rule violations when necessary, multitasking, unpredictable situations..

Each article was reviewed to determine the relevance to the proposed research. Specifically, the focus of the review was to identify personal and environmental barriers affecting mobility in AYA. The purpose of Deka study was to identify barriers to mobility for autistic adults through a large sample size survey design. Data was gathered and reported but not prioritized, compared, or analyzed for associations.¹¹⁷ Deka (2016)

study was innovative in that it was the only large quantitative study to fill knowledge gaps regarding transportation barriers specific to autistic individuals. New Jersey autistic adults and parents of autistic adults (N=703) responded to a cross-sectional survey investigating travel patterns, importance of travel, modes of travel and barriers to travel. The majority (86%) of autistic adults were aged 30 or younger. Although the study sample size was robust, only 6% of respondents were self-reporting autistic adults. Respondents reported difficulties with walking as a mode of travel, with the most frequently cited barriers being challenges in judging the distance or speed of cars (45.2%) and crossing a street (41.3%). Dealing with distractions while walking was also a common issue (40.1%), whereas fewer respondents identified crowded sidewalks as a problem (9.1%). Survey results also identified key barriers to public transportation, including its unavailability when needed or to specific destinations, difficulties in planning trips, and unreliable service. Additional concerns included crime, high fare costs, and challenges in accessing transportation without assistance. Worries about driver friendliness and treatment by other passengers were reported less frequently. The overall findings identified travel importance, types of preferred travel modes, and travel barriers. The study identified that further research in these areas is necessary.

Studies by Falkmer (2015) and Rezae (2021) focus on the investigation of barriers to mobility. These studies prioritized barriers as described by autistic individuals. However, these studies did not look at predictors of community mobility for AYA. The purpose of the study by Falkmer (2015) was to contrast barriers and facilitators to transportation and transportation preferences experienced by autistic (N=55) and non-autistic adults (N=57).¹¹² The mean age for both groups was 25. Falkmer (2015) used the

Q method ranking technique to identify factors that needed further study on the additional impacts on transportation. The study results identified that many similar barriers are identified by autistic adults and non-autistic adults. Safety and accessibility were reported as the main barriers to public transportation. Crowds as a barrier to transportation was reported as unique to autistic adults. The study did not consider personal and environmental barriers as specific factors influencing public transportation and did not investigate the relationships between these factors and mobility.

Rezae (2021) conducted a literature review to explore autistic persons' experiences with specific mobility modes, public transportation, and challenges in order to guide the creation of a survey that identifies areas of assistance needed.¹¹³ In addition, Rezae's study developed a list of mobile application functionalities to address the problems identified through the literature review. Autistic young adults and their families were then asked to validate these functionalities to ensure their relevance and usefulness. The results of the survey were intended to guide the development of a mobile app to support the use of public transportation. Results of the survey identified 16 different items to be used for prioritizing assistance in the development of the mobile app. Some of these items are consistent with the personal (anxiety, executive functioning, and sensory sensitivities) and environmental factors (neighborhood factor concerns) described by others.^{118,119} The functionality survey items include statements like; "When I feel sensory overload on my trip, help me to cope and to feel better", "remind me to tap my card when I am getting on and off the bus", "when I miss my stop, help me work out how to get to my destination", "tell me how crowded the train is before it arrives, and if the train is too crowded for me, give me other travel options." Twenty-seven autistic adults (age 18-30)

and 19 parents of autistic adults ranked the items of importance for inclusion in a mobile app. The literature review and functionality ranking revealed that safety and spatial awareness are the primary concerns for autistic individuals and their families when using public transportation. Additionally, anxiety, trip planning challenges, and sensory sensitivities were identified as significant barriers. The ranking results also highlighted that different perceptions of importance exist between AYA and caregivers. This technique facilitated the prioritization of information needed to guide interventions and solutions.

Lubin (2016), Pfeiffer (2021) and Haas (2020) researched barriers and facilitators to mobility for autistic individuals. Their studies gathered information from those with lived experience. All the studies used qualitative methodology and collected data through focus groups or semi-structured interviews. Lubin's (2016) study expanded on Deka's (2016) foundational research, which identified barriers to various transportation modes through a survey of 703 individuals in New Jersey, primarily consisting of families of autistic young adults (AYA). Lubin (2016) expanded on this work through focus groups to further investigate transportation barriers and solutions specifically from the perspectives of those with lived experience. A total of 22 autistic adults and 19 parents of autistic adults participated in six focus groups. All participants emphasized the importance of transportation access for community participation and quality of life. Parents reported barriers to transportation as safety, cost, accessibility, lack of transportation training, and the lack of specific travel goals in individual education plans (IEP). Autistic adults aligned with parents when describing training and accessibility of transportation as barriers, although did not emphasize safety as a barrier as frequently as

caregivers. However, both groups identified anxiety, frustration of relying on others, and not being able to schedule their own time as barriers to transportation. This study was unique in that it discussed barriers specific to multiple transportation modes. The study also asked participants to share suggestions for strategies to improve transportation access. Addressing modifiable environmental barriers was a strategy shared across both groups. The study recommended the need for specific research related to decreasing barriers and increasing strategies to create effective trainings.

Pfeiffer (2021) investigated mobility barriers and facilitators from the perspectives of individuals with intellectual and developmental disabilities.²¹ The study utilized a semi-structured interview design involving 12 individuals, 7 with autism between the ages of 24 and 34. Participants identified that certain factors were perceived as both facilitators and barriers. Cost, access, and social environment were overlapping themes identified by individuals as both facilitators and barriers. Factors identified as only facilitators of transportation included travel time, training, and social support, and safety, which is often reported as a barrier. Barriers included physical planning, navigation, and anxiety. The study concluded that a larger sample and better understanding of these barriers and facilitators is critical for gaining knowledge that can assist in increasing the accessibility of community mobility.

Haas (2020) and Dirix (2022) both utilized qualitative methods that focused on gathering the personal experiences of autistic individuals who use public transportation. Both studies provided direct accounts from the individuals, highlighting the real-world barriers and facilitators of public transportation use in this population. The studies were small qualitative designs that focused on the perspectives and experiences of autistic

individuals during the use of public transportation. The study by Haas (2020) used multiple qualitative interview methods including a focus group, as well as in-person, phone and email interviews to gather the experiences of using smart phone technology to decrease transportation challenges and increase mobility. There were 14 young autistic adults (18-30) that independently used public transportation in a metropolitan area who participated in the study.¹²⁰ The common themes identified from the experiences of autistic adult participants included anxiety and uncertainty, varying levels of confidence, desire for independence, and managing strategies. Young adults described significant anxiety related to public transportation, driven by uncertainties such as unfamiliar routes, schedules, and stops, as well as fear of making mistakes or encountering unexpected situations. Sensory challenges like noise, motion sickness, and crowded environments also contributed to discomfort and anxiety. Participants emphasized the importance of strategies like using technology (e.g., GPS and trip-planning apps), seeking help from family or friends, and planning to reduce uncertainty and improve their confidence in navigating public transport. While many preferred independence and self-reliance, the need for initial support on new routes was commonly acknowledged. The study highlighted the importance of understanding lived experiences to create effective interventions for increased mobility. The author explicitly suggested a need understand the relationships between factors in a larger more quantitative study to further advance the understanding of mobility and develop effective strategies.

A study by Dirix (2022) acknowledged the need to better understand transportation barriers for autistic adults due to the critical impact of transportation on community participation and quality of life.¹¹⁴ Seventeen autistic individuals ages 18-30

were interviewed and asked to share their experiences while using public transportation. The individuals identified challenges and related coping strategies. The main challenges reported included creating predictability, limiting stimuli, and the need for open and accessible communication. Participants reported using noise canceling headphones as one coping strategy. Results provide important information to guide the creation of autism friendly transportation. Dirix identified that future studies should gather more information from the experiences of autistic individuals to better understand how to make transportation more accessible for autistic adults.

Bross (2023) completed a study to better understand mobility barriers using a dyad approach of transition age (18-30) individuals with IDD and their parents.¹²¹ Semi-structured interviews were conducted with 26 individuals with intellectual and/or developmental disabilities, parents, and service providers. The dyads included nine young adults (seven with ID, and 2 ASD) and nine parents (all mothers). Despite the small ASD sample, this study was included due to its focus on mobility and the fact that many individuals with IDD also report ASD as a secondary diagnosis. Individuals described the need to rely on family members and scheduling around family members as factors in their transportation access. Accessibility to transportation was reported as both a barrier and facilitator. Individuals shared a need for transportation planning, policies, and training. These findings further support the need to understand barriers and facilitators as predictors to create travel intervention and trainings more effectively. Although quality of life was not a focus of the study, nor one of the targets of the interview questions, individuals with IDD specifically stated that lack of transportation affected their quality of life.

Driving is a less common mode of community mobility for AYA.²⁰ There are a number of identified challenges in the literature for autistic people learning to drive, including the lack of sustained interventions to improve driving skills and overall decreased community mobility.^{20,115} Additionally, the specific experiences and needs of AYA in this area remain under-researched, as many of these studies primarily relied on responses from parents and driving instructors rather than AYA.

Almberg et al. (2017), Chee et al. (2015), Cox et al. (2012), and Ross et al. (2018) explored the experiences of autistic drivers. Almberg et al. (2017) observed that autistic people learning (ages 16-22) to drive struggled to translate driver's license theory (study and understanding required to pass drivers test) into practical skills and adjust to unfamiliar driving situations. Chee et al. (2015) found that anxiety caused new AYA (mean age 21.8) drivers to limit driving to essential trips, with specific concerns about parking, lane changes, navigating heavy traffic, and fears of delayed reactions or potential crashes. Cox et al. (2012) and Ross et al. (2018) noted that novice autistic drivers faced difficulties in interpreting and anticipating other drivers' actions, managing unexpected changes in the driving environment, tolerating road rule violations, regulating emotions, and maintaining focus. Ross et al. (2018) also highlighted challenges with concentration, multitasking, and responding to unpredictable situations, particularly when breaking traffic rules was required. Studies using professional driving instructors' observations and self-reports consistently indicated difficulties with executive function, motor coordination, social communication, and emotional regulation, as well as challenges seen in simulated contexts.

The reviewed studies highlight key barriers and facilitators affecting community mobility for autistic young adults (AYA). Common barriers include anxiety about unfamiliar routes, sensory sensitivities (e.g., noise, crowds, motion sickness), executive functioning challenges (e.g., trip planning, multitasking), and safety concerns related to traffic and crime (Haas, 2020; Dirix, 2022; Chee, 2015; Deka, 2016). Limited transportation access, high costs, and reliance on caregivers further restrict independence (Deka, 2016; Bross, 2023). Facilitators that improve mobility include assistive technologies like GPS and trip-planning apps, structured travel training, and social or family support during initial trips (Rezae, 2021; Lubin, 2016; Pfeiffer, 2021). Predictable travel experiences, including clear schedules and accessible environments, also help reduce stress and improve confidence (Dirix, 2022; Falkmer, 2015). These findings highlight the need for further investigation into which barriers and facilitators are associated with and predictive of community mobility.

Gaps

Previous research has not explored community mobility and its various dimensions frequency, sufficiency, satisfaction and ease. The relationships between these factors remain largely unexplored. A better understanding of these factors can guide in the design of intervention and policy that will have positive impacts on the individual, relationships, community, and society as whole.

There are no integrated models that comprehensively examine how personal and environmental factors interact across different dimensions of mobility, rather than treating them as independent influences. Additionally, while many measures assess mobility outcomes, there is limited research on how these dimensions evolve over time or how

different supports (e.g., assistive technology, peer networks, policy interventions) mitigate mobility barriers. There is also a need for more research on specific populations, such as autistic young adults and individuals with intellectual and developmental disabilities (IDD), to understand unique barriers and facilitators in their mobility experiences. Addressing these gaps could lead to more targeted interventions that enhance mobility outcomes across diverse populations.

The literature identifies that many autistic individuals experience difficulties in community mobility as a result of specific characteristics related to their diagnosis or their environment.^{21,27,112,113,117,120,122} Although existing literature highlights the beliefs and opinions of autistic adults, family members, and researchers regarding transportation barriers and facilitators, no studies were found that examine if personal (PBSF) and environmental factors actually associate with the community mobility of AYA. These represent important gaps in the knowledge necessary to improve community mobility for AYA.

Identifying predicative factors and associations is important when prioritizing limited resources and informing mobility training. Decision-makers can allocate resources more effectively by focusing on interventions that address key personal and environmental factors associated with community mobility barriers. Additionally, this knowledge can support the development of targeted mobility training programs, providing AYA with the skills and strategies needed to achieve greater independence and actively engage in their communities. Prior studies have identified that autistic adults reported numerous barriers to community mobility including anxiety, perceived fear,^{27,123} sensory processing,¹²⁰ self-determination,¹²⁴ executive functioning,²¹ perceived safety,^{20,21} social

communication,^{113,115,120} co-occurring conditions, and degree of disability/amount of support.¹²⁵ While research has identified these perceived barriers, there is limited empirical evidence examining their associations, and predictive significance with community mobility.^{115,126}

Most research identifying barriers relies on data and opinions from autistic young adults (AYA), caregivers, and staff. However, these perceptions may differ from the actual associations between personal and environmental factors and community mobility for AYA. To develop effective interventions, it is essential to empirically test which factors are associated with and predictive of community mobility outcomes. As identified throughout this chapter, there are studies that have provided valuable insights into the barriers and facilitators of community mobility for the AYA population. While some studies focus on specific types of mobility, such as public or private transportation, they share the common conclusion that further research of community mobility barriers and facilitators is necessary.

A thorough literature review underscored the need to investigate environmental and personal (PBSF) factors that influence community mobility for AYA. To develop effective transportation interventions, it is essential to address this gap and identify factors that predict community mobility. Notably, the literature review identified no studies that empirically tested the relationships between personal (PBSF) and environmental factors on AYA mobility. Additionally, information on personal (PBSF) and environmental barriers perceived by transition-age autistic individuals is scarce.^{50,106} Autism research often lacks direct participation, perceptions, and experiences of autistic

individuals.^{127,128} There is a notable lack of information on personal (PBSF) factors such as sensory processing, self-determination, and fear/anxiety as predictors of community mobility.^{115,126} Additionally, the relationship between community mobility and transportation goals remains underexplored.¹⁰⁶ Further exploration and refinement of skills needed for community mobility are necessary to guide transition planning.^{2,129,130} Research on mobility planning programs and procedures specific to transition-age young adults with autism is minimal.¹²⁹⁻¹³¹ Investigating the specific needs of autistic individuals to achieve inclusive and environmentally sustainable transport systems is also limited.^{113,132} Autistic needs are largely overlooked in transport strategies.²⁷ Additionally, there is limited information on transition-age young autistic individuals with varying degrees of disability and co-occurring conditions related to mobility.²⁰ Finally, there is a scarcity of research describing strategies and behaviors used by transition-age autistic adults to increase independent mobility.¹³³

CHAPTER 3

FRAMEWORKS AND CONCEPTUAL MODEL

This chapter will describe The International Classification of Functioning, Disability, and Health (ICF)¹ framework that serves as the conceptual model for this research. It will also describe Webber's Mobility framework² as it informs the key personal and environmental mobility determinants. The chapter explores the personal (PBSF) and environmental factors in greater detail and examines how they might uniquely shape community mobility experiences for AYA. A thorough literature review revealed a need to examine both personal (PBSF) and environmental factors influencing dimensions of community mobility for AYA. Understanding these factors is essential for developing effective, inclusive transportation interventions. Current research rarely examines the specific barriers experienced by AYA or incorporates empirically tested factors related to mobility challenges and successes.

International Classification of Functioning, Disability, and Health (ICF)

The ICF serves as the conceptual model for the overall project as it aligns with the study's goal of understanding how personal (PBSF) and environmental factors influence and predict community mobility and the relative contributions of both.

The International Classification of Functioning, Disability, and Health (ICF) framework is a comprehensive model for understanding and classifying health and disability.¹³⁴ It highlights that disability and participation are shaped by dynamic interactions between personal (PBSF) and environmental factors.¹ This holistic model of health considers the interplay among biological, personal, and environmental factors.¹³⁵

The ICF offers a standardized language and conceptual structure widely recognized in disability research, enabling consistent communication and comparison across studies. Additionally, its focus on the interaction between individual abilities, personal and environmental contexts and provides a framework for the analysis of community mobility challenges and opportunities specific to AYA.

The ICF framework includes several components that influence the interactions between AYA and community mobility. These include body functions and structure, activities, participation, personal and environmental factors.¹³⁶

Figure 2 illustrates

the ICF as the

framework used in

the research study.

Body functions and

structure refer to the

physiological

functions of body systems, including cognitive abilities, support levels, and

sensory sensitivities. Activities refer to the execution of tasks or actions by an

individual, which, in the context of mobility, could include walking, using public

transportation, or driving. Participation denotes involvement in life situations,

with community mobility as a key component that affects access to work, social

life, education, and healthcare.

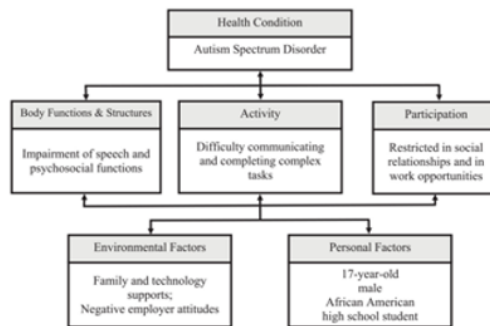


Figure 2. ICF. International Classification of Functioning, Disability, and Health.

Webber's Mobility Framework

Webber's Mobility Framework conceptualizes mobility as a multidimensional construct influenced by various determinants and life space levels (Figure 3). This holistic approach highlights the complexity of mobility and the necessity of considering the interactions between key determinants. Webber's Mobility Framework defines seven life space levels. Those pertinent

to community mobility in this study are neighborhood, service community, and surrounding area.

Webber's Mobility Framework

defines six key mobility

determinants: cognitive,

psychosocial, physical, environmental, financial, and sociodemographic factors. These

determinants encompass the personal (PBSF) factors examined in this study. The

framework organizes mobility determinants across progressively expanding life spaces,

ranging from the home to the neighborhood, community, and the broader world. This

expansion may suggest that certain determinants may interact with life spaces in ways

that influence community mobility dimensions differently.

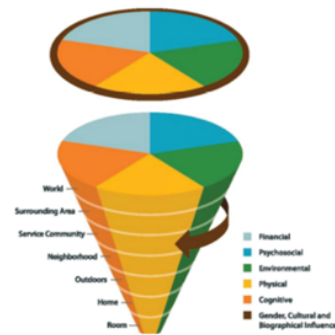


Figure 3. Mobility Framework. Webber's Mobility Framework.

The Webber mobility framework is particularly relevant for understanding the associations between the ICF defined personal (PBSF) and environmental factors and their impact on community mobility as it provides a structured approach to analyzing how these factors increase across mobility spaces. Webber's Framework underscores the importance of considering key personal and environmental determinants as they cross

mobility spaces. This comprehensive framework supports better conceptualization and measurement of community mobility while accounting for the complex interplay of factors that influence it.

Personal (PBSF) and Environmental Factors

The ICF framework can be applied to understand the complex interactions among personal (PBSF) factors and their impact on community mobility. The ICF framework can address body structure/function, such as memory, planning, and problem-solving¹ as they play a critical role in an individual's ability to navigate their community effectively. Additionally, it addresses mobility challenges, including sensory sensitivities, that may influence the ease and frequency of transportation use, shaping overall mobility experiences. Factors such as motivation, self-efficacy, and anxiety further impact participation in community mobility,¹³⁷ potentially predicting both the frequency of mobility and satisfaction with these experiences. Together, these factors highlight the complex interplay between cognitive, sensory, and personal characteristics in shaping community mobility outcomes.

The ICF also provides a structure to understand how environmental factors either hinder or facilitate mobility. It prompts an exploration of the characteristics of a neighborhood that might create physical barriers that affect mobility. It acknowledges the role of family members, caregivers, and community services may predict or associate with dimensions of mobility. The ICF accommodates societal perceptions and attitudes toward individuals with disabilities that impact their use of public transportation, including whether they receive assistance or face discrimination.

The ICF offers a valuable framework for conceptualizing the study’s purpose. We can better understand the relationships between both personal (PBSF) and environmental factors and community mobility through the lens of the ICF for AYA. This is especially helpful due to the numerous challenges that AYA experience in accessing transportation and navigating their communities effectively.^{138,89} This dissertation aims to examine these interactions, utilizing the ICF framework to contribute to a deeper understanding of the factors that predict community mobility for AYA.

Conceptual Framework

Building on the understanding of these frameworks and the perceived factors influencing community mobility for AYA, the conceptual model, depicted in Figure 4, illustrates how participation may be shaped by both personal and environmental contributors. Figure 4 demonstrates how these factors may be associated with and predict different dimensions of mobility.

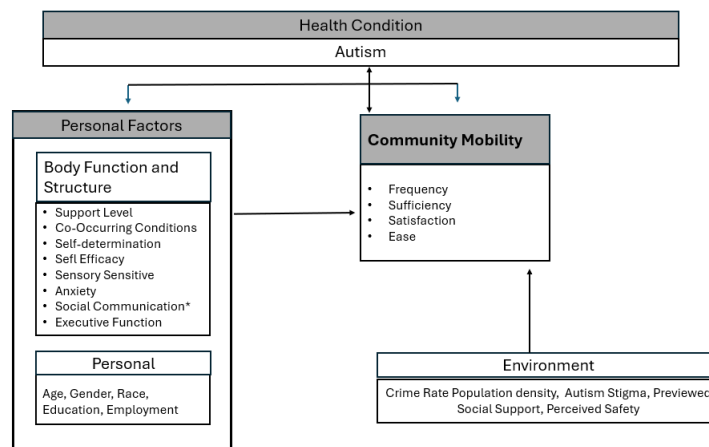


Figure 4. Conceptual Model. Conceptual Model Informed by ICF and Webber.

* Social Communication was categorized as a personal factor, aligning with Webber's mobility framework, which views it as a psychosocial determinant rather than an activity, as classified by the ICF.

Informed by the ICF and Webber's mobility frameworks (Figures 2, 3), the model places autism as the overarching health condition, influencing and influenced by components such as participation, activities, body structure and function, personal, and environmental. Within this framework, body structure and function encompass psychosocial variables, including support level, co-occurring conditions, self-determination, self-efficacy, sensory sensitivity, anxiety and executive function. Webber's mobility framework identifies these factors as key psychosocial determinants of mobility. These factors reflect key cognitive, emotional, and sensory characteristics often associated with autism, drawn from both research literature and autism-specific profiles.

This conceptual framework demonstrates how personal (PBSF) and environmental factors shape community mobility. The model provides a perspective on the barriers and facilitators of mobility for individuals with autism, offering a foundation for targeted interventions that address personal (PBSF) and environmental needs.

Personal and Environment Factors Specific to Autistic Young Adults

Personal (PBSF) and environmental factors, both perceived and actual, create barriers and facilitators to community mobility for everyone, but especially for AYA.¹³⁹ AYA face unique mobility challenges as they transition to greater independence, often encountering gaps in support, accessibility barriers, and the need to develop self-advocacy and executive functioning skills. Unlike younger individuals with structured support or older adults with more adaptive strategies, AYA must navigate unfamiliar transportation systems while balancing new responsibilities in education, employment, and social life. Personal (PBSF) and environmental factors are essential drivers of

community mobility.¹¹⁵-Autistic individuals of all ages often lack ease of mobility and report reduced overall community mobility due to both personal and environmental factors.^{11,21,140,141} Recent literature indicates that different modes of transportation may be more affected by personal (PBSF) and environmental barriers than others.¹²⁶ Table 7 shows various modes of transportation and personal and environmental factors that may be associated with these barriers for AYA.

Table 7. Modes of Transportation: Personal and Environmental Factors

Mode Transportation	Personal and Environment Factors	Literature Referenced
Driving	Executive functioning Attention Social Communication*	Huang et al., 2012; Lubin & Feeley, 2016; Curry et al., 2018; Almberg et al., 2015; Vindin et al., 2021; Ross et al., 2017; Myers et al., 2021; Kersten, 2020; Cox 2012; Chee 2020
Public Transit	Executive functioning Sensory Sensitivities Anxiety Attention	Lubin & Feeley, 2016; Haas, 2017; Feeley et al., 2015; Lim et al., 2021; Deka, 2016; Kersten, 2020; A; Kersten, 2020
Walking	Executive Function Safety Anxiety Walkability	Lubin & Feeley, 2016; Kersten, 2020

*Activity Level in ICF

Prior literature has identified both personal (PBSF) and environmental factors that affect the community mobility of AYA. Table 8 summarizes the personal (PBSF) and environmental factors identified as influencing AYA community mobility. The table includes the corresponding ICF categories and associated Webber’s determinants.

Table 8. Frequently Reported Personal and Environmental Factors that Affect Community Mobility and Related Theories.

Factors	ICF Category/Code	Webber's Key Determinant	Literature
Demographics			Silvi, 2018; Lindsay et al., 2020; Kapp, 2018; Lubin & Feeley; 2016, Deka et al., 2016
Age	Personal	Sociodemographic	White et al 2018; Kersten et al., 2020
Gender	Personal	Sociodemographic	Shakibaei 2024; White et al 2018
Race	Personal	Sociodemographic	Galaskiewicz et al, 2020
Education	Major Life Areas	Sociodemographic	Bierbaum et al 2021; Deka et al., 2016
Employment	Major Life Areas	Sociodemographic	Kersten et al. 2020; Wilson et al., 2021; Tessier et al, 2024
Co-occurring Conditions	Body Function/ Structure	Physical	Cox et al., 2012; Ross et al., 2018; Vindin et al., 2019; Lubin & Feeley, 2016; Almberg et al., 2017
Severity Levels of ASD	Body Function/ Structure	Cognitive	Ross et al., 2018; Vindin et al., 2019; Lubin & Feeley, 2016; Almberg et al., 2017
Self-Efficacy		Psychosocial	Wilson, 2021; Corrigan et al., 2012; Fitzgerald et al., 2015; Iwanaga et al., 2019; Tansey et al., 2017; Iwanaga et al., 2019; Tansey et al., 2017
Sensory Sensitivities	Additional sensory functions, b250, b255, b270	Psychosocial	Kinnaer et al., 2016; Falkmer et al., 2015; Haas et al., 2020; Vindin et al., 2019; Silvi & Scott-Parker, 2018
Anxiety	Emotional Functions, b152	Psychosocial	Agarwal et al, 2022; Kersten et al., 2020; Wilson et al., 2021
Executive Functioning	Higher-level cognitive functions, b164	Psychosocial	Almberg et al., 2017; Haas et al., 2020; Cox et al., 2012; Ross et al., 2018; Chee et al., 2015; Lubin & Feeley, 2016; Silvi & Scott-Parker, 2018; Deka et al., 2016
Social Communication	Basic Interpersonal Interactions, d710	Psychosocial	Haas et al., 2020; Deka et al., 2016; Lubin & Feeley, 2016; Lindsay, 2017; Silvi et al., 2018; Almberg et al., 2017; Ross et al., 2018; Vindin et al., 2019
Social Support	Support and relationships, e399	Environment	Lindsay et al., 2020; Hedley et al., 2017; Kapp, 2018; Chee et al., 2015
ASD Stigma	Attitudes	Environment	Lindsay et al., 2020; Dirix 2020
Physical Environment (neighborhood walkability, crime rate, density)	Natural environment and human-made changes	Environment	Lubin & Feeley, 2016; Kersten, 2020, Kinnaer 2016; Falkmer 2015
Safety (perceived and environmental)		Environment	Lubin & Feeley, 2016; Kersten, 2020, Alanazi, 2022; Anderson, 2018

Personal Factors Affecting Autistic Young Adults Community Mobility

Demographics

Gender and socioeconomic status are reported to significantly influence community mobility among autistic individuals.¹⁴² Studies have shown that autistic males tend to have more driving experience than autistic females, suggesting that demographic factors such as gender may influence mobility outcomes.¹⁴³ Transgender and gender-diverse individuals often encounter significant challenges, including violence, discrimination, and harassment, when accessing public transportation.¹⁴⁴ Individuals with lower socioeconomic backgrounds frequently have reduced access to the resources and services necessary to support the mobility.¹⁴⁵ This scarcity of resources is often exacerbated by racial disparities, further limiting opportunities for community engagement and mobility for individuals with AYA.¹⁴⁶ These sociodemographic factors highlight the importance of addressing inequities to enhance community mobility for autistic individuals.¹⁴⁷ Younger AYA may benefit from greater access to various modes of transportation (i.e., school related transportation; caregivers) and more substantial family support, thereby increasing their frequency of mobility.¹⁴⁸ Higher education levels are often associated with better employment opportunities and financial stability, leading to increased resources for transportation.¹⁴⁹

Level of Support

Autism is considered a spectrum disorder because the various levels of brain disruptions cause different severity levels that require varying levels of support.⁵ This variability in autism symptomatology and support needed is often confusing and not clearly reflected in the diagnostic criteria.¹⁵⁰ In 2013, the American Psychiatric

Association (APA) proposed revisions to the DSM-5 regarding the level of support marker and degree of impairment for social communication and restricted and repetitive behavior domains (American Psychiatric Association (APA) 2013).¹⁵⁰ The APA revised its guidelines based on the severity and complexity of symptoms and characteristics, as well as their associations with autistic individuals.¹⁵¹ Autism severity levels are determined and applied during the diagnostic process based on the complexity and intensity of the individual's symptoms, as well as their impact on daily functioning. This is particularly challenging when comorbidities and overlapping variations are present, which can exacerbate the symptoms. Therefore, determining how these severity levels should be used in diagnosis is crucial for both clinicians and researchers to ensure accurate assessment and treatment planning.¹⁵² APA's proposal for the DSM-5 autism spectrum criteria includes three severity levels. The levels include Level 1 (Requiring support), Level 2 (Requiring substantial support), and Level 3 (Requiring very substantial support)¹⁵² These support levels are determined relative to social communication and restricted and repetitive behaviors. Severity level can affect participation in certain occupations. Lower or higher support needs may be associated with different mobility.^{13,146} Individuals requiring lower levels of support may find it easier to move around independently, resulting in greater ease and frequency of mobility. They are often more able to navigate public or private transportation systems without additional assistance. In contrast, individuals with higher support needs may face more barriers and require more accessible transportation options or additional help to facilitate their mobility. This can include specialized transportation services, physical assistance, or

modifications to transportation systems, which can impact both the ease and frequency with which they can move through their community.

Co-Occurring Conditions

It is well documented that individuals with developmental disabilities, like autism, experience physical, emotional, behavioral, and psychiatric disorders at a higher rate.^{153,154} These co-occurring conditions include various physical, psychiatric, chronic, and autoimmune health conditions.^{58,155} As many as 78% of autistic individuals have at least one co-occurring condition. The percentage of multiple co-occurring conditions is only slightly lower.¹⁵⁶ Physical impairments are more common in autistic individuals due to neurological differences affecting motor skills and the higher prevalence of co-occurring conditions, such as epilepsy and cerebral palsy.¹⁵⁷ Motor coordination challenges linked to atypical brain development in motor regions contribute to an increase in issues with muscle tone and other physical conditions.¹⁵⁸ Studies show about 30-50% of autistic individuals experience motor difficulties, impacting their mobility and daily functioning.¹⁵⁹ Physical impairments may also be due to an association with weight issues and obesity. Weight and obesity are frequently more prevalent in autistic individuals.¹⁶⁰ Many autistic individuals meet criteria for co-occurring psychiatric conditions like attention deficit (ADD), anxiety and emotional disorders, and oppositional defiance disorder.^{154,161} These conditions are often predictors of adult quality of life, independent living, and community participation.⁷²

Anxiety

Anxiety is one of many co-occurring psychiatric conditions identified in autistic individuals. Anxiety is often considered outside of co-occurring conditions because of its

high prevalence rate, especially in autistic individuals. Anxiety disorders refer to excessive and persistent worries about everyday life situations.¹⁶² These worries can interfere and disrupt daily activities. Research has documented the high prevalence of psychiatric disorders, specifically anxiety and depression, in autistic adults.^{163,164} AYA experience high rates of anxiety¹⁶⁵ across several types of anxiety disorders. Autism is commonly associated with acute anxiety, social anxiety, and generalized anxiety disorder. In a 2018 study, 80% of AYA reported as having at least one mental health problem across their life.¹⁶⁶ Research has demonstrated that children and adolescents with ASD experience increased risk for aggression, anxiety, and depression when compared to their typically developing (TD) peers without autism.¹⁶⁷ Anxiety can affect community mobility.^{115,168} Individuals with anxiety may experience intense worry or panic about navigating unfamiliar environments, interacting with others, or facing unpredictable situations, which can limit their ability to move freely in their communities.¹⁶⁹ Additionally, individuals with anxiety may avoid public transportation or crowded spaces, reducing the frequency and ease of their community mobility.¹³⁷

Social Communication and Interaction Skills

The ICF considers social communication an activity. Webber includes this as psychosocial determinant. Social communication and interactions include social-emotional reciprocity, nonverbal communicative behaviors, and the ability to develop, maintain, and understand relationships.¹⁷⁰ Social interactions and relationship building are often challenging for autistic individuals.¹⁷¹ Research has identified that autistic individuals have difficulties with subtle social cues and nonverbal body language that can lead to difficulties with relationships. Social challenges may include difficulties in

building relationships, sharing joy with others, and using non-verbal behaviors effectively.¹⁷² Social impairments are among the most difficult challenges faced by autistic individuals.^{173,174} Social interactions are often required when navigating new environments, which is necessary for community mobility. Individuals need to communicate where they are going, determine if they might be at the wrong stop, and address or correct any misunderstandings while traveling in the community.

Sensory Sensitivity

Up to 90% of autistic individuals have sensory processing differences.^{175,176 177} Sensory sensitivity is a subcategory of restrictive and repetitive behaviors and is defined by the DSM-5 as a hyper response to stimuli.¹⁷⁸ Sensory sensitivity can be experienced in any of the senses such as sight, taste, touch, sound, olfactory, proprioception, and vestibular systems. Behaviors associated with differences in sensory processing are often the first noticed symptoms of autism, even before the actual autism diagnosis is defined and determined.³¹ Studies identified correlations between more pronounced autistic characteristics and greater sensory sensitivities.^{177,179} Research has identified behaviors such as self-harm and elopement related to sensory sensitivity and reactions to sensory stimuli in the environment.¹⁷⁶

Autistic individuals may demonstrate hyper or hypo responses to visual stimuli such as sunlight and flash photography.¹⁷⁵ Some autistic individuals have extremely sensitive hearing that can cause them to hear sounds barely distinguishable by neurotypical people.¹⁸⁰ This hypersensitivity can result in negative responses to sounds like sirens, traffic, and construction site tools. Approximately 40% of autistic individuals report sensitivities to smells resulting in responses of physical (nausea, dizziness)

emotional (anxiety) or behavioral (avoidance) reactions.¹⁸¹ Many pediatric studies have examined feeding behaviors and preferences. While there is limited research on sensory responses to taste in autistic adults,^{182,183} available studies highlight a restricted food repertoire for many in this population, often linked to sensitivities to taste and texture. This sensory sensitivity can lead to selective eating habits, where certain textures or tastes are avoided due to discomfort or sensory overload.¹⁸⁴ Sensitivity to touch or tactile stimuli has been identified by autistic individuals and many of their parents.¹⁷⁵ This can result in misperceptions of negative intent with accidental touch and distressing reactions to touch that others may perceive as enjoyable or friendly.

Sensory sensitivities in autistic individuals can make community mobility challenging, as the person becomes easily overstimulated in public environments. Loud noises, bright lights, and strong smells can trigger discomfort, leading to avoidance of certain transportation modes or crowded areas. Removing or mitigating sensory barriers may help AYA community mobility.

Executive Function

Variations in executive function are common for autistic individuals.^{185–187} Executive function, which is largely controlled by the frontal cortex of the brain, refers to managing goals, tasks, and regulations.¹⁸⁸ Prior research on executive function and autistic individuals primarily focused on the three processes of working memory, cognitive flexibility, and response inhibition/self-control.¹⁸⁷ Executive function skills include higher order functions such as multiple step directions, attention to details, planning, maintenance, emotional regulation and staying on task.^{187,189} Executive function skills develop between infancy and adulthood.¹⁸⁶ The literature identifies that

executive function impairments can impact many areas of everyday life for autistic individuals. Often the executive function skills of self-management, organizing, planning, executing, problem solving, and responding to change are necessary to achieve everyday tasks and new goals. AYA sometimes lack sufficient executive function skills and therefore face mobility challenges.¹⁹⁰ Executive function skills, such as planning, time management, and adaptability, are integral to successful community mobility.¹⁹¹ These skills enable individuals to organize their travel, manage time effectively, and adjust to unexpected situations, making them crucial for navigating various transportation systems and maintaining independence.

Self-Determination

Self-determination and executive functioning rely on similar brain function and are highly interrelated.¹⁹² Self-determination is defined by Wehmeyer (1992)¹⁹³ as “the attitudes and abilities required to act as the primary causal agent in one’s life and to make choices regarding one’s actions free from undue external influence or interference” (p.305).¹⁹³ Some common characteristics associated with self-determination include problem solving, goal setting, evaluation of performance, self-awareness, and self-advocacy.^{142,194} Research studies show that individuals with ASD often have lower self-determination than neurotypical peers and those with other developmental disabilities.¹⁹⁴ Research also shows individuals with ASD have lower self-determination due to less opportunities to develop these skills.^{193–195} Self-determination is closely tied to community mobility, as individuals who feel empowered and autonomous are more likely to actively engage with and effectively navigate their communities.¹⁹⁶

Self-Efficacy

Self-efficacy, defined as the belief in one's ability to perform novel or difficult tasks and cope with adversity in various domains of human function, is a key factor for community mobility among AYA.^{197,198} When learning new skills, such as using public transportation, self-efficacy plays a significant role because it influences AYA's belief in their abilities to succeed in a specific new task.¹⁰⁶ The importance of self-efficacy is highlighted in behavior change during travel interventions.¹⁹⁸ Building self-efficacy can empower AYA to navigate public transportation systems confidently, thereby enhancing their independence and overall community mobility.

Environmental Factors Affecting AYA Community Mobility

Perceived Social Support

Social support refers to various assistance and resources provided to individuals. This support can include but is not limited to emotional, information, social and peer support.¹⁹⁹ Social support has been identified as a crucial factor in influencing changes in travel behavior, as well as in other behavioral programs.¹⁹⁸ Perceived social support refers to the belief that one has access to supportive resources from others.²⁰⁰ Perceived social support is closely linked to improved physical and mental health in both the general and autistic populations.^{200,201} For autistic individuals, effective interventions addressing cognitive-perceptual stress, loneliness, and social support can significantly reduce the risk of stress-related health issues.²⁰¹

In adulthood, the impact of perceived social support becomes particularly evident. Some autistic individuals with higher needs may function better than those with less severe symptoms and higher cognitive abilities largely due to the level of support they

receive.²⁰⁰ Additionally, studies have shown that PSS is associated with a higher quality of life.²⁰² Although only a few studies have examined the relationship between social support and occupation, one reported a connection between perceived social support and newly employed AYA.²⁰² A supportive social environment, including family, coworkers, peers, and staff, can greatly facilitate occupational engagement.²⁰² Furthermore, perceived social support can influence mobility by providing the necessary encouragement and resources for individuals to navigate their environments more confidently and independently.^{148,201}

Autism Stigma

Public stigma refers to a process where society labels differences, associates these labels with negative stereotypes, which then leads to discrimination and status loss for those labeled.²⁰³ Autism stigma specifically encompasses negative stereotypes, prejudices, and discriminatory behaviors toward autistic individuals.²⁰⁴ These stereotypes often stem from misunderstandings about autism. The familiar quote from Dr. Stephen Shore, professor and self-advocate, "If you've met one person with autism, you've met one person with autism," highlights the individuality of each autistic person.²⁰⁵

Autistic individuals frequently report unfair treatment in various settings, including education, employment, and healthcare, due to their diagnosis.²⁰⁶ There is evidence that both public stigma and internalized stigma are linked to poorer mental health in autistic adults.²⁰⁴ Internalized stigma occurs when autistic individuals adopt negative societal attitudes, leading to reduced self-esteem and increased mental health issues.²⁰⁷

Research has explored the relationship between autism stigma and participation in activities. Studies found that higher levels of stigma perceived by parents were associated with reduced participation in community activities by their children with autism.^{208,209}

Autism stigma not only affects participation in social activities, but also impacts community mobility.²¹⁰ Stigmatizing behaviors and discrimination can limit an individual's ability to confidently navigate and engage in broader community environments. Autism stigma affects community mobility by fostering social exclusion, discrimination, and negative public attitudes that make navigating transportation and public spaces more challenging. It also contributes to self-stigma, reducing confidence and increasing anxiety, which can lead to avoidance of independent travel and further limit participation in the community.¹¹⁴ This reduced mobility further diminishes opportunities for social interaction, access to services, and overall quality of life for autistic individuals.

Perceived Safety

Perceived safety refers to an individual's subjective assessment of how safe they feel in each situation or environment. It is influenced by various psychological and social factors. It is distinct from objective measures of safety, such as actual crime rates or the presence of safety features and instead focuses on the personal feelings of security and risk. Perceived safety in a community can also influence the mobility of autistic individuals. People with autism and other developmental disabilities are at a higher risk of being victims of violence and abuse. The Arc's Autism Now Center emphasizes that individuals with intellectual and developmental disabilities are more likely to experience

violent crime, which significantly impacts their sense of safety and community mobility.²¹¹ Fear of crime and violence may deter autistic individuals from exploring and participating in their communities freely.

Crime Rate

The crime rate is the ratio between the number of felonies and misdemeanors recorded by the enforcement officials and the population in question.²¹² There is limited information on the perception of safety or crime rates from the AYA perspective.²¹³ Existing literature primarily discusses police interactions with autistic individuals. Crime rates typically include counts of violent and property crimes. In some cases, crime rates are associated with personal factors like anxiety or fear, but there is limited information on how crime rates impact autistic individuals and even less on how these rates affect their community mobility.

Population Density

Population density is defined as the number of people per square mile of land area.²¹⁴ It allows for broad comparisons of settlement intensity across geographic areas. Higher population density can present challenges for autistic individuals, particularly affecting their mobility due to increased noise, crowds, and sensory stimuli.²¹⁵ These environmental factors can exacerbate anxiety and sensory sensitivities, making navigation and mobility more difficult for individuals on the autism spectrum.

Walkability

Walkability refers to how well an area supports walking as a safe, comfortable, and convenient mode of transportation.²¹⁶ It is an important aspect of urban design and

public health because higher walkability is associated with increased physical activity, reduced traffic congestion, and lower pollution levels.^{64,217} Walkability is often assessed using criteria such as the presence of sidewalks, pedestrian crossings, street connectivity, land use mix, and accessibility to amenities like shops, schools, and parks.²¹⁷ These criteria are quantified into walkability scores, derived from tools like Walk Score® or Geographic Information System (GIS) data.²¹⁸ Higher scores indicate more walkable environments which promote better health outcomes and enhanced community engagement.^{216,219,220}

The relationship between walkability and community mobility is significant, especially for vulnerable populations, including youth and adults with disabilities.²¹⁶ Walkable neighborhoods provide safer and more accessible routes for individuals who rely on walking as their primary mode of transportation.²¹⁷ This is particularly important for AYA who may face additional challenges in navigating less pedestrian-friendly environments. Research indicates that improved walkability can enhance the overall mobility of these individuals, promoting greater independence and participation in community activities.^{216,219,220}

CHAPTER 4

JUSTIFICATION AND SPECIFIC AIMS

Problem Statement

Community mobility is a major challenge and barrier to competitive employment, community integration, and community independence for AYA.^{6,69} Community mobility, which involves the capacity to navigate and travel within one's community, is essential for meaningful engagement in community life.^{11,12} It enables individuals to access opportunities for work, education, social activities, and services. Lack of community mobility has an influence on the health of AYA.¹⁸

Focusing on AYA is essential due to the growing number of individuals transitioning to adulthood following an autism diagnosis in childhood. Young adulthood represents a critical developmental period marked by significant life transitions such as entering college, employment, and independent living. For AYA, this stage is often accompanied by the loss of long-standing services and supports, a phenomenon known as "falling off the services cliff." These disruptions can lead to poorer health outcomes, reduced access to care, and increased mental health challenges. Limited community mobility, due to gaps in transportation access and travel training, can hinder independence, social participation, and access to essential services.

The cost and consequences of poor community mobility for AYA are personal health, social, and financial. Not only is lack of mobility associated with poor health outcomes for AYA, but it also impacts health outcomes for caregivers, communities and society as a whole.^{27,123} Caregivers have reported missing work, medical appointments, and other activities due to the need to transport their AYA.^{20,117} Limiting the

contributions that AYA could make to the workplace due to community mobility challenges has a broader impact on the community.²²¹ Public financial resources are being utilized in ways that could otherwise benefit other populations.

As of 2017, national and state based estimates in the United States report that 2.1% of the population, about 5,437,988 people, are autistic adults.²²² These individuals have a unique set of health issues. Lack of community participation in transitioning AYA is a public health concern.⁶³ Health related quality of life is defined by the World Health Organization as “an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns.”²²³ Lack of participation and perceived low levels of health related quality of life can impact the mental health among autistic individuals.¹⁴¹ Fifty percent of individuals with ASD do not participate in employment or post-secondary education.²²⁴ Only 50-66% report close friendships.²²⁵ Further, autistic adults have less independent living when compared to individuals with other developmental disabilities.^{161,226} Based on self-reports from autistic adults, an estimated 61-87% live with family members through adulthood.²²⁶ Increased quality of life, independence, community inclusion and improved social outcomes are associated with independent living.^{226,227}

There are limited research, interventions, and policies that specifically address the community mobility needs of AYA. To guide AYA transition planning and future policies, there needs to be a better understanding of personal (PBSF) and environmental factors as they relate to community mobility challenges. Specifically, this study examined both

personal (PBSF) and environmental factors to determine their associations and predictive utility in relation to community mobility.

This study introduces a comprehensive approach to assessing community mobility, informed by a systematic review of research and existing mobility assessments. It examines community mobility through key dimensions, frequency, sufficiency, satisfaction, and ease, to offer a more complete understanding of how effectively individuals move around their communities. Frequency refers to how often an individual travels, helping to identify patterns of participation and potential limitations, such as reliance on caregivers or restricted travel due to transportation barriers. Sufficiency examines whether a person's mobility meets their personal and practical needs, as frequent travel does not necessarily mean access is adequate, particularly if routes are limited or safety concerns exist. Assessing sufficiency helps determine gaps between actual and desired mobility. Satisfaction reflects an individual's comfort, enjoyment, and perceived success in amount of community mobility. Satisfaction may be influenced by factors such as transportation accessibility, interactions with others during community mobility, and the reliability of transit services and modes of transportation. Ease captures the level of difficulty or effort required for an individual to move around their community, including physical, cognitive, and sensory demands such as handling transit schedules, managing unexpected changes, or coping with sensory overload. Together, these dimensions highlight both structural and personal factors that shape mobility experiences, providing valuable insights to inform inclusive policies, interventions, and support systems that promote independent travel and community participation. Each aspect is vital to understanding barriers and facilitators to community mobility.

An understanding of the associations and predictiveness of personal (PBSF) and environmental characteristics on dimensions of community mobility is necessary to assure adequate planning and use of scarce resources to address the priorities of the autistic community. With limited resources most public policy planning and implementation programs (i.e., medical, public health, environmental, transportation, and infrastructure) rely upon data and information to identify priorities for resource allocation. It is important to examine the associations between personal (PBSF) and environmental factors with dimensions of mobility and their role as predictors.

The means by which autistic individuals navigate, and address mobility barriers have not been systematically examined. Autistic individuals are typically not directly engaged in identification of barriers and planning for solutions. Associations and predictors both provide distinct insights.²²⁸ Research in many areas of health has focused on identifying predictive factors in order to effectively develop interventions, training, and policy.^{75,104,131,229} Our understanding of how factors predict community mobility and the complex associations between personal (PBSF) and environmental factors and dimensions of community mobility for AYA is very limited. Without empirical testing to determine whether specific factors are associated with or predictive of certain dimensions of mobility.

Understanding the nature of relationships between variables is important for statistical analysis. Some relationships are straightforward and directly correlated, while others are more complex and interdependent, particularly when considering multifaceted factors such as personal (PBSF) and environmental influences on community mobility. Examining bivariate associations and multivariate predictors of personal and

environmental factors is important for understanding the complex influences on community mobility. Bivariate associations help identify simple relationships between individual factors, such as the link between self-efficacy and mobility ease or crime rate and travel frequency, highlighting key variables for further analysis. Multivariate predictors provide a more comprehensive understanding by considering multiple factors simultaneously, accounting for confounding variables, and identifying the strongest independent predictors of mobility outcomes. This dual approach ensures that interventions and policies are informed by both direct relationships and combined influences, leading to more targeted and effective mobility support strategies for autistic young adults. Together, this knowledge can guide tailored interventions by revealing both the contextual factors to address and the specific traits or resources to strengthen for improving mobility outcomes.

A thorough review of the literature revealed very limited research identifying personal (PBSF) and environmental predictors of mobility needed to guide planning and interventions. While studies have explored the beliefs and opinions of AYA, caregivers, and professionals, none have empirically examined the associations between community mobility and personal or environmental factors. A deeper understanding of these factors is essential for supporting successful post-secondary transitions and developing effective travel interventions. Furthermore, the literature lacks an exploration of the specific dimensions of community mobility to better identify how AYA are impacted. While existing studies and measures address different aspects of community mobility, none comprehensively examine its four key dimensions frequency, sufficiency, satisfaction and

ease. As in most cases where individuals navigate their environments, not all factors likely exert an equal influence on all dimensions of mobility.

Aims and Research Questions

This study examined the associations of four dimensions of community mobility for AYA, which are frequency, sufficiency, satisfaction and ease. A number of personal (PBSF) and environmental factors have been identified as possibly impacting community mobility. This study empirically examined which of these factors are significantly associated with and predictive of the various dimensions of community mobility. The study explored the dimensions of community mobility through the perspectives of individuals with lived experience.

The aims and questions within this study seek to address the multifaceted and interconnected influences of personal (PBSF) and environmental factors on community mobility for AYA. This understanding can guide evidence-based interventions and policies to support the independence and inclusion of AYA in their communities.

Aim 1: Understand and explore the relationship between the four conceptualized dimensions of community mobility: frequency, sufficiency, satisfaction and ease.

Understanding and exploring the relationship between the four conceptualized dimensions of mobility: frequency, sufficiency, satisfaction, and ease, will provide valuable insights into how these factors interact to influence community mobility for (AYA). These findings will help identify which dimensions are associated, allowing for more targeted interventions. Understanding how experiences like sufficiency and satisfaction align with or differ from measures such as frequency and ease will highlight

barriers and facilitators that may not be apparent when examining these dimensions individually. This research will guide the development of interventions that address both the practical aspects of mobility and individuals' personal experiences with community mobility.

Aim 2: Empirically assess the relationships between putative personal factors with the dimensions of community mobility (frequency, sufficiency, satisfaction and ease) among AYA.

Q2-1 What are the bivariate associations between the personal (PBSF) factors and the dimensions of community mobility (frequency, sufficiency, satisfaction and ease) for AYA?

Q2-2 What are the multivariate associations between personal (PBSF) factors and the dimensions of community (frequency, sufficiency, satisfaction and ease) for AYA?

Aim 3: Empirically assess the relationships between putative environmental factors with the dimensions of community mobility (frequency, sufficiency, satisfaction and ease) among AYA.

Q3-1 What are the bivariate associations between environmental factors and the dimensions of community mobility (frequency, sufficiency, satisfaction and ease) for AYA?

Q3-2 What are the multivariate associations between environmental factors and the dimensions of community mobility (frequency, sufficiency, satisfaction and ease) for AYA?

Aim 4: Examine the relative contributions of personal and environmental factors examined together in predicting community mobility dimensions (frequency, sufficiency, satisfaction, and ease) among AYA.

Q4-1 What are the multivariate relative contributions of personal and environmental factors in predicting community mobility dimensions (frequency, sufficiency, satisfaction and ease)?

Although both personal (PBSF) and environmental factors can act as barriers or facilitators to mobility for AYA, few studies have explored how community mobility is associated with or predicted by these characteristics. The proposed study is novel in that it identifies associations and predictors for dimensions of mobility necessary to develop personal centered interventions to support community mobility for autistic adults.

Aim 1 findings will provide a deeper understanding of how the four dimensions of mobility; frequency, sufficiency, satisfaction, and ease interrelate. The findings from Aims 2-4 will provide important insights into community mobility by empirically testing whether the beliefs and opinions of AYA align with actual personal and environmental barriers. This research will help identify which factors are associated with or predictive of community mobility. Examining these associations helps identify relationships between variables, providing insights into patterns or trends, such as how personal (PBSF) or environmental factors relate to community mobility. It will determine whether certain personal (PBSF) and environmental factors are related to specific dimensions and across multiple dimensions. By exploring these relationships, the study will identify key personal and environmental factors that shape mobility experiences and inform targeted interventions. Studying predictors helps identify key variables, providing actionable

insights for interventions and program design. While associations reveal connections, predictors enable targeted decision-making to improve outcomes.

CHAPTER 5

METHODS

Research Design

A cross-sectional survey design with self-reported data from AYA was used to gather data to answer the research questions for all four aims. A full copy of the survey is in Appendix A. Multiple analytical approaches were used to address each aim and research question.

Participants and Inclusion Criteria

Participants consisted of AYA who were invited to complete an online survey. The study used a convenience sampling method. Participants had a self-reported autism diagnosis and self-reported age between 18-30 years of age. To further ensure the likelihood of a confirmed autism diagnosis, participants were recruited from agencies that work with this population. Participants needed to be able to access the REDCap survey software used to collect data either through a phone, computer, or similar device. All participants had to be able to read English. Participants could receive assistance in completing the questionnaire if they needed help reading and understanding the questions or selecting the appropriate answer.

Participant Recruitment

Recruitment occurred through established partnerships in the Philadelphia and surrounding areas, including but not limited to Community Integrative Services (CIS), Philadelphia Independence Network, Carousel Connection, GRASP, ASERT, the Institute on Disabilities at Temple University, Philadelphia Area Charter School, Delaware Project

Search, SEPTA, and Villanova University. The sites were selected based on successful previous survey dissemination.

The organizations either scheduled a time for the researcher to explain the consent process and survey, sharing the survey link in group settings, or they distributed the electronic consent form, which, once signed, provided access to the survey through an introductory recruitment email. The virtual platform Zoom was used by the researcher to present materials and guidance to participants. Participants met with the researcher, who reviewed and explained the consent form. They then decided whether to participate. Those who chose to participate electronically signed the consent form, while those who declined did not take part in the study. Participants who provided consent received the survey link via email. For others, the email was sent to potential participants through the organization. The email included a link to the survey questions on REDCap. All participants were informed that they could receive assistance with reading the questions or navigating the survey if needed. Those who requested support were contacted, and a Zoom meeting was scheduled to help them complete the survey. Participants were informed that they could start and stop the survey as needed. A personalized link that saved their progress was sent to participants who indicated they needed more time or required breaks to complete the survey.

Data Collection Procedure

Philadelphia Department of Public Health Institutional Review Board (2023-65) and Temple University Institutional Review Board (30923) reviewed and approved this study. A link to the REDCap survey was shared via email through classrooms, groups,

organizations, or directly by the project investigator, inviting potential participants. The survey began with a screening for inclusion criteria, followed by informed consent, which outlined the study's purpose, time commitment, and voluntary nature (see Appendix A for survey and IRB-approved forms). Participants confirmed their understanding of the research and their voluntary participation through a four-question quiz before completing the survey. Contact information for the research team was provided if participants had any further questions, and informed consent was obtained electronically. At the end of the survey, participants were asked to provide their email if they wanted to receive the \$20 electronic Amazon gift card as a thank you for completing the survey. Average completion times were calculated using time-stamped data from consent to survey submission. On average, the survey took approximately 35 minutes to complete.

Survey Development

The complete survey, titled "Personal and Environmental Factors Predicting Mobility", used existing measures from PROMIS[®] (Patient-Reported Outcomes Measurement Information System) and other online surveys to measure individual and environmental factors. Measures that were not originally created for the AYA (Adolescent and Young Adult) population were adapted for accessibility when possible. This included changing the language to self-reported terms, lowering the reading level to a 6th-grade standard, and making responses more easily understood and reportable. Definitions for words above a fifth grade reading level were provided. No changes were made to the PROMIS measures. Questions were developed for a community mobility survey to measure the dimensions of mobility frequency, sufficiency, satisfaction, and ease, as described below. These items also considered the various modes of transportation used

for community mobility (e.g., public transportation, driving). The adapted survey was then pilot tested through cognitive interviews with AYA. These interviews aimed to assess the clarity and comprehension of the survey questions. Participants were asked questions such as, "What do you think this question is asking?" "Is this clear?" and "What could make this clearer?" They were encouraged to think aloud while responding, allowing researchers to identify and revise any confusing items. Changes were made through this iterative process based on their feedback to ensure the questions and phrasing were respectful and accessible. The finalized survey was combined with the personal and environmental measures, and the entire survey underwent additional pilot testing. Feedback and suggestions were also sought from other key groups such as, professionals who work with AYA, caregivers of AYA, AYA, ID, and researchers to ensure the survey's accessibility. Overall, this study took the following steps to develop and evaluate the individual and environmental factors associated with community mobility.

1. Constructs were clearly defined to ensure understanding.
2. Simplified language was used, with special attention paid to avoiding complex or ambiguous terms. Short sentences and statements were used, examples were provided whenever possible, and unclear terms were defined.
3. Duplicate or unnecessary questions were removed to streamline the survey.
4. Pilot testing was conducted with a small group of AYAs (n = 6) to gather feedback.
5. Expert reviews (n = 7) were completed by consulting professionals experienced in working with autistic individuals, such as psychologists, occupational therapists,

or special educators, to obtain input on the appropriateness and sensitivity of the questions.

6. Cultural sensitivity was ensured by pilot testing the survey with participants from diverse backgrounds ($n = 5$), including variations in race, ethnicity, income, education, and disability, to account for cultural differences that might impact question interpretation and responses, making the survey more inclusive and respectful of all participants.

Surveys Included in the Research Study

Community Mobility. No single measure of community mobility was found that encompassed all dimensions of mobility. As part of this process, existing mobility measures from other areas or populations were identified and modified for this research. Therefore, community mobility survey questions were informed by existing mobility measures (Table 2). The survey was created to include questions regarding various dimensions of community mobility, including how frequently individuals leave the house each week for specific activities (frequency), whether they feel they engage in enough community mobility (sufficiency), their satisfaction with the number of outings (satisfaction), and how easy it is for them to do so (ease). These questions aim to capture a comprehensive view of community mobility by assessing not only the frequency of participation but also the subjective experience related to satisfaction, perceived sufficiency, and ease of mobility.

The frequency of mobility questions was inspired by measures such as the Life-Space Assessment (LSA) and the Community Integration Questionnaire (CIQ). These questions assessed how often a person left their home and the specific locations to which

they traveled. These locations included spaces commonly referred to as participation spaces, such as work, school, visiting family and friends, shopping, entertainment, exercise, and other activities. Participation spaces are recognized in community mobility research, including those within the domains of the International Classification of Functioning, Disability and Health (ICF) and studies on social and community participation.¹³⁴ The sufficiency question was developed based on inferences from mobility measures that assess whether a person participates in community activities. The ease of mobility question was adapted from measures like the Difficulty with Mobility Questionnaire (DMQ), which evaluates mobility difficulty, and the Mobility Assessment Tool-Short Form (MAT-SF), which assesses mobility ease using a Likert scale. Finally, the satisfaction question was influenced by the PROMIS Satisfaction with Participation in Discretionary Social Activities, which measures an individual's satisfaction with specific areas of participation.

To assess frequency of mobility, participants reported the number of times per week they left their house for various activities, including work, school, visiting family and friends, shopping, entertainment, exercise, and other activities. Frequency of mobility results in a continuous variable that included the total number of activities (work, school, social, leisure) completed during a typical week.

For the sufficiency dimension, participants were asked whether they leave their house often enough to engage in the activities they need or want to do. Response options included "Not enough," "Enough," and "Too much." Sufficiency was then categorized dichotomously as sufficient or insufficient. Sufficient included participants who met the threshold of sufficiency, encompassing responses of "Enough" and "Too much."

Insufficient included participants who selected "Not enough," as it indicated that their mobility did not meet their personal threshold. Condensing these categories not only accounts for sample size considerations but also enhances clarity by streamlining the analysis, making it easier to differentiate between those who find their level of mobility sufficient and those who do not.

For the satisfaction dimension, participants were asked, "How satisfied are you with the number of times you leave your house to get where you need or want to go?" Response options included "Very dissatisfied," "Dissatisfied," "Neither satisfied nor dissatisfied," "Satisfied," and "Very satisfied." Satisfaction was then categorized dichotomously as satisfied or dissatisfied. Participants who selected "Satisfied" or "Very satisfied" were classified as satisfied, while those who chose "Very dissatisfied" or "Dissatisfied" were classified as dissatisfied. Condensing these categories not only addresses sample size considerations but also improves interpretability by simplifying the analysis, making it easier to distinguish between those who are satisfied and those who are not.

For the ease dimension, participants were asked, "How easy is it for you to leave your house to get where you need or want to go?" Response options included "Very difficult," "Difficult," "Neither difficult nor easy," "Easy," and "Very easy." Ease was then categorized dichotomously as easy or not easy. Participants who selected "Easy," or "Very" easy were classified as easy, while those who chose "Very difficult," "Difficult," or "Neither difficult nor easy," were classified as not easy. Condensing these categories not only accounts for sample size considerations but also enhances clarity by streamlining

the analysis, making it easier to differentiate between those who find community mobility easy and those who do not.

The survey asked about various modes of transportation, including walking, driving, being a passenger in a car, school transportation, public transportation, private transportation, paratransit, biking, and other modes. These options were included because they are commonly referenced in research on community mobility.²³⁰⁻²³² Participants were also asked how often they use each mode and how easy it is for them to reach their destinations using these modes.

Personal Factors

Demographics. Demographic data were collected to analyze personal (PBSF) and environmental factors as predictors of mobility. Data on age, race, ethnicity, gender, educational background, and zip code was collected. Additionally, autism-specific demographics, including autism diagnosis, level of support, and any co-occurring conditions were collected.

Race. Participants were asked to respond to a question about race. The survey asked, "Which best describes your race/ethnicity? Check all that apply," with response options including White/Caucasian, Black or African American, Asian/Asian American, American Indian or Alaska Native, Native Hawaiian or Pacific Islander, Hispanic/Latinx (with the option to select a race), Another race or ethnicity, Not Listed, and Prefer Not to Answer. For analyses, responses were categorized into a dichotomized variable for simplicity based on the results, with categories of White and Non-White (Black/Other). This approach of combining 'Black' and 'Other' categories has been used in previous literature when the other category is minimal.^{233,234} In addition, this approach helped

address statistical power limitations while maintaining meaningful group comparisons.²³⁵

Co-Occurring Conditions. Participants were asked to identify any co-occurring conditions they had been diagnosed with or informed of by a doctor, health professional, or school professional. They were given the option to select multiple conditions, including Attention Deficit, Blind or Visually Impaired, Epilepsy/Seizure Disorder, Learning Disability, Mental Health Condition, Anxiety, Depression, Obsessive Compulsive Disorder (OCD), Substance Use Disorder, Physical or Mobility-related Challenges, and Speech-Related Disability. Additionally, they could select Other Chronic Conditions, such as autoimmune diseases, cancer, diabetes, or heart disease, as well as an open-ended "Other" option. Participants also had the option to choose "Prefer Not to Answer." Co-occurring conditions were categorized into a dichotomous variable based on the number of conditions reported. The categories were "one or fewer conditions" and "more than one condition." This classification was based on research indicating an increase in co-occurring conditions, with many individuals experiencing more than one. Given this trend, categorizing individuals into "one or fewer conditions" and "more than one condition" was deemed appropriate.²³⁶ Research suggests that those with multiple co-occurring conditions face greater challenges in community mobility, daily functioning, and health outcomes compared to those with none or only one condition.^{237,238}

Level of Support. Participants were asked to evaluate their perceived level of support or assistance needed in areas such as communication, social behaviors, planning, and other daily activities. Examples included receiving help from a teacher to organize a schedule or assistance in social interactions with friends. Response options ranged from "I do not need any support or help" to varying levels of need, including "I need a little

support or help," "I need some support or help," and "I need a lot of support or help." This question aimed to assess self-perceived support needs among autistic young adults. For analysis, support levels were categorized into a dichotomous variable, with responses grouped into two categories: "no or little support" and "some or high support." Categorizing support levels into "no or little support" and "some or high support" ensures sufficient sample sizes for statistical comparisons while capturing a meaningful distinction between individuals with minimal versus greater support needs. This approach aligns with research practices in disability and healthcare studies and thresholds used in service eligibility and intervention planning.²³⁹

Self-Determination Questionnaire (SDQ). The Self-Determination Questionnaire (SDQ) was used to collect information about self-determination.²⁴⁰ The form consists of six items. The survey was developed by the American Institutes for Research (AIR) in collaboration with Teachers College, Columbia University. These items were part of the larger SDQ and focused on self-determination aspects related to "things I do." Other sections of the survey addressed areas such as "things I feel," "things at school," and "things at home," all specific to self-determination. The questionnaire measures various aspects of self-determination, including autonomy, competence, and relatedness. The questionnaire uses a Likert scale with responses ranging from "(1) Not at all true/Never" to "(5) Always true." A higher score indicates greater self-determination.¹⁹³ The scale was developed to be completed by an educator and later established as a self-report measure for students.¹⁹³ The Cronbach's alpha for the SDQ self-report short form was [0.70 to 0.85], demonstrating its reliability in measuring the

different dimensions of self-determination. Data obtained in this study resulted in an acceptable Cronbach's Alpha of 0.882 for the 6 items included in the analysis.

Sensory Sensitivity. The Sensory Sensitivity subscale (SS) of the Sensory Processing Sensitivity Questionnaire (SPSQ) was used to collect information about sensory sensitivity.²⁴¹ The SPSQ used a response scale ranging from 0 to 10, with 0 representing "Not Sensitive" and 10 representing "Very Sensitive." This measure is well-established with validated psychometric properties. The Cronbach's alpha was 0.91 in prior research and 0.887 for the 8 items used in the survey. These items were chosen as they address community mobility sensory stimuli. This scale allowed participants to indicate how sensitive they were to each type of stimulus, providing a detailed assessment of their sensory sensitivities. The higher score indicates a higher sensitivity to stimuli.

PROMIS General Self-Efficacy. The PROMIS General Self-Efficacy measure was used to assess a person's belief in their capacity to manage daily stressors and have control over meaningful events.²⁴² The tool has established reliability and validity.²⁴² Participants completed the 10-question tool which is designed for people 18 years and older. The response options are on a 5-point scale from "I am a little confident" (1) to "I am very confident" (5) with higher scores reflecting greater general self-efficacy. A total standard T-score was used to analyze the data. Data obtained in this study resulted in an acceptable Cronbach's Alpha 0.91 for the ten items in this dataset.

PROMIS Anxiety Short Form. This measure was obtained from the PROMIS item bank and is designed to assess anxiety in adults aged 18 and older. This self-report measure has 8 items with a response range from "Never" (1) to "Very Often" (5). Higher

scores reflect greater levels of anxiety. It has established acceptable psychometrics and is sensitive to change.^{243,244} A total standard T-score was used to analyze the data. Data obtained in this study resulted in an acceptable Cronbach's Alpha a value of 0.93 for the eight items used in this dataset.

Ritvo Autism Asperger Diagnostic Scale–Revised (RAADS–R). The Ritvo Autism Asperger Diagnostic Scale–Revised (RAADS–R) is used to assess social communication in AYA.²⁴⁵ This self-report questionnaire allows individuals to screen themselves for autism and has demonstrated high accuracy in classifying individuals as autistic. The RAADS–R shows excellent validity and reliability, with a sensitivity of 97% (ability to identify autism symptoms), specificity of 100% (ability to identify who does not have autism symptoms), concurrent validity of 96% (comparison with other autism measures including the ADOS Module 4 and SRS), and test-retest reliability of 0.987 (agreement between successive measurements).²⁴⁵

Only the social relatedness subscale of the RAADS–R was used for this study. This subscale consists of 39 statements addressing various social interaction challenges, including difficulties with mentalization (understanding others' thoughts or feelings), preferring interaction with those who share similar interests, and issues with emotional reciprocity (e.g., recognizing flirting). It also explores experiences of being perceived as 'different,' struggles with conversational turn-taking, and difficulties with nonverbal communication, such as body language and auditory processing.

Scoring for most of the statements (31 out of 39) is as follows: 3 points for "True now and when I was young," 2 points for "True now only," 1 point for "True only when I was younger than 16," and 0 points for "Never true." However, for 8 normative questions,

the scoring is reversed: 0 points for "True now and when I was young," 1 point for "True now only," 2 points for "True only when I was younger than 16," and 3 points for "Never true." Cronbach's Alpha was calculated at 0.81 for the 39 items used in this dataset.

Behavior Rating Inventory of Executive Function Second Edition Self Report Form (BRIEF-2). Adapted and reproduced with special permission from Psychological Assessment Resources, Inc. (PAR), the BRIEF Self-Report Form Second Edition (BRIEF-2) is a self-reported questionnaire consisting of 12 items designed to assess executive functioning in children and adolescents. The questions cover various aspects of executive functioning, including attention span, task completion, adaptability to changes, planning, impulsivity, organization, and reactions to events. For example, participants are asked about their attention span, difficulty in finishing tasks independently, or how often they get upset over minor events. This questionnaire is useful for identifying cognitive and behavioral management issues based on self-reported difficulties experienced over the past six months.

The BRIEF-2 responses are scored on a scale from "(1) Never" to "(3) Often," with higher scores indicating poorer executive functioning. Cronbach's alpha values generally range from 0.80 to 0.98 for different scales. In prior research test-retest reliability over 2-4 weeks showed correlation coefficients in the range of 0.82 to 0.93, which suggests good test-retest reliability.²⁴⁶ Cronbach's Alpha was calculated for the 12 items used in this dataset, resulting in a value of 0.88.

Environmental Factors

Perceived Social Support. The Perceived Social Support questionnaire measures social support through three dimensions: family, friends, and significant others.²⁴⁷ It

consists of 12 items with responses ranging from "(1) very strongly disagree" to "(7) very strongly agree" on a Likert scale. A high score indicates higher perceived social support. It is widely used and has been adapted for various populations. The PSS was originally developed for undergraduates in the United States. The measure was not adapted, but definitions of certain terms were provided to enhance its accessibility. Data obtained in this study resulted in an acceptable Cronbach's alpha of 0.88 for the 12 items in this dataset. In prior research, test-retest reliability ranged from 0.72 to 0.85.²⁴⁷

Autism Stigma Survey. The Autism Stigma questions were derived from the Brief Internalized Stigma of Mental Illness Scale which included 10 items.²⁴⁸ For the purpose of this study, four declarative items were selected to measure autism stigma. Response options to the items use a Likert format, with responses ranging from 0 to 10, where 0 indicates "Strongly Disagree" and 10 indicates "Strongly Agree." The four items that were used included declarative statements: "People who don't have autism/ID can't understand what it's like for me," "Having autism/ID has made my life hard," "Others think that I can't achieve much in life because I have autism/ID," and "People ignore me or take me less seriously because I have autism/ID." In the full version of the tool, total scores for each dimension, such as public or self-stigma, are calculated by summing these values. The survey is designed to capture various aspects of stigma experienced by autistic individuals and their families, providing insights to target stigma reduction efforts effectively. For this study, the four items were summed to create a total score, which was used to assess perceptions of autism-related stigmatizing experiences. A higher score indicates a stronger perception of autism stigma. Data obtained in this study resulted in an acceptable Cronbach's Alpha of 0.83 for the four items.

Perceived Safety. Perceived safety was measured by asking participants the question, "Do you feel safe when you leave your house to get where you need or want to go?" Response options included "Never," "Almost never," "Sometimes," "Almost always," and "Always." Responses were categorized into two groups: "Rarely or Never" (including almost never and never) and "Sometimes to Always" (including sometimes, always, and almost always).

Walkability. Walkability scores were determined based on participants' zip codes. Participants were asked to report their zip codes in the demographic portion of the survey. Participants zip codes were entered into Walk Score, which can be accessed through the web at <https://www.walkscore.com/score/>. Walk Score was developed by Front Seat. The software measures the walkability of any address based on proximity to amenities, pedestrian-friendliness, and urban design factors. It assigns scores using a patented system, where locations within a 5-minute walk receive maximum points, while distances beyond 30 minutes earn none. Additional metrics include Transit Score for public transit access and Bike Score for biking conditions. Walk Score ranges from 0 to 100. Higher scores indicate greater walkability, while lower scores signify more car dependency. Walk Score is validated by academic research, is widely used in urban planning, real estate, and transportation studies.²⁴⁹

Crime Rate: Property Crime and Violent Crime. Property crime scores were determined using participants' zip codes. Participants provided their zip codes, which were then entered into a crime rate database, <https://www.bestplaces.net/>. BestPlaces.net was accessed through the web and zip codes were put into the site and scores were then generated. BestPlaces.net was founded by Bert Sperling and sources its crime data

primarily from the FBI's Uniform Crime Reporting (UCR) Program. It uses additional data from the U.S. Census Bureau and other government agencies. The platform provides comprehensive insights on crime, demographics, and livability factors to help users evaluate different locations. The platform generates crime scores based on the reported zip codes. BestPlaces.net provides crime indices on a scale from 1 (low crime) to 100 (high crime), with higher numbers indicating higher crime rates.²⁵⁰ According to BestPlaces.net, the national average for property crime, it's 35.4. According to BestPlaces.net, the national average for property crime, it's 22.7. The Crime rate database is accurate based on government findings.²⁵¹

Population Density. Population density scores (measured in people per square mile) were determined using participants' zip codes. The website <https://greatdata.com/> sources population density data from the U.S. Census Bureau and the U.S. Postal Service (USPS) to ensure accuracy and up-to-date information. Each zip code was entered into the U.S. Census database, which then provided the corresponding population density values (people/ square mile). Both the U.S. Census Bureau and USPS are widely recognized as reliable sources for measuring population density across geographic regions.

Analysis

Power Analysis

Power was determined based on the number of factors that were expected to be used in the regression analyses. The minimum desired sample size of 130 was determined using both the 10k rule of thumb and G*Power software. According to the 10k rule of thumb, a sample size of 130 was required for the 13 personal PBSF variables used in the

regression analyses (calculated as 13 personal PBSF factors \times 10 observations per predictor = 130). For environmental factors, a sample of 70 was needed (7 environmental predictors \times 10 observations per predictor = 70). Lastly, for the analysis of combined personal and environmental factors, a sample of 100 was determined (anticipated 10 personal and environmental factors \times 10 observations per predictor = 100). Literature reflects similar methods that utilize sample sizes within this range.^{75,252,253 254}

Data Preparation

Data preparation involved cleaning the data and addressing missing values. The survey included forced responses for many items, but not all. Missing values were handled using pairwise deletion. Multiple individual variables (or survey items) were combined or aggregated into a single numerical score to create scale or subscale scores based on procedures for certain measures. For example, the variable "anxiety" was based on the scores of eight anxiety items, which were consolidated into a total score, as standard for the anxiety measure.

Several procedures were used to ensure the integrity of the data. The data were cleaned to identify and correct erroneous and duplicative data. For example, if a participant completed the survey multiple times, only the first response was retained. Additionally, data that appeared to be implausible, such as the one mobility frequency scores in the thousands, were removed. To ensure the integrity of self-reported data in the computer-based survey, security procedures were implemented to validate respondents and their responses to avoid responses from bots and responses from ineligible individuals. The survey activated security features to monitor IP addresses, user agent platforms, and mobile device confirmations. These measures helped identify potential

issues, such as surveys completed by the same person multiple times, fake addresses, or unrecognizable devices. Responses flagged for security concerns were reviewed, and those with significant red flags were removed from the dataset. Two hundred and forty-seven were screened. Of the 247 surveys screened, 29 were identified as scams through security checks. These security checks included verifying that the IP addresses and mobile devices were either located within the U.S. or not duplicated. Forty-four were excluded for completing less than 25% of the survey, and 12 were removed due to erroneous data. Erroneous data examples include any extremely high frequency responses (100s) or surveys completed in just seconds with identical answers throughout.

Specific consideration was given to ensuring data integrity. This included verifying that RAADS-R subscale social connectedness scores met ASD threshold numbers, reviewing anomalies such as perfect scores across measures, and cross-checking that emails sent directly to past participants were correct.

The data was then reviewed by initial examination through summary statistics and visualizations to review distributions, outliers and anomalies. This process ensures data quality, informs necessary transformations, and prepares the dataset for accurate analysis. Missing values outliers, and duplicates were handled through removal. Categorical data was converted into numerical values for analysis. Demographic variables, including age, gender, and race, were categorized. Two categories were selected in age, and three categories were selected for gender and race to simplify the regression, ANOVA and chi-square analysis. Age was divided into two groups: 18–21 and older than 21. This distinction reflects the difference between younger transition-aged individuals, who may have access to specific services and mobility options, and older individuals with differing

circumstances. Gender was categorized into three groups - male, female, and other. The male and female categories were retained to explore potential gender-specific challenges. The "other" category did not have enough (13.4% N=22) to allow for meaningful analysis or distinctions and was excluded from analyses. Race was divided into white and nonwhite categories for analytical simplification. The number of participants in the “Other” racial groups was determined too small to detect meaningful differences.

The entire cleaning process was thoroughly documented and available for review upon request. After cleaning the data and ensuring all variables were correctly computed, data was imported into SPSS 28 statistical software. Table 9 provides details on the definition of the construct, scoring of the measure, and type of variable. Finally, the data was reviewed again using summary statistics and visualizations to assess distributions after cleaning.

Table 9. Community Mobility, Personal (PBSF) and Environmental Factors Scoring

Community Mobility	Definition	Measure	Scoring	Type of Variable
Frequency of Mobility	The number of times a person reports leaving their house to complete a specific activity (such as work, school, social events, or errands) during a typical week.	Community Mobility Survey	Total number of activities (work, school, social, leisure) completed during a typical week.	Continuous
Satisfaction with Mobility	Satisfaction with the amount of leaving the house to go where needed or wanted.	Community Mobility Survey	Likert Scale Higher Scores more satisfaction	Ordinal variables
Sufficiency with Mobility	The determination of whether one leaves their house frequently enough to meet their needs or wants.	Community Mobility Survey	Likert Scale Higher Scores Enough	Ordinal variables
Ease with Mobility	The reported ease with which a person can leave their house to reach their desired or necessary destinations.	Community Mobility Survey	Likert Scale Higher Scores Greater Ease	Ordinal variables
Personal Factors	Definition	Measure	Scoring	Type of Variable
Age	Age of Individual	Demographic	Categorized into <21 and >21	Categorical Variable
Level of Support	Degree of assistance needed for autism support.	Demographics	1 No or little support 2 Some or high support	Categorical Variable
Race	The race variable in a survey categorizes participants based on their self-identified racial or ethnic group.	Demographics	Multiple Choice Not scored	Nominal variables

Table 9 (continued).

Gender	The gender variable in a survey captures participants' self-identified gender.	Demographics	Multiple Choice Not scored	Nominal variables
Education	Participants' highest level of formal education completed	Demographics	Multiple Choice Not scored	Nominal variables
Body Structure/Function	Definition	Measure	Scoring	Type of Variable
Sum of Co-occurring conditions	Conditions that occur alongside autism spectrum disorder (ASD).	Demographics	>2 or conditions >2 or more conditions	Categorical Variable
Anxiety	Anxiety is a state of heightened worry or fear, often characterized by persistent and excessive concern about potential future events	PROMIS Anxiety Short Form.	Total score is the sum of 8 items, with responses ranging from 1 to 10. Scores range from 7 to 70. Higher scores indicate greater sensory sensitivity.	Continuous
Sensory Sensitivity	An increased or heightened response to sensory stimuli, such as sounds, lights, or textures.	Sensory Sensitivity (SS)	Total score is the sum of 7 items, with responses ranging from 1 to 10. Scores range from 7 to 70. Higher scores indicate greater sensory sensitivity.	Continuous
Executive Function (EF)	Set of cognitive skills that help you plan, make decisions, and solve problems.	BRIEF-2 SHORT 12	Total score is sum of 12 items with responses ranging from 12 to 36. Higher scores indicate lower executive function skills.	Continuous

Table 9 (continued).

Self Determination	The ability to make choices and decisions about one's own life.	Self-Determination Questionnaire (SDQ) based on The AIR Self-Determination Scale	Total score is the sum of 6 items with responses ranging from 1-5. Scores Range 6-30 Higher scores more Self Determination.	Continuous
Self-Efficacy	The belief in one's own ability to succeed or accomplish tasks.	PROMIS General Self-Efficacy	Total score is the sum of 10 items with responses ranging from 1-5. Scores Range 10-50 Higher scores more Self Efficacy.	Continuous
Psychosocial (ICF Activity)	Definition	Measure	Scoring	Type of Variable
Social Communication (SC)	The ability to use and understand language and nonverbal cues effectively in social interactions.	RAADS-R 39	Total score is the sum of 39 items with responses ranging from 0-3. Some reverse scoring Higher Scores = Greater SC	Continuous
Environmental	Definition	Measure	Scoring	Type of Variable
Walkability	How easy and safe it is to walk in an area, including factors like pedestrian infrastructure and access to amenities.	Demographic	The ZIP code was used with walkability data to obtain walkability. Higher Score Greater walkability	Continuous

Table 9 (continued).

Property Crime Rate (CR)	The number of population crimes reported per unit of population.	Demographic	The ZIP code was used with crime data to obtain the Property CR. Higher Score greater property crime	Continuous
Violent Crime Rate (CR)	The number of violent crimes reported per unit of population.	Demographic Zip Code	The ZIP code was used with crime data to obtain the Violent CR. Higher Score greater violent crime	Continuous
Population Density (PD)	Number of people living per unit area	Demographic Zip Code	The ZIP code was used with census data to obtain the population density. Higher Score greater population	Continuous
Perceived Autism	Belief or awareness of negative attitudes or discrimination associated with autism.	Autism Stigma Scale	Total score is the sum of 4 items, with responses ranging from 1 to 10. Scores range from 4 to 40. Higher scores indicate greater perceived autism stigma.	Continuous
Perceived Safety	The feeling or belief about how safe a person feels in a particular environment.		Likert Scale Higher Scores Greater perceived safety	Ordinal variables
Perceived Social Support (PSS)	The sense of feeling supported by others and having access to help or resources when needed.	Perceived Social Support (12)	Total score is the sum of 12 items, with responses ranging from 1 to 7. Scores range from 12 to 84. Higher scores indicate greater social support.	Continuous

Analysis Methods

To explore the relationships among 1) personal (PBSF) factors and dimensions of community mobility, 2) environmental factors and dimensions of community mobility, and 3) the interaction of personal (PBSF) and environment factors with community mobility, variables were first categorized as continuous, dichotomous, or multinomial.

Aim 1: Understand and explore the relationship between the four conceptualized dimensions of mobility frequency, sufficiency, satisfaction and ease.

Descriptive statistics, Chi-square and ANOVA analyses were conducted to examine the associations among the dimensions of community mobility. Chi-square was used for categorical dimensions (sufficiency, satisfaction, and ease) and ANOVA was performed to assess the relationship between frequency (a continuous variable) and sufficiency, satisfaction, and ease, which were transformed into categorical variables for reasons described in the Results section.

Aim 2 and Aim 3 Question 1 What are the bivariate associations between the personal (PBSF) and environmental factors and the dimensions of community mobility (frequency, sufficiency, satisfaction and ease) for AYA?

Two methods were used to determine associations between two nominal variables: Chi-Square Test of Independence and Cross-Tabulation. First, the Chi-Square Test of Independence assessed whether a significant association existed by comparing observed frequencies with expected frequencies under the assumption of no association. Second, cross-tabulation, or a contingency table, helped visualize the relationship by showing the frequency distribution within each category, providing a clearer understanding of how the variables relate.

A one-way series ANOVA was used to analyze associations between continuous and categorical variables, determining whether significant differences existed in the means of the continuous variable across the categories, particularly when the categorical variable had more than two levels. Pearson correlation was also applied because many

categorical variables had a meaningful order, allowing for the assessment of the strength and direction of the relationship between the continuous variable and ordinal categorical variables. When examining associations between two continuous variables, Pearson correlation was used if the assumptions of normality were met. If these assumptions were not met, Spearman correlation was used.

Aim 2 and Aim 3 Question 2: What are the multivariate associations between personal (PBSF) and environmental factors and the dimensions of community (frequency, sufficiency, satisfaction and ease) for AYA?

Multiple regression analyses were conducted to determine which personal (PBSF) and environmental variables predict dimensions of community mobility, frequency, sufficiency, satisfaction and ease. Linear regression was used for mobility frequency, as it is a continuous variable. Binary logistic regression was applied to sufficiency, satisfaction, and ease, as these were categorized as dichotomous variables. Personal (PBSF) factors (e.g., anxiety, social support, executive functioning) and environmental factors (e.g., walk score, crime rate, population density) were analyzed separately for each dimension of mobility. All personal and environmental variables were used in the regression not just those that showed to have significant associations. Including all personal variables in the regression model helps control for confounding effects and avoids omitted variable bias, ensuring that each factor is assessed independently. Additionally, some variables may not show significant bivariate associations but could still play a role in multivariate models when accounting for other influences. The

regression tables included alpha levels, coefficients, standard errors, t-values, p-values, and confidence intervals. R-squared values are also reported.

Aim #4: Empirically assess the relationships between putative personal environmental factors with the dimensions of community mobility (frequency, sufficiency, satisfaction and ease) among AYA.

Exploratory factor analysis (EFA) was conducted to identify interpretable factors from the personal (PBSF) and environmental variables. EFA included correlation matrix analysis, eigenvalue determination, and rotation selection. Reduced variables were used in multiple regression to assess both individual and environmental contribution to understanding community mobility.

Multiple regression analyses were performed to evaluate the contribution of personal (PBSF) and environmental factors and on, as identified through the EFA, in predicting community mobility. Consistent with Aim 2 and Aim 3, Question 2, linear regression was used to analyze mobility frequency, given its continuous nature. Binary logistic regression was applied to sufficiency, satisfaction, and ease, as these were treated as dichotomous variables. Personal (PBSF) (PF1, PF2, PF3) and environmental factors (e.g., EF1, EF2) were examined. Regression results included alpha levels, coefficients, standard errors, t-values, p-values, and confidence intervals. R-squared values were provided where relevant.

CHAPTER 6

RESULTS

The results of this study are presented in three parts. First, a summary of personal (PBSF) and environmental variables is provided. Next, a description of the community mobility dimensions and relationship with one another is provided (Aim 1). Finally, the results pertaining to study Aims 2-4 are presented in order.

Basic Descriptives

Table 10 provides a summary of demographic data for the 164 participants who completed the survey. The average age of participants was 22.04 years, with 55.8% (N =92) aged 18 to 21 and 44.2% (N = 73) aged 21-30. The majority identified as male (61%, N = 100), 25.6% as female (N =42), and 13.6% identified as "Other" (N = 22). Racially, 43% (N =71) identified as white, 39.4% (N =65) identified as Black/African American, and 17.6% (N=29) as other groups. Educational levels varied, with some participants still in high school 21% (N =35) while others had completed college degrees 17% (N=28). Reflecting these educational levels, many participants reported being students, interns, or volunteers, while 37.8% (N=62) were employed part-time or full-time. In terms of support needs, 61.6% (N=101) of participants reported requiring little to no assistance with communication, social behaviors, planning, or related activities. Co-occurring conditions were common, with 63.4% (N=104) of participants reporting mental health conditions such as anxiety, OCD, and depression.

Summary of Personal (PBSF) and Environmental Variables

Table 10. Person Demographics Descriptives

Variable	Response	Frequency	Percent
Age (Mean 22.04)	18-21	92	55.8
	22-30	73	44.2
Gender	Male	100	61
	Female	42	25.6
	Other	22	13.4
Race	White/Caucasian	71	43
	Black African American	65	39.4
	Other	29	17.6
Ethnicity	Hispanic	20	12.1
	Non-Hispanic	145	87.9
Highest Level of Education Completed	HS	35	21.3
	Completed HS	60	36.6
	Some College	41	25
	College Degree or Higher	28	17.1
Current Work Status	Employed (Part-time or full-time)	62	37.8
	Student, Internship or Volunteer	71	43.3

Table 10. (continued).

Variable	Response	Frequency	Percent
Perceived Level of Support required for communication, social behaviors, planning, and related activities	None or little support	101	61.6
	Some or a lot of support	63	33.9
Co-Occurring conditions in addition to Autism			
Mental Health Condition (Anxiety and Obsessive-Compulsive Disorder, Depression)		104	63.4
Substance Use Disorder		11	6.7
ADHD		81	49.4
Learning Disability		79	48.2
Blind or Visually Impaired		18	11
Epilepsy Seizure Disorder		8	4.9
Physical or Mobility-related Challenges		27	16.5
Speech Related Disability		46	28
Other Chronic Condition		18	11
Other		23	14
Frequency of Co-occurring Conditions			
	0 -1 Co-occurring Conditions	79	48.2
	>1 Co-occurring Conditions	85	51.8

Table 11 presents the descriptive statistics for all continuous personal (PBSF) and environmental variables.

Table 11. Person (PBSF) and Environmental Variables' Descriptives

Variable	Valid	Missing	Mean	Std. Dev	Min	Max
Personal (PBSF) Factors						
Self Determination Score	162	9	21.86	5.051	8.00	30.00
Self-Efficacy score	162	9	34.76	7.59	11.00	50.00
Sensory Sensitivity Score	163	8	29.26	10.611	5.00	50.00
Anxiety Score	162	9	22.88	8.06	8.00	40.00
Executive Function Score	157	14	24.43	5.66	12.00	36.00
Social Communication Score	155	16	49.28	12.46	21.00	74.00
Environmental Factors						
Autism Stigma Score	162	9	20.88	10.24	0.00	40.00
Perceived Social Support Score	162	9	64.69	13.91	12.00	84.00
Violent Crime	163	8	51.23	23.58		
Property Crime	163	8	53.54	20.37		
Population Density (people/mi ²)	162	9	4176.71	4951.39		
Walk Score	163	8	58.99	29.08	0.00	100.00

Analytical Results-Aim 1

The objective of Aim 1 was to explore the relationships between the four dimensions of mobility. The results of Aim 1 are discussed below and displayed in tables.

Dimensions of Community Mobility Descriptives

Community mobility was operationalized using the four dimensions of frequency, sufficiency, satisfaction, and ease. Frequency of mobility refers to the number of times a person leaves their house in a typical week to complete specific activities, such as work, school, social events, or errands. Sufficiency of mobility reflects whether an individual feels they leave their house frequently enough to meet their needs or desires. Satisfaction with mobility refers to a person's level of contentment with how often they leave their

house to go where they need or want to go. Lastly, ease of mobility describes how easily a person can leave their house to reach their desired or necessary destinations.

Table 12 presents the descriptive statistics of the frequency of mobility (continuous) and the categorical community mobility dimensions, including sufficiency, satisfaction, and ease.

Table 12. Descriptives of Categorical Community Mobility Dimensions (Sufficiency, Satisfaction, Ease)

Variable			
Frequency with Mobility	Trips a week	Range	Mean/SD
		3-40	17.00±7.82
	Responses	Frequency	Percent
Sufficiency with Mobility			
	Not enough	50	30.3
	Enough	99	60.0
	Too much	16	9.7
Satisfaction with Mobility			
	Very Dissatisfied	6	3.6
	Dissatisfied	21	12.7
	Neither Satisfied nor Dissatisfied	49	29.7
	Satisfied	74	44.8
	Very Satisfied	15	9.1
Ease with Mobility			
	Very Difficult	9	5.5
	Difficult	29	17.6
	Not difficult or Easy	45	27.3
	Easy	58	35.2
	Very Easy	24	14.5

As described in the methods, the categorical dimensions were dichotomized as follows: sufficiency was classified as sufficient or not sufficient, satisfaction was categorized as satisfied or dissatisfied, and ease was defined as easy or not easy. It is acknowledged that some variability is lost; however, for the purposes of this study, categorizing mobility as sufficient or not sufficient, satisfied or dissatisfied, and easy or not easy provided a clearer and more interpretable context for analysis.

Chi-square analyses were conducted to assess associations among the categorical dimensions of community mobility. Significant relationships were observed across all dimensions: frequency, sufficiency, satisfaction, and ease.

A significant association was found between satisfaction and sufficiency ($\chi^2 (1) = 46.06, p < 0.001$). Participants who reported not leaving the house enough were dissatisfied (N=42; 86%). In contrast, participants who felt they left the house enough reported satisfaction (N=82; 71.3%).

A significant association was also found between ease and satisfaction ($\chi^2 (1) = 13.517, p < 0.001$). Respondents who were dissatisfied with their community mobility, found it not easy to leave (N=50; 65.8%). Respondents who were satisfied found it easy to move around their community (N=56; 62.9%).

Finally, there was a significant association between ease and sufficiency ($\chi^2 (1) = 16.115, p < 0.001$). Participants who reported insufficient community mobility reported not easy community mobility (N=37; 74.0%). In contrast, among those who reported sufficiency, stated that it was easy (N=69; 60.0%).

A one-way series ANOVA was performed (Table 13) to examine the relationship between the dimension frequency (continuous variable), and the dimensions of ease, satisfaction, and sufficiency (categorical variables).

Table 13. ANOVA Frequency with Sufficiency, Satisfaction and Ease with Mobility

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Sufficiency	12.696	42	0.302	1.651	0.019*
	21.967	120	0.183		
	34.663	162			
Satisfaction	12.751	42	0.304	1.310	0.131
	27.813	120	0.232		
	40.564	162			
Ease	12.280	42	0.292	1.233	0.190
	28.456	120	0.237		
	40.736	162			

A significant relationship was found between frequency and sufficiency with community mobility ($F(1,163) = 11.81, p = 0.01$). Sufficient mobility was associated an average frequency of ($M = 18.36 \pm 7.36$). There were no other significant relationships identified with the other dimensions of community mobility, ease and satisfaction.

Table 14 summarizes the relationship between dimensions of mobility.

Table 14. Summary of Dimensions of Mobility Relationships

Dimension	Frequency	Sufficiency	Satisfaction	Ease
Frequency		+		
Sufficiency	+		+	+
Satisfaction		+		+
Ease		+	+	

* "+" symbolizes direct relationship

Analytical Results-Aim 2

The objective of Aim 2 was to examine which personal (PBSF) variables are associated with dimensions of community mobility (frequency, ease, sufficiency, and satisfaction) for AYA. The results of Aim 2 are discussed below and displayed in tables.

Demographics Associated with Dimensions of Mobility

Frequency of Community Mobility. Table 15 presents the results of a series of one-way ANOVAs conducted to examine associations between personal (PBSF) variables and the frequency of community mobility.

Table 15. ANOVA Results: Frequency of Community Mobility by Demographic Variables

Variable	N	Mean of Frequency of Mobility	Std. Deviation	df	Mean Square	F	Sig.
Age				1	14.88	0.24	0.62
	18-21	90	16.73	7.43			
	22-30	73	17.34	8.33			
Gender				2	54.82	0.89	0.41
	Male (boy)	98	16.64	7.36			
	Female (girl)	42	18.32	9.05			
	Other	22	15.95	7.51			
Race				1	0.38	0.01	0.94
	White	76	16.93	7.73			
	Black/ Other	86	17.02	7.98			
Education				1	435.58	7.31	0.01*
	Currently In HS/HS Graduate	91	15.50	7.16			
	Some College/College Degree	69	18.83	8.40			
Employment				2	263.68	4.47	0.01*
	Employed (Full or Part)	61	19.21	7.51			
	Student//Intern/Volunteer	70	16.05	7.12			
	Unemployed	31	14.68	9.10			
Cooccurring Conditions				1	0.15	0.00	0.96
	Low	78	17.01	7.31			
	High	84	16.95	8.35			
Support Level				1	252.47	4.19	0.04*
	None or a little support or help	99	17.97	7.71			
	Some or a lot of support or help.	63	15.41	7.84			

*Significant association $p < .05$

Participants with some college education or a college degree/graduate program reported a significantly higher frequency of mobility ($M = 18.83 \pm 8.40$) compared to those with only a high school education or who were currently in high school ($M = 15.50 \pm 7.16$)

Employment status was significantly related to mobility frequency ($F(1,158) = 7.311, p = 0.01$). Employed individuals reported higher mobility frequency ($M = 19.21 \pm 7.51$)

compared to students/interns/volunteers ($M = 16.05 \pm 7.12$) and unemployed individuals ($M = 14.68 \pm 9.10$). The Tukey post-hoc test, was used to understand which specific employment groups differ from each other after finding a significant overall effect. The comparisons revealed that employed participants had significantly higher mobility frequency than unemployed participants (Mean Difference = 4.53, $p = 0.022$), while the difference between employed and student/intern/volunteer groups approached significance (Mean Difference = 3.15, $p = 0.053$). Support level exhibits a significant effect on mobility frequency ($F(1,160) = 4.188$, $p = 0.04$). Participants with no or little support reported higher frequency with mobility ($M = 17.97 \pm 7.71$) than those with some or a lot of support ($M = 15.41 \pm 7.84$).

Sufficiency with Mobility. A series of chi-square tests of independence were conducted to examine the bivariate relationship between person demographic factors (age, gender, race, employment status, education, frequency of co-occurring conditions, and support level) and the sufficiency with mobility, specifically whether individuals feel they leave the house enough. Table 16 displays the results of the chi-square test of independence. The test revealed a significant association between employment status and sufficiency with community mobility ($\chi^2 = 18.812$, $df=2$, $p < 0.001$). Employed individual (full or part-time), reported sufficient mobility ($N=51$; 82.3%). Students, interns, or volunteers indicated sufficient mobility ($N=51$; 71.8%). Unemployed reported insufficient mobility ($N=19$; 61.3%).

Table 16. Chi-Square Associations Between Sufficiency with Community Mobility and Demographic Variables

Person Demographic Variable	Pearson Chi-Square Value	df	Asymptotic Significance (2-sided)
Age	.411 ^a	1	0.522
Gender	.737 ^a	2	0.692
Race	1.395 ^a	1	0.237
Education	.343 ^a	1	0.558
Employment	18.812 ^a	2	< 0.001*
Co-Occurring Conditions	.422 ^a	1	0.516
Support Level	.005 ^a	1	0.942

*Significant association $p < .05$

Satisfaction with Mobility. A Chi-Square test of independence was conducted to assess the relationship between demographic person variables and satisfaction with community mobility. Table 17 displays the results of the chi-square test of independence.

Table 17. Chi-Square Associations Between Satisfaction with Community Mobility and Demographic Variables

Variable	Pearson Chi-Square Value	df	Asymptotic Significance (2-sided)
Age	.558 ^a	1	0.455
Gender	4.880	2	0.087
Race	.171 ^a	1	0.679
Education	1.670	1	0.196
Employment	9.896	2	0.007*
Co-Occurring Conditions	0.669	1	0.413
Support level	0.148	1	0.700

*Significant association $p < .05$

The analysis revealed a significant association between employment status and satisfaction with mobility ($\chi^2 (2, N = 164) = 9.896, p = 0.007$). Participants who were employed reported satisfaction with their mobility (N=39; 62.9%). Those who were unemployed reported dissatisfaction with community mobility (N=22; 71.0%). No significant associations were found for other demographic variables.

Ease with Mobility. A Chi-Square test of independence was conducted to examine the relationship between demographic factors (age, gender, race, employment

status, education, frequency of co-occurring conditions, and support level) and the ease with community mobility (Table 18).

Table 18. Chi-Square Associations Between Ease with Community Mobility and Demographic Variables

Variable	Pearson Chi-Square Value	df	Asymptotic Significance (2-sided)
Age	3.874	1	0.049*
Gender	6.003	2	0.033*
Race	0.024	1	0.876
Education	1.237	1	0.266
Employment	9.707	2	0.008*
Co-Occurring Conditions	4.127	1	0.042*
Support level	5.799	1	0.016*

*Significant association $p < .05$

Significant associations were found between numerous demographic variables and ease with mobility. Specifically, there was a significant association between age and ease with mobility, $\chi^2 (1, N=165) = 3.874, p = 0.049$. Participants aged >21 were more likely to report greater difficulty in moving around their community compared to those aged 18-21. Aged 18- 21 reported easy to leave, (N=52; 56.5%). In contrast aged >21 found it not easy to leave (N=43; 58.9%).

Gender was also significantly associated with ease with mobility, $\chi^2 (2, N=164) = 6.993, p = 0.030$. Males reported that their community mobility was easy (N=58; 58%) compared to females (N=17; 40.5%).

Employment status showed a significant relationship with mobility ease, $\chi^2 (2, N=164) = 9.707, p = 0.008$. Employed individuals and students/interns reported ease with mobility compared to unemployed individuals. Employed individuals reported easy community mobility (N=37; 59.7%) and student interns report easy community mobility (N=37; 52.1%). Unemployed individuals report “not easy” community mobility (N=23; 74.2%). The analysis revealed a significant association between the frequency of co-occurring conditions and ease with mobility, $\chi^2 (2, N=164) = 6.852, p = 0.033$.

Participants with fewer co-occurring conditions reported greater ease with mobility (N=46; 58.2). Those high co-occurring conditions reported “not easy” community mobility (N=49; 57.6%).

Additionally, support level was significantly related to mobility ease, $\chi^2 (1, N=164) = 5.799, p = 0.016$. Participants with less support (none or a little support or help) reported greater ease with mobility (N=58; 57.4%). Individuals with higher levels of support reported “not easy” community mobility (N=39; 61.9%).

Summary of Demographic Associations. Table 19 illustrates how various dimensions of community mobility; frequency, sufficiency, satisfaction, and ease are associated with demographic factors. Employment was associated with all dimensions of mobility. The ease of mobility dimension was associated with the most demographic variables. Frequency with mobility followed ease with three variables associated.

Table 19. Summary of Demographic Associations with All Dimensions of Community Mobility

Variables	Frequency	Sufficiency	Satisfaction	Ease
Age				-
Gender				+ *
Race				
Education	+			
Employment	+	+	+	+
Co-Occurring Conditions				-
Support Level	-			-

"+" symbolizes direct relationship "-" symbolizes inverse relationship

Personal (PBSF) Variables Associated with Dimensions of Mobility

Frequency of Mobility. Pearson correlations were used to examine the relationships between frequency of mobility and continuous personal (PBSF) variables. Self-determination had a positive correlation with mobility frequency ($r = .253, p < .01$), suggesting that higher levels of self-determination were associated with more frequent

engagement in mobility activities. Similarly, self-efficacy was positively correlated with frequency of mobility ($r = .287, p < .01$), indicating that individuals with higher self-efficacy also reported more frequent mobility activities. Table 20 displays the correlations.

Table 20. Correlations Personal Body Structure/ Function Variables and Frequency of Community Mobility

Personal Body Structure/ Function	Pearson Correlation	Sig. (2-tailed)	N
Self Determination	0.253	0.001*	160
Self-Efficacy	0.287	0.001*	160
Sensory Score	0.066	0.404	161
Anxiety Score	-0.035	0.661	160
Executive Function	-0.102	0.207	155
Social Communication	0.083	0.305	153

*Significant association $p < .05$

Sufficiency with Mobility. A series of one-way ANOVAs was conducted to examine the relationship between personal (PBSF) factors and individuals' perceptions of sufficiency with community mobility. Table 21 presents the results for the series of one-way ANOVAs. Significant effects were found for self-determination and executive function.

Table 21. ANOVA Results: Sufficiency of Community Mobility by Personal Body Structure/Function Variables

Variable		N	Mean	Std. Deviation	df	Mean Square	F	Sig.
Self Determination	Insufficient	50	20.38	-4.4762	1	157.999	6.400	0.012*
	Sufficient	112	22.5179	-5.17092				
Self-Efficacy	Insufficient	49	33.1633	-6.75878	1	178.935	3.144	0.078
	Sufficient	113	35.4513	7.85583				
Sensory	Insufficient	50	28.46	10.543	1	46.599	0.412	0.522
	Sufficient	113	26.62	-10.669				
Anxiety Score	Insufficient	49	23.8571	-8.84119	1	67.549	1.039	0.310
	Sufficient	113	22.4513	7.70551				
Executive Function	Insufficient	48	26.1458	5.38315	1	202.807	6.566	0.011*
	Sufficient	109	23.6789	5.63205				
Social Communication	Insufficient	47	50.8723	11.79281	1	170.202	1.097	0.297
	Sufficient	108	48.5926	12.72868				

*Significant association $p < .05$

Participants who reported having sufficient mobility had significantly higher self-determination scores ($M = 22.52 \pm 5.17$) compared to those who reported insufficient mobility ($M = 20.38 \pm 4.48$), which was a statistically significant difference ($F(1,160) = 6.4, p = 0.012$). Participants who reported having sufficient mobility had lower executive function scores (low scores mean higher EF skills), as indicated by lower scores ($M = 23.68 \pm 5.63$), compared to those who reported insufficient mobility ($M = 26.15 \pm 5.38$). This difference was statistically significant ($F(1,155) = 6.566, p = 0.011$).

Satisfaction with Mobility. A series of one-way ANOVAs was conducted to examine the associations between psychosocial factors and satisfaction with community mobility. Table 22 provides the descriptive statistics and ANOVA results.

Table 22. ANOVA Results: Satisfaction with Mobility by Personal Body Structure/Function Variables

Variables		N	Mean	Std. Deviation	Std. Error	df	Mean Square	F	Sig.
Self Determination	Dissatisfied	75	20.52	3.99	0.46	1	250.03	10.37	0.02*
	Satisfied	87	23.01	-5.58	0.60				
Self-Efficacy	Dissatisfied	74	33.50	-6.49	0.75	1	216.02	3.81	0.05*
	Satisfied								
Sensory Score	Dissatisfied	75	31.27	9.10	1.05	1	557.27	5.07	0.03*
	Satisfied	88	27.56	-11.52	1.23				
Anxiety Score	Dissatisfied	74	24.32	8.80	1.02	1	285.54	4.49	0.04*
	Satisfied	88	21.66	7.22	0.77				
Executive Function	Dissatisfied	70	26.23	5.20	0.62	1	407.22	13.77	< 0.01*
	Satisfied	87	22.99	5.62	0.60				
Social Communication	Dissatisfied	70	48.73	11.77	1.41	1	39.36	0.25	0.62
	Satisfied	85	49.74	13.05	1.42				

*Significant association $p < .05$

The analysis revealed significant associations for self-determination, sensory sensitivity, anxiety, and executive function. Self-determination was significantly associated with mobility satisfaction ($F(1,160) = 10.37, p = 0.02$), with higher self-

determination scores observed in participants who were satisfied with their mobility ($M = 23.01 \pm 5.58$) compared to those who were dissatisfied ($M = 20.52 \pm 3.99$). Sensory sensitivity was also significantly related to mobility satisfaction ($F(1,161) = 5.07, p = 0.03$). Participants who reported being satisfied had lower sensory sensitivity scores ($M = 49.74 \pm 13.05$) compared to those who were dissatisfied ($M = 48.73 \pm 11.77$). Executive function was significantly associated with satisfaction with community mobility ($F(1,155) = 13.77, p < 0.001$). Participants who were satisfied with their mobility had lower executive function scores (low scores mean higher EF skills) ($M = 22.99 \pm 5.62$) than those who were dissatisfied ($M = 26.23 \pm 5.20$).

Ease with Mobility. A series of one-way ANOVAs was conducted to examine the associations between personal (PBSY) factors and ease with mobility. Table 23 shows the significant associations for self-determination, sensory sensitivity, anxiety, and executive function.

Table 23. ANOVA Results: Ease with Mobility by Personal Body Structure/Function Variables

Variables		N	Mean	Std. Dev	df	Mean Square	F	Sig.
Self Determination	Not Easy	80	20.21	4.88	1	427.96	18.61	< 0.01*
	Easy	82	23.46	4.71				
Self-Efficacy	Not Easy	80	32.33	6.96	1	936.54	17.95	< 0.01*
	Easy	82	37.13	7.47				
Sensory Score	Not Easy	81	31.64	9.44		910.64	8.46	0.04*
	Easy	82	26.91	11.22				
Anxiety Score	Not Easy	80	25	7.75	1	712.65	11.69	< 0.01*
	Easy	82	20.8	7.86				
Executive Function	Not Easy	78	26.45	5.11	1	629.76	22.38	< 0.01*
	Easy	79	22.44	5.49				
Social Communication	Not Easy	81	49.48	12.88	1	6.63	0.04	0.84
	Easy	74	49.07	12.07				

*Significant association $p < .05$

Sensory sensitivity was significantly related to ease with mobility, $F(1,161) = 8.46$, $p = 0.004$, with individuals with lower sensory sensitivity ($M = 31.64 \pm 9.44$) reporting greater ease in mobility. Anxiety was significantly associated with ease with community mobility, $F(1,160) = 11.687$, $p = 0.001$. Participants with higher anxiety levels reported more difficulty in community mobility ($M = 25 \pm 7.75$), whereas lower anxiety levels were associated with greater ease ($M = 26.91 \pm 11.22$). Executive function was another significant factor, $F(1,155) = 22.38$, $p < 0.001$, with higher executive functioning scores (higher scores indicate less executive function skills) being linked to less ease in mobility.

Summary of Personal (PBSF) Associations. Table 24 illustrates how various dimensions of community mobility including frequency, sufficiency, satisfaction, and ease are associated with personal (PBSF) factors. Satisfaction and ease of mobility were

associated with personal (PBSF) factors. Self-determination was associated with all dimensions of mobility, while executive function and self-efficacy were associated with three dimensions.

Table 24. Summary of Bivariate Associations Between Personal Body Structure/Function Variables and Dimensions of Community Mobility

Variables	Frequency	Sufficiency	Satisfaction	Ease
Self Determination	+	+	+	+
Self-Efficacy	+		+	+
Sensory Score			-	-
Anxiety Score			+	+
Executive Function		+	+	+
Social communication				

* "+" symbolizes direct relationship "-" symbolizes inverse relationship

Personal (PBSF) Variables: Predictors of Dimensions of Community Mobility

The second question, Q1-2, associated with Aim 2 was “Which personal (PBSF) variables predict dimensions of community mobility (frequency, ease, sufficiency and satisfaction) in AYA?” The results of Q1-2 are discussed below and displayed in tables.

Frequency of Mobility. The regression model was statistically significant ($F(13,130) = 2.43, p = 0.01$) and explained 19.5% of the variance in the frequency of mobility ($R^2 = 0.195$, Adjusted $R^2 = 0.115$). Table 25 shows the regression for frequency of mobility and person demographics. Education was the only factor that significantly predicted frequency of mobility.

Table 25. Regression Predicting Frequency with Community Mobility: Personal (PBSF) Variables

	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
Personal Demographic					
Age	-0.859	1.453	-0.055	-0.591	0.555
Gender	-0.182	0.978	-0.017	-0.186	0.853
Race	0.137	1.265	0.009	0.108	0.914
Education	4.246	1.723	0.271	2.465	0.015*
Employment	-1.671	0.868	-0.158	-1.924	0.057
Support Level	-0.868	1.421	-0.055	-0.611	0.542
Co-occurring Conditions	1.679	1.387	0.109	1.210	0.228
Self Determination	-0.029	0.189	-0.020	-0.155	0.877
Body Structure/Function					
Self-Efficacy	0.220	0.129	0.223	1.706	0.090
Sensory	0.103	0.068	0.143	1.507	0.134
Anxiety	-0.107	0.096	-0.112	-1.111	0.269
Executive Function	-0.167	0.150	-0.125	-1.113	0.268
Social Communication	0.016	0.050	0.027	0.326	0.745
(Constant)	9.521	6.821		1.396	0.165

*Significant association $p < .05$

Sufficiency with Mobility. Table 26 displays the results from the logistic regression for person variables and sufficiency with mobility.

Table 26. Regression Predicting Sufficiency with Community Mobility with Personal (PBSF) Variable

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
Personal Demographic						
Age	-0.237	0.553	0.183	1	0.669	0.789
Race	-0.453	0.432	1.099	1	0.295	0.636
Male			0.501	2	0.778	
Female	0.399	0.576	0.478	1	0.489	1.49
Other	0.262	0.655	0.16	1	0.689	1.3
Education	-0.113	0.577	0.038	1	0.845	0.893
Full or Part-time Employed			15.671	2	< 0.001*	
Student Intern	-0.688	0.585	1.387	1	0.239	0.502
Unemployed	-2.397	0.618	15.058	1	< 0.001*	0.091
Category Total	0.315	0.486	0.42	1	0.517	1.37
Support Level	0.493	0.495	0.992	1	0.319	1.637
Body Structure/Function						
Self Determination	0.049	0.064	0.599	1	0.439	1.05
Sensory Score	0.042	0.024	3.008	1	0.083	1.043
Self-Efficacy	0.021	0.043	0.229	1	0.632	1.021
Anxiety Score	-0.008	0.033	0.057	1	0.811	0.992
Social Communication	-0.025	0.018	1.92	1	0.166	0.976
Executive Function	-0.123	0.054	5.106	1	0.024*	0.884
Constant	2.983	2.036	2.146	1	0.143	19.747
Percentage Correct 76.0% ACO .767						

*Significant association $p < .05$

Employment status was a significant predictor of the sufficiency with mobility ($B = -2.397$, $p < 0.001$), with much lower odds of the outcome ($\text{Exp}(B) = 0.091$). Additionally, executive functioning was a significant negative predictor ($B = -0.123$, $p = 0.024$), indicating that lower executive functions is associated with lower odds of mobility sufficiency ($\text{Exp}(B) = 0.884$). The constant was not statistically significant ($B = 2.983$, $p = 0.143$), suggesting that the baseline odds of sufficiency with mobility are not particularly high without accounting for the predictors.

Satisfaction with Mobility. Table 27 displays the results from the logistic regression for person variables and satisfaction with mobility.

Table 27. Regression Predicting Satisfaction with Community Mobility Personal (PBSF) Variables

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Personal Demographic						
Age	-0.032	0.532	0.004	1	0.952	0.968
Race	0.447	0.397	1.267	1	0.26	1.564
Male			0.617	2	0.735	
Female	-0.109	0.495	0.049	1	0.825	0.896
Other	-0.508	0.648	0.615	1	0.433	0.602
Education	-0.084	0.556	0.023	1	0.880	0.919
Full or Part-time Employed			11.309	2	0.004*	
Student Intern	-0.301	0.515	0.342	1	0.559	0.740
Unemployed	-1.937	0.588	10.87	1	<0.001*	0.144
Category Total	0.074	0.436	0.028	1	0.866	1.076
Support Level	0.042	0.441	0.009	1	0.924	1.043
Body Structure/Function						
Self Determination	0.123	0.061	4.062	1	0.044	1.131
Sensory Score	-0.03	0.022	1.853	1	0.173	0.971
Self-Efficacy	-0.051	0.041	1.53	1	0.216	0.95
Anxiety Score	0.015	0.03	0.257	1	0.612	1.016
Social Communication	0.008	0.016	0.257	1	0.612	1.008
Executive Function	-0.088	0.047	3.513	1	0.061	0.915
Constant	1.964	1.744	1.269	1	0.260	7.131
Percentage Correct 74.,7% AOC .773						

*Significant association $p < .05$

Employment status (2) was a significant predictor of satisfaction with mobility ($B = -1.937$, $p < 0.001$), indicating that unemployment is associated with much lower odds of the outcome ($\text{Exp}(B) = 0.144$). Additionally, self-determination was also significant ($B = 0.123$, $p = 0.044$), meaning higher self-determination is linked to greater odds of the satisfaction with mobility ($\text{Exp}(B) = 1.131$).

Ease with Mobility. Table 28 presents the logistic regression results for predicting ease with mobility based on person variables.

Table 28. Regression Analysis predicting Ease with Community Mobility Personal (PBSF) Variables

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Personal Demographic						
Age	-0.584	0.543	1.159	1	0.282	0.558
Race	0.139	0.413	0.113	1	0.737	1.149
Male			1.622	2	0.444	
Female	-0.655	0.515	1.618	1	0.203	0.519
Other	-0.347	0.685	0.257	1	0.612	0.707
Education	-0.177	0.584	0.092	1	0.761	0.838
Full or Part-time Employed			6.043	2	0.049	
Student Intern	-0.591	0.532	1.235	1	0.267	0.554
Unemployed	-1.562	0.638	5.989	1	0.014*	0.21
Co-Occurring Conditions	-0.175	0.445	0.155	1	0.694	0.839
Support Level	-0.652	0.448	2.114	1	0.146	0.521
Body Structure/Function						
Self Determination	0.068	0.06	1.278	1	0.258	1.07
Sensory Score	-0.022	0.023	0.97	1	0.325	0.978
Self-Efficacy	0.061	0.043	2.006	1	0.157	1.063
Anxiety Score	-0.019	0.032	0.379	1	0.538	0.981
Social Communication	-0.011	0.017	0.422	1	0.516	0.989
Executive Function	-0.044	0.048	0.852	1	0.356	0.957
Constant	0.373	1.836	0.041	1	0.839	1.453
Percentage Correct 70.5 AOC .802						

*Significant association $p < .05$

Employment status was a significant predictor of ease with mobility ($p = 0.049$).

Specifically, unemployment was significant ($B = -1.562$, $p = 0.014$), indicating that unemployment is associated with much lower odds of experiencing ease with mobility, with an odds ratio of 0.210 ($\text{Exp}(B) = 0.210$). This suggests that individuals who are unemployed are less likely to find it easy to move around their community.

Multivariate Analysis of Predictors for Dimensions of Community Mobility

The regression analysis for Aim 2 identified which personal (PBSF) variables are predictive of different dimensions of mobility. Table 29 summarizes these results.

Table 29. Summary of Personal (PBSF) as Predictors of Dimensions of Community Mobility in Regression Analyses

Variables	Frequency	Sufficiency	Satisfaction	Ease
Age				
Gender				
Race				
Education	+			
Employment		+	+	+
Co-Occurring Conditions				
Support Level				
Self Determination			+	
Self-Efficacy				
Sensory Score				
Anxiety Score				
Executive Function		+		

* "+" symbolizes direct relationship "-" symbolizes inverse relationship

Employment status emerged as a predictive factor across multiple mobility dimensions including sufficiency, satisfaction, and ease. Employment was the most significant predictors of all dimensions of mobility. Sufficiency and satisfaction with mobility were the only dimensions to include two predictive person variables.

Analytical Results for Aim 3

The objective of Aim 3 is to examine which environmental variables are associated with dimensions of community mobility (frequency, sufficiency satisfaction and ease) for AYA. The first question, Q3-1, associated with Aim 3 is which environmental variables are associated with dimensions of community mobility (frequency, ease, sufficiency and satisfaction) in AYA? The results of Aim 3 are displayed below.

Environmental Variables Associated with Dimensions of Mobility

Frequency of Mobility. Pearson correlation was run with the continuous variable of frequency of mobility and the environmental variables (autism stigma, perceived social support, crime rates, population density, and walkability). The results, displayed in Table

30, indicated positive associations with perceived social support, violent crime, property crime, walk score, and population density.

Table 30. Correlations Between Frequency of Community Mobility Across Environmental Variables

Environmental Variables	Pearson Correlation	Sig. (2-tailed)
Perceived Social Support	0.177	0.025*
Autism Stigma	0.125	0.116
Violent Crime	0.158	0.046*
Property Crime	0.164	0.038*
Population Density	0.185	0.019*
Walk Score	0.186	0.018*

*Significant association $p < .05$

These variables had statistically significant correlations with mobility frequency. A series of one-way ANOVAs was conducted to analyze the relationship between perceived safety and the frequency of mobility, as perceived safety is a categorical variable. No significant relationships were found ($F(1,162) = 0.141, p = 0.962$).

Sufficiency with Mobility. A series of one-way ANOVAs were conducted to examine the impact of various environmental variables on the perception of having sufficiency with mobility. Table 31 presents the ANOVA results. The results revealed that no environmental variables significantly associated with sufficiency with mobility.

Table 31. ANOVA Results: Sufficiency with Community Mobility by Environmental Variables

Variables		N	Mean	Std. Deviation	df	Mean Square	F	Sig.
Perceived Social Support	Sufficient	49	62.20	12.488	1	432.44	2.252	0.135
	Insufficient	113	65.76	14.403				
Autism Stigma	Sufficient	49	21.67	9.95	1	44.61	0.424	0.516
	Insufficient	113	20.53	10.39				
Violent Crime	Sufficient	49	52.67	22.63	1	145.72	0.261	0.610
	Insufficient	114	50.61	24.05				
Property Crime	Sufficient	49	55.70	20.28	1	325.56	0.78	0.377
	Insufficient	114	52.62	20.42				
Population Density	Sufficient	49	3497.26	3191.48	1	32430472.59	1.33	0.251
	Insufficient	113	4471.34	5530.58				
Walk Score	Sufficient	49	53.76	30.04	1	1918.31	2.29	0.133
	Insufficient	114	61.24	28.50				

*Significant association $p < .05$

A chi square test was run between the categorical variable perceived safety and sufficiency with mobility. No significant association was found, $\chi^2 (1, N=165) = 1.013, p = 0.314$.

Satisfaction with Mobility. A series of one-way ANOVAs was conducted to examine the association of environmental variables on mobility satisfaction. The results showed that autism stigma had a statistically significant influence on satisfaction with mobility, with lower perceived autism stigma associated with higher satisfaction. Table 32 provides ANOVA results.

Table 32. ANOVA Results: Satisfaction with Mobility by Environmental Variable

Variable		N	Mean	Std. Deviation	df	Mean Square	F	Sig.
Perceived Social Support	Dissatisfied	74	60.15	13.78	1	2803.58	15.82	0.00*
	Satisfied	88	68.50	12.90				
Autism Stigma	Dissatisfied	74	22.64	9.79	1	421.30	4.10	0.05*
	Satisfied	88	19.40	10.43				
Violent Crime	Dissatisfied	75	54.53	22.20	1	1517.90	2.76	0.10
	Satisfied	88	48.41	24.47				
Property Crime	Dissatisfied	75	56.84	19.58	1	1513.15	3.71	0.06
	Satisfied	88	50.73	20.72				
Population Density	Dissatisfied	75	4533.26	6257.22	1	17753181.47	0.72	0.40
	Satisfied	87	3869.35	3464.20				
Walk Score	Dissatisfied	75	59.24	28.72	1	8.84	0.01	0.92
	Satisfied	88	58.77	29.55				

*Significant association $p < .05$

Perceived social support also had a significant association on mobility satisfaction ($F(1, 160) = 15.823, p < 0.001$), indicating that individuals with higher perceived social support reported greater mobility satisfaction. Property crime approached significance but did not reach the threshold used in this study ($p < 0.05$). A chi square test was run between the categorical variable safety and satisfaction with mobility. No significant association was found, $\chi^2(1, N=165) = 0.732, p = 0.392$.

Ease with Mobility. A one-way ANOVA was conducted to investigate the relationship between environmental variables and ease of mobility. The analysis revealed that autism stigma had a statistically significant association with ease of mobility ($F(1, 160) = 4.242, p = 0.041$). Table 33 provides the ANOVA results.

Table 33. ANOVA Results: Ease with Community Mobility by Environmental Variable

Variables		N	Mean	Std. Deviation	df	Mean Square	F	Sig.
Perceived Social Support	Not easy	80	60.475	14.25178	1	2801.519	15.81	0.001*
	Easy	82	68.7927	12.32556				
Autism Stigma	Not easy	80	22.5375	9.64029	1	436.021	4.242	0.041*
	Easy	82	19.2561	10.6026				
Violent Crime	Not easy	81	50.1667	22.93341	1	180.397	0.323	0.571
	Easy	82	52.2707	24.30249				
Property Crime	Not easy	81	53.0926	19.84933	1	32.567	0.078	0.780
	Easy	82	53.9866	20.9808				
Population Density	Not easy	81	3685.635	3698.9	1	39067693	1.599	0.208
	Easy	81	4667.793	5930.33				
Walk Score	Not easy	81	57.4444	27.76193	1	383.488	0.452	0.502
	Easy	82	60.5122	30.4271				

*Significant association $p < .05$

Individuals who perceived higher levels of autism stigma were more likely to report difficulty in leaving their homes. Perceived social support also had a significant effect on ease of mobility ($F(1, 160) = 15.810, p < 0.001$), with those who reported higher levels of social support finding it easier to move around their community. A Chi-square test was performed to investigate the relationship between the two categorical variables, ease with community mobility and perceived safety. The chi-square value was 1.966, with 1 degree of freedom and a non-significant asymptotic p-value of 0.161 ($p > 0.05$), indicating no statistically significant association between ease of use and perceived safety.

Summary Aim 3 Environmental Associations. The first question of Aim 3 examined the associations between environmental variables and dimensions of mobility. Table 34 shows that social support is significantly associated with the most dimensions of mobility, with positive associations observed for frequency, satisfaction, and ease.

Table 34. Summary of Environmental Variables Association with Community Mobility Dimension

Variable	Frequency	Sufficiency	Satisfaction	Ease
Violent Crime	+			
Property Crime	+			
Population Density	+			
Walkability	+			
Social Support	+		+	+
Autism Stigma			-	-
Perceived Safety				

*Significant association $p < .05$

Frequency also has positive associations with violent crime, property crime, population density, and walkability. Autism stigma is negatively associated with satisfaction and ease, while perceived safety was not associated with any mobility dimension.

Additionally, no environmental variables were associated with sufficiency with mobility.

Environmental Variables Predictors of Dimensions of Mobility

The second question associated with Aim 3, Q2-3, was “What extent do environmental factors predict community mobility (frequency, ease, sufficiency and satisfaction) in AYA?”

Frequency of Mobility. A linear regression was conducted to evaluate which environmental variables (perceived social support, autism stigma, perceived safety, violent crime rate, property crime rate, population density, and walk score) predict mobility frequency. The model was significant, $F(7,149) = 2.395$ $p = .024$, explaining approximately 10% of the variance in mobility frequency ($R^2 = .10$). Table 35 provides the regression results.

Table 35. Linear Regression Environmental Variables on Community Mobility Frequency

Variables	B	Beta		t	Sig
		Unstandardized Coefficients	Standardized Coefficients		
(Constant)	2.812	4.957		0.567	0.571
Perceived Social Support	0.111	0.045	0.198	2.470	0.015*
Autism Stigma	0.096	0.059	0.127	1.615	0.108
Violent Crime	0.010	0.115	0.032	0.089	0.929
Property Crime	0.037	0.128	0.097	0.285	0.776
Population Density	0.000	0.000	0.087	0.890	0.375
Walk Score	0.017	0.028	0.063	0.582	0.561
Perceived Safety	0.418	1.898	0.017	0.220	0.826

*Significant association $p < .05$

Perceived social support was the only significant factor ($B=0.111$, $p=.015$). Higher levels of perceived social support positively predict mobility frequency, indicating that individuals who feel more supported tend to have greater mobility frequency. Autism stigma, perceived safety, violent crime, property crime, population density, and walk score, did not significantly predict mobility frequency.

Sufficiency of Mobility. A logistic regression analyzed environmental factors as predictors of sufficiency with mobility. Autism stigma, perceived safety, violent crime, property crime, population density, and walk score, did not significantly predict sufficiency with mobility. Table 36 provides the regression results.

Table 36. Environmental Predictors of Sufficiency with Community Mobility

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
Perceived Social Support	0.024	0.013	3.392	1	0.066	1.025
Autism Stigma Total Score	-0.022	0.018	1.469	1	0.226	0.978
Violent Crime	0.039	0.035	1.238	1	0.266	1.040
Property Crime	-0.066	0.038	3.033	1	0.082	0.936
Population Density	0	0	0.199	1	0.655	1.000
Walk Score	0.014	0.009	2.191	1	0.139	1.014
Perceived Safety	0.363	0.546	0.443	1	0.506	1.438
Constant	0.082	1.16	0.005	1	0.943	1.086

Percentage Correct 69.2% AOC .673

*Significant association $p < .05$

Satisfaction with Mobility. The logistic regression analysis for environmental variables predicting satisfaction with mobility revealed several significant predictors.

Table 37 provides the regression results.

Table 37. Environmental Predictors of Satisfaction with Community Mobility

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Social Support	0.063	0.016	16.201	1	< 0.001*	1.065
Autism Stigma	-0.05	0.019	6.987	1	0.008*	0.952
Violent Crime	0.066	0.036	3.39	1	0.066	1.068
Property Crime	-0.097	0.04	5.724	1	0.017	0.908
Population Density	0	0	1.104	1	0.293	1
Walk Score	0.012	0.009	1.709	1	0.191	1.012
Perceived Safety	0.375	0.555	0.457	1	0.499	1.455
Constant	-1.891	1.278	2.192	1	0.139	0.151
Percentage Correct 69.2% AOC .751						

*Significant association $p < .05$

Perceived social support was a strong positive predictor ($B = 0.063$, $p < 0.001$, $\text{Exp}(B) = 1.065$), indicating that higher levels of perceived social support significantly increase the odds of being satisfied with mobility. Autism stigma showed a significant negative relationship with mobility satisfaction ($B = -0.050$, $p = 0.008$, $\text{Exp}(B) = 0.952$), suggesting that higher levels of perceived autism stigma reduce the likelihood of satisfaction with mobility. Property crime was negatively associated with the outcome ($B = -0.097$, $p = 0.017$, $\text{Exp}(B) = 0.908$), indicating that lower property crime is linked to higher odds of community mobility satisfaction.

Ease with Mobility. The logistic regression model for ease with mobility revealed several significant findings. Table 38 provides the regression results.

Table 38. Environmental Predictors of Ease with Community Mobility

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Perceived Social Support	0.056	0.015	13.677	1	<0.001*	1.058
Autism Stigma	-0.044	0.018	5.964	1	0.015*	0.957
Violent Crime	0.079	0.037	4.518	1	0.034*	1.082
Property Crime	-0.084	0.041	4.145	1	0.042*	0.92
Population Density	0	0	0.468	1	0.494	1
Walk Score	-0.003	0.008	0.134	1	0.714	0.997
Perceived Safety	0.544	0.562	0.937	1	0.333	1.723
Constant	-2.731	1.3	4.413	1	0.036	0.065
Percentage Correct 64.8% AOC 737						

*Significant association p<.05

Perceived social support, autism stigma, violent crime and property crime were significant predictors of ease with mobility. Autism stigma had a significant negative effect on mobility ease indicating that higher levels of perceived stigma reduce the odds of experiencing ease with mobility by 4.3%. Violent crime was found to positively influence ease with, suggesting that individuals in areas with higher violent crime rates reported slightly increased odds of ease in mobility. Property crime showed a significant negative, meaning that lower property crime was predictive of ease with mobility.

Summary of Aim 3 Environmental Predictors. Question 2 of Aim 3 attempts to identify environmental variables that are associated with various dimensions of mobility.

Table 39 shows the summary of results.

Table 39. Summary of Environmental Variables Predictive of Community Mobility Dimension

Variables	Frequency	Sufficiency	Satisfaction	Ease
Perceived Social Support	+		+	+
Autism Stigma			-	-
Violent Crime				+
Property Crime			-	-
Population Density				
Walk Score				
Perceived Safety				

* "+" symbolizes direct relationship "-" symbolizes inverse relationship

The results indicate that perceived social support is the strongest predictor of mobility dimensions, positively predicting frequency, satisfaction, and ease. Autism stigma negatively predicted satisfaction and ease, indicating that higher perceived stigma is associated with lower satisfaction and ease with community mobility. Violent crime positively predicts ease, while property crime is negatively associated with satisfaction (i.e., more crime is associated with lower satisfaction) and ease. (i.e., more crime is associated with mobility being viewed as not easy) No relationships were found for population density, walk score, or perceived safety with any mobility dimensions. No variables were associated with sufficiency.

Analytical Results-Aim 4

The objective of Aim 4 was to identify relative contributions of personal (PBSF) and environment factors as predictors of community mobility (frequency, ease, sufficiency, and satisfaction) for AYA when examining factors together.

The Aim 4 question was “what are the relative contributions of personal (PBSF) (e.g., sensory sensitivities, self-efficacy) and environment (e.g., transportation infrastructure, social support) factors in predicting community mobility dimensions?”

Aim 4 Preparation Methods

To prepare for the binary regression analysis required of Aim 4, a dimension reduction was conducted to determine if certain personal (PBSF) and environmental variables could be grouped into factors. This step was taken to ensure that the sample size would be sufficient for the regression analysis. The dimension reduction process aimed to identify patterns in the data by grouping related variables together, thereby reducing the

number of predictors and improving the power of the analysis. Based on this procedure, the variables were consolidated into factors for subsequent analysis.

A correlation matrix was completed for personal (PBSF) (Table 40), and environment continuous variables (Table 41) to provide a basis for conducting factor analysis.

Table 40. Correlation Matrix for Personal (PBSF) Variables

Variables	Self Determination	Sensory	Anxiety	Executive Function	Self-Efficacy	Social Communication
Self Determination	1	0.033	-0.051	-.339**	.744**	0.092
Sensory	0.033	1	.398**	.437**	-0.052	0.01
Anxiety	-0.051	.398**	1	.492**	-0.037	0.019
Executive Function	-.339**	.437**	.492**	1	-.339**	0.025
Self-Efficacy	.744**	-0.052	-0.037	-.339**	1	0.109
Social Communication	0.092	0.01	0.019	0.025	0.109	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 41. Correlation Matrix for Environmental Variables

	Autism Stigma	Social Support	Violent Crime	Property Crime	Population Density	Walk Score
Autism Stigma	1	0.017	-0.071	-0.083	0.038	-0.038
Social Support	0.017	1	-0.118	-0.075	-0.021	-0.084
Violent Crime	-0.071	-0.118	1	.973**	.459**	.600**
Property Crime	-0.083	-0.075	.973**	1	.420**	.572**
Population Density	0.038	-0.021	.459**	.420**	1	.578**
Walk Score	-0.038	-0.084	.600**	.572**	.578**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The overall pattern of correlations indicates that dimension reduction technique, PCA, was a viable option to simplify the dataset while retaining key relationships between variables. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.664, indicating that the sample is suitable for factor analysis. Additionally, Bartlett's test of sphericity was significant ($\chi^2 (66) = 992.500, p < 0.001$). The test confirmed that the correlations among variables are strong enough to justify factor analysis. These findings support the application of factor analysis for dimension reduction in this dataset.

Personal (PBSF) Variables Principal Component Analysis. A principal components analysis with Varimax rotation was conducted to identify the underlying factors among the personal (PBSF) variables. As shown in Table 42, the initial eigenvalues indicated that the first factor accounted for 30.69% of the variance, the second factor explained an additional 20.73%, and the third factor contributed 13.36%, resulting in a cumulative variance of 64.78%. After extraction and rotation, the first factor explained 27.47% of the variance, the second factor explained 23.86%, and the third explained 13.45%, for a cumulative total of 64.78%. The factor analysis shown in Table 42 revealed three distinct factors, based on eigenvalues greater than 1 and factor loadings above 0.40.²⁵⁵

Table 42. Factor Analysis (Personal (PBSF) Variables: Initial Eigenvalues, Extraction, and Rotation Loadings

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum. %	Total	% of Var	Cum.%	Total	% of Var	Cum.%
1	2.455	30.688	30.688	2.455	30.688	30.688	2.198	27.471	27.471
2	1.659	20.733	51.421	1.659	20.733	51.421	1.909	23.858	51.329
3	1.069	13.360	64.782	1.069	13.360	64.782	1.076	13.453	64.782
4	0.870	10.879	75.660						
5	0.797	9.965	85.625						
6	0.553	6.913	92.538						
7	0.383	4.793	97.331						

Table 43 displays the rotated component matrix from the personal factor analysis, highlighting the loadings of each variable onto the three extracted components to identify underlying patterns and associations among the factors.

Table 43. Rotated Component Personal (PBSF)

Personal (PBSF)	Component		
Support Level	-0.44	-0.10	0.61
Co-occurring Conditions	-0.45	0.27	-0.03
Anxiety Score	0.02	0.81	-0.12
Sensory Sensitivity	0.01	0.79	0.06
Self Determination	0.87	-0.02	0.06
Self-Efficacy Total Score	0.91	-0.02	-0.04
Social Communication	0.24	0.08	0.82
Executive Function	-0.40	0.73	0.11

The following labels were used to describe the three factors.

- Person Factor 1 (PF1): Personal Empowerment: This factor primarily included variables related to personal empowerment and functioning. Key loadings were self-efficacy (0.909) and self-determination (0.868).
- Person Factor 2 (PF2): Vulnerability: This factor was characterized by variables associated with emotional and sensory challenges. The name

"Vulnerability" was used for this factor because it reflects the emotional and sensory challenges that may increase an individual's susceptibility to community mobility challenges. Key loadings were anxiety (0.813), sensory sensitivity (0.786), and executive function (0.734).

- Person Factor 3 (PF3): Social and Functional Support: This factor captured social communication and functional support needs. Key loadings were social communication (0.821) and support level (0.605).

Environmental Factors Principal Component Analysis

A principal component analysis (PCA) with Varimax rotation was conducted to identify the underlying factors among the environmental variables. As shown in Table 44, the initial eigenvalues indicated that the first component accounted for 47.91% of the variance, while the second component explained an additional 17.26%, resulting in a cumulative variance of 65.17%. After extraction and rotation, the first component explained 47.34% of the variance, and the second component explained 17.83%, for a total cumulative variance of 65.17%.

Rotated Factor Analysis. The factor analysis, shown in Table 44, revealed two distinct components Environmental Factor 1 (EF1) and Environmental Factor 2 (EF2), based on eigenvalues greater than 1 and factor loadings above 0.40.

Table 44. Factor Analysis (Environmental) Initial Eigenvalues, Extraction, and Rotation Loadings

Component	Total Variance Explained					
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cum.%	Total	% of Variance	Cum. %
1	2.874	47.905	47.905	2.874	47.905	47.905
2	1.036	17.263	65.168	1.036	17.263	65.168
3	0.975	16.251	81.419			
4	0.705	11.750	93.169			
5	0.385	6.410	99.579			
6	0.025	0.421	100.000			

*Extraction Method: Principal Component Analysis.

EF1, Neighborhood Characteristics included Violent Crime (0.914), Property Crime (0.893), Population Density (0.727), and Walk Score (0.819). "Neighborhood Characteristics" was chosen as the name because it encompasses the physical aspects of the environment. Environmental Factor 2 (EF2): Social Environment included Autism Stigma (0.823) and Perceived Social Support (0.538). "Social Environmental" was chosen as the name because it encompasses social interactions within the environment, including factors such as stigma and social support

Table 45 displays the rotated component matrix from the environmental factor analysis, highlighting the loadings of each variable onto the three extracted components to identify underlying patterns and associations among the factors.

Table 45. Rotated Component Matrix Environmental

Variables	Component	
	1	2
Perceived Social Support	-0.078	0.538
Autism Stigma	0.027	0.823
Violent Crime	0.914	-0.183
Property Crime	0.893	-0.183
Population Density	0.727	0.184
Walk Score	0.819	-0.036

Personal (PBSF) and Environmental Factors as Predictors of Community Mobility Dimensions

Frequency of Community Mobility. A linear regression model examining predictors of frequency of mobility was significant. Table 46 shows the results of the regression.

Table 46. Personal (PBSF) and Environmental Factors as Predictors of Frequency of Community Mobility

Factors	Beta	Wald	p-value
(Constant)	16.641	4.559	<0.001
PF1: Empowerment		2.364	0.020*
PF2: Vulnerability	-0.612	-0.815	0.417
PF3: Social and Functional Support	-0.207	-0.336	0.738
EF1: Neighborhood Characteristics	1.521	2.344	0.021*
EF2: Social Environmental	1.341	1.929	0.056
Age Category	0.061	0.043	0.966
Gender	-0.032	-0.033	0.974
Race (White/Non-White)	-0.93	-0.735	0.464
Education Level (High School College)	2.658	1.724	0.087
Employment Status	-1.308	-1.538	0.126

*Significant association $p < .05$

Personal Empowerment (Person Factor 1) ($\beta=1.529$ $p=.020$) and Neighborhood Characteristics (Environment Factor 1) ($\beta=1.521$ $p=.021$) were significant predictors, indicating that greater levels of personal empowerment and neighborhood characteristics are associated with increased mobility frequency.

Sufficiency with Mobility. A logistic regression (Table 47) examined predictors of whether individuals reported sufficient mobility.]

Table 47. Personal and Environment Factors as Predictors of Sufficiency with Community Mobility

Factors	B	S.E.	Wald	df	Sig.	Exp(B)
PF1: Empowerment	0.350	0.217	2.600	1	0.107	1.419
PF2: Vulnerability	-0.146	0.254	0.332	1	0.565	0.864
PF3: Social and Functional Support	-0.162	0.207	0.613	1	0.434	0.851
EF1: Neighborhood Characteristics	0.052	0.210	0.061	1	0.805	1.053
EF2: Social Environmental	0.106	0.223	0.226	1	0.635	1.112
Age	-0.189	0.460	0.169	1	0.681	0.828
Gender	0.156	0.318	0.240	1	0.624	1.169
Race	-0.224	0.284	0.620	1	0.431	0.800
Education	-0.694	0.503	1.905	1	0.168	0.499
Employment	-1.002	0.285	12.395	1	0.000*	0.367
Constant	4.100	1.131	13.133	1	0.000	60.347

*Significant association $p < .05$

The null model correctly classified 68.8% of cases, predicting all as having sufficient mobility. Adding predictors significantly improved model fit ($\chi^2 (10) = 22.960, p = .011$), with the final model correctly classifying 73.6% of cases (35.6% for "Insufficient" and 90.9% for "Sufficient"). Employment status was the only significant predictor ($B = -1.002, p < .001$), indicating that being employed reduced the likelihood of reporting insufficient mobility. There were no other significant personal and environmental predictors.

Mobility with Satisfaction. A logistic regression was conducted to examine predictors of satisfaction with the amount of time spent outside the home. The model significantly improved fit over the null model ($\chi^2 (10) = 30.511, p < .001$), explaining 25.6% of the variance (Nagelkerke $R^2 = .256$). The model correctly classified 74.3% of cases, with 60.9% accuracy for "Very Dissatisfied to Neutral" and 85.0% accuracy for "Satisfied to Very Satisfied." PF2: Vulnerability ($B = -$

0.512, $p = .033$) and employment status ($B = -0.819$, $p = .003$) were significant predictors of satisfaction with mobility.

Higher PF2: Vulnerability scores were associated with lower satisfaction, and being employed was linked to a lower likelihood of dissatisfaction. Other factors, including personal empowerment, social support, and environmental characteristics, were not significant predictors. Table 48 presents the results of the logistic regression.

Table 48. Person and Environment Factors as Predictors of Satisfaction with Community Mobility

Factors	B	S.E.	Wald	df	Sig.	Exp(B)
PF1: Empowerment	0.379	0.212	3.193	1	0.074	1.460
PF2: Vulnerability	-0.512	0.240	4.567	1	0.033*	0.599
PF3: Social and Functional Support	0.015	0.200	0.005	1	0.942	1.015
EF1: Neighborhood Characteristics	-0.323	0.207	2.432	1	0.119	0.724
EF2: Social Environmental	0.157	0.217	0.527	1	0.468	1.170
Age	-0.462	0.466	0.981	1	0.322	0.630
Gender	-0.265	0.304	0.761	1	0.383	0.767
Race	0.424	0.285	2.208	1	0.137	1.528
Education	-0.261	0.495	0.278	1	0.598	0.770
Employment	-0.819	0.280	8.534	1	0.003*	0.441
Constant	2.479	1.093	5.146	1	0.023	11.926

*Significant association $p < .05$

Ease with Mobility. A logistic regression was conducted to examine predictors of perceived ease of leaving the house. The model significantly improved fit over the null model ($\chi^2 (10) = 47.065$, $p < .001$) and explained 37.2% of the variance (Nagelkerke $R^2 = .372$). PF1: Empowerment ($B = 0.886$, $SE = 0.243$, $Wald = 13.276$, $p < .001$, $Exp(B) = 2.425$) was a positive predictor, indicating that higher empowerment levels were associated with increased ease.

PF2: Vulnerability (B = -0.611, SE = 0.261, Wald = 5.478, p = .019, Exp(B) = 0.543) significantly predicted higher vulnerability were linked to lower ease of mobility. Employment status (B = -0.714, SE = 0.308, Wald = 5.393, p = .020, Exp(B) = 0.489) was also a significant predictor. Employed individuals reported more ease leaving the house. Table 49 presents the results of the logistic regression.

Table 49. Person and Environment Factors as Predictors of Ease with Community Mobility

Factors	B	S.E.	Wald	df	Sig.	Exp(B)
PF1: Empowerment	0.886	0.243	13.276	1	0.000*	2.425
PF2: Vulnerability	-0.611	0.261	5.478	1	0.019*	0.543
PF3: Social and Functional Support	-0.409	0.222	3.387	1	0.066	0.664
EF1: Neighborhood Characteristics	-0.100	0.217	0.212	1	0.645	0.905
EF2: Social Environmental	0.305	0.240	1.619	1	0.203	1.357
Age	-0.859	0.503	2.921	1	0.087	0.423
Gender	-0.332	0.336	0.979	1	0.322	0.717
Race	0.280	0.301	0.867	1	0.352	1.324
Education	-0.290	0.526	0.304	1	0.582	0.748
Employment	-0.714	0.308	5.393	1	0.020*	0.489
Constant	2.894	1.223	5.603	1	0.018	18.063

*Significant association p<.05

Summary of Aim 4. Regression was used to examine associations between dimensions of mobility when both personal (PBSF) and environmental factors contributed in various ways. Table 50 shows the summary results for Aim 4.

Table 50. Summary of Person and Environmental Factors as Predictors of Dimensions with Community Mobility

Factors	Frequency	Sufficiency	Satisfaction	Ease
PF1: Empowerment	+			+
PF2: Vulnerability			-	-
PF3: Social and Functional Support				
EF1: Neighborhood Characteristics	+			
EF2: Social Environmental				
Age				
Gender				
Race				
Education				
Employment		+	+	+

* "+" symbolizes direct relationship "-" symbolizes inverse relationship

The results indicate that PF1: Empowerment and EF1: Neighborhood Characteristics are the predictors of mobility frequency, with personal empowerment also positively predicting ease. Employment status predicts sufficiency, satisfaction, and ease positively. PF2: Vulnerability negatively predicts satisfaction and ease, while no significant predictive contributions were found for PF3: Social and Functional Support, EF2: Social Environmental, age category, gender, race, or education level. No predictors were associated with all dimensions of mobility.

CHAPTER 7

DISCUSSION

Community mobility is critical for community participation and overall quality of life, particularly for autistic young adults (AYA), who face an increased risk of limited mobility.^{13,168} A review of the limited existing research showed that personal (PBSF) and environmental factors were primarily drawn from previous studies, based on caregivers, professionals, and AYA. However, no prior research had empirically determined whether these factors were significantly associated with community mobility or identified which factors were predictive. Years of immersion in autism research and direct engagement with AYA revealed significant gaps in understanding the factors affecting their community mobility. This insight shaped the purpose of this study: to examine the personal (PBSF) and environmental factors associated with and predictive of AYA community mobility.

Aim 1: Understand and Explore the Relationship Between the Four Conceptualized Dimensions of Mobility, Frequency, Sufficiency, Satisfaction and Ease.

Key finding 1: AYA experience insufficient, unsatisfactory, and difficult community mobility.

Previous studies have noted that AYA often experience barriers in accessing their communities, particularly related to transportation, support needs, and environmental demands.^{21,114} The current findings are consistent with this literature, but go a step further by showing that the challenge is not limited to how often AYA leave their homes (frequency), but also extends to how sufficient, satisfying, and easy those experiences

are. AYA in this study reported that they do not believe they leave their house enough to meet their needs or pursue their interests, are not satisfied with the amount they leave their home and find it hard to do so.

AYA reported that their community mobility is insufficient, unsatisfying, and not easy, underscoring the need for targeted interventions. Specifically, 30% indicated their mobility was insufficient, and approximately 50% reported dissatisfaction and difficulty with moving around in their communities. These rates are substantial and highlight the importance of addressing multiple dimensions of community mobility. The findings offer a strong foundation for developing tailored solutions, with mobility insufficiency in particular emerging as a potentially powerful motivator for promoting change and fostering engagement.

Community mobility for AYA is not merely a logistical issue, but a gap in autonomy, access, and well-being. Previous research has shown that community mobility presents significant challenges for AYA, affecting their independence and participation in various areas of life.^{20,115} However, many of these studies examined community mobility only as a barrier to other activities, rather than exploring specific dimensions of mobility itself. A scoping review emphasized that autistic individuals often face reduced participation in employment, education, and social activities due to barriers in driving and transportation.¹¹⁵ Another study identified specific factors that can make navigating the community more difficult for AYA, suggesting that ease of community mobility remains a significant challenge.^{27,117}

Key Finding 2: The associations among community mobility dimensions of frequency, sufficiency, satisfaction, and ease suggest that they should be considered collectively rather than in isolation.

Community mobility is a multidimensional construct, and while significant associations and correlations exist among its dimensions, the findings also suggest that each dimension remains unique. Frequency of mobility was significantly associated with sufficiency ($p = .001$, Pearson's $r = .262$). Sufficiency, in turn, was significantly associated with frequency ($r = .262$), satisfaction ($r = .528$), and ease ($r = .313$), all with p -values $< .001$. Additionally, satisfaction was significantly associated with ease ($p = .001$, $r = .286$). These results demonstrate that community mobility encompasses more than just how often or how far individuals' travel. Experiences such as ease, satisfaction, and perceived sufficiency are also critical components. This underscores the importance of capturing multiple dimensions when measuring community mobility, rather than relying solely on frequency or geographic range. While research has used mapping, self-reports, and GPS-based methods to quantify mobility patterns such as destinations visited, trips taken, and distance traveled, there remains a gap in understanding how these patterns relate to individuals' experiences. A study comparing GPS-based tracking with self-reports found big differences, showing that tracking data alone may not tell the full story of a person's mobility.⁹⁴ Other research in older adults also found that GPS tools often miss how meaningful or manageable a person's travel feels, pointing to the need for approaches that include people's own views and experiences.^{11,94,256} Mobility is not just about how far or how often one travels but also about whether mobility meets personal needs and feels manageable.²⁵⁶ A previous study on mobility in the elderly recognized its

complexity, and examined a conceptual model that focused on ambulatory mobility and environmental determinants.⁹³ The study highlighted how factors such as ambient conditions and terrain characteristics contribute to mobility disability. This suggests a continuum of mobility, ranging from home-based movement to broader community access. Building on this premise, understanding community mobility requires a comprehensive framework that defines its key dimensions, and includes environmental conditions and individual capabilities.

Studies have underscored the critical role of community mobility in accessing education, employment, healthcare, and social participation. However, few have provided a consistent or comprehensive way to conceptualize and measure it. Existing research tends to focus on single aspects, such as access to transportation (Haas, 2020), self-efficacy related to travel (Dirix, 2022) or built environment factors like walkability and transit coverage. However, community mobility is a multidimensional experience, shaped by the interaction between personal capabilities (e.g., executive function, social communication, self-determination) and environmental characteristics (e.g., accessibility, safety, support systems).

Additionally, studies have consistently reported disparities in community mobility outcomes for individuals with disabilities—particularly during key life transitions such as the move from adolescence to adulthood. These disparities are well-documented, yet many studies lack a guiding conceptual framework to systematically explain or address them. For example, while some interventions focus on practical skills such as trip planning, route navigation, or road safety, they often fail to consider subjective and person-centered dimensions such as perceived ease of travel, satisfaction with mobility

experiences, or whether available transportation options feel sufficient for meeting daily needs.

This narrow focus not only limits our understanding of mobility challenges but also hinders the development of comprehensive supports. Without a unified framework, researchers and practitioners struggle to compare outcomes across studies, replicate successful strategies, or design inclusive interventions that reflect the full range of mobility experiences. Moreover, the lack of a standard structure makes it difficult to assess whether progress is being made in improving equitable access to transportation and community participation.

Developing a community mobility framework tailored to the needs of populations with disabilities, especially AYA, would help synthesize fragmented findings and highlight the personal and environmental factors that shape mobility outcomes. Such a framework would provide a shared language and structure for research, policy, and practice, offering a more holistic view of mobility that goes beyond frequency or geographic distance. Ultimately, it would strengthen efforts to design, evaluate, and scale interventions that promote autonomy, inclusion, and quality of life for vulnerable and underserved populations.

In another domain, community participation, which is highly correlated with community mobility, has been examined through multidimensional constructs.¹¹ The Temple University Community Participation (TUCP) scale highlights the complexity of community participation by measuring independent engagement across 22 activities over 30 days.²⁵⁷ It captures not only frequency but also personal importance and perceived sufficiency (“enough,” “not enough,” or “too much”), emphasizing the need for a

multidimensional approach to understanding community participation.²⁵⁷ This multidimensional approach underscores the necessity of considering various dimensions when evaluating constructs like community mobility, ensuring a more comprehensive understanding of participation and access.

Integration of these dimensions of mobility helps capture the full impact of community mobility on community participation and well-being. The relationship between the dimensions of mobility can be analyzed to refine and clarify the factors influencing community mobility in autistic young adults (AYA). Prior research has emphasized the importance of defining constructs and their multiple dimensions to ensure accurate measurement and interpretation. Community participation, which is strongly correlated with community mobility, has been recognized as a critical construct that requires both clear definition and multidimensional assessment.

Key Finding 3: Ease serves as a key dimension, enhancing both sufficiency and satisfaction, but surprisingly does not directly influence travel frequency.

Key Finding 2 has implications for future interventions. While reducing barriers improves the ease of mobility- motivation, personal agency, purpose, and access to opportunities play important roles in AYA community mobility.

The significant association between ease and sufficiency ($p < .001$, $r = .313$) suggests that individuals who have trouble with mobility often feel that they do not go out enough limiting their participation to only the most essential activities, rather than engaging in all the activities they need or want to do. By making mobility easier, individuals may be better able to meet their desired frequency of outings. Barriers such as

transportation challenges or physical limitations reduce ease and can restrict mobility, contributing to feelings of insufficiency.

Similarly, the association between ease and satisfaction suggests that when mobility is easier, individuals experience greater satisfaction. Lim's (2024) study highlights how travel satisfaction influences transportation mode choice, with ease of travel playing a key role.²⁵⁸ Travel experiences are shaped by external stimuli (e.g., congestion, weather), which individuals interpret based on their needs and goals. These interpretations lead to cognitive and emotional responses that form overall trip satisfaction. In turn, satisfaction with travel influences attitudes and long-term travel behaviors. This framework suggests that making travel easier enhances satisfaction, ultimately shaping mobility decisions.²⁵⁸ For instance, research indicates that positive within-trip experiences can enhance travel satisfaction, which in turn influences attitudes toward the chosen mode of transportation and future travel behavior. Conversely, mobility difficulties can lead to frustration and fatigue, diminishing overall contentment. This underscores that mobility is not just about how often a person travels but also about the quality of their experiences.

The lack of a significant relationship between ease and frequency is counterintuitive. Increasing ease would seem to lead to more frequent travel. However, motivation and purpose play a crucial role in community mobility. Ease alone does not determine how often AYA travel. Sufficiency and satisfaction play important roles.

Several scenarios may indirectly link ease to frequency. Ease may limit frequency by only resulting in increased frequency until a person feels they go out enough. Once sufficiency and satisfaction are achieved, frequency is likely ample.

Regardless of ease, further travel is unnecessary. Ease may increase frequency by expanding choices and thus increasing travel opportunities. Paradoxically, reduced ease may result in increased frequency of trips required to meet a need. Difficult travel may require several attempts to achieve a goal.

Key Finding 4: Sufficiency emerged as a central dimension of community mobility.

Sufficiency, defined as whether individuals leave their homes enough to meet both their needs and desires, emerged as a fundamental dimension of community mobility. Sufficiency showed significant associations ($p < .001$) with frequency, satisfaction, and ease. Sufficiency along with ease may be the most operative community mobility dimensions. Sufficiency provides a more holistic measure of mobility by encompassing both needs and desires, suggesting that it is a key indicator of meaningful mobility experiences. Achieving sufficiency in mobility is essential, as it enables access to necessary resources, participation in meaningful activities, and greater independence. Research highlights that mobility and social participation are key determinants of health and quality of life, underscoring the importance of identifying factors that influence these aspects.^{84,259}

Sufficiency's significance aligns with the concept of Maslow's hierarchy of needs, which suggests that individuals must first meet basic needs before progressing to higher levels of well-being and self-fulfillment.²⁶⁰ This may explain why sufficiency was the only mobility dimension significantly associated with frequency, ease, and satisfaction. Once a level of need is met, individuals gain more opportunities to pursue additional goals related to mobility. However, criticism of Maslow's hierarchy argues that needs are dynamic and may not follow a fixed order, varying based on individual circumstances.²⁶¹

This perspective supports the idea that AYA may have a different hierarchy of needs influencing their approach to community mobility.

Key finding 3 has implications for future interventions and the importance of the consideration of AYA community mobility needs. AYA individualized expressions of needs and wants are important to help assure effectively targeted interventions.

Aim 2: Empirically Assess the Relationships Between Putative Personal Factors with the Dimensions of Community Mobility (frequency, sufficiency, satisfaction and ease) among AYA.

Key Finding 1: Employment is a dominant predictor of mobility outcomes.

In bivariate associations and multivariate regression analyses employment emerged as a dominant factor influencing community mobility. Employment is significantly associated with ease, sufficiency, and satisfaction, even when controlling other personal factors. Employed individuals reported higher community mobility frequency (M = 19.21, SD = 7.51). Employment status, specifically being employed or participating as a student/intern, was significantly associated with mobility sufficiency ($p < .001$). Additionally, employment status showed significant associations with ease of mobility ($p < .001$) and satisfaction with mobility. This suggests that employment plays a crucial role in shaping perceptions of mobility, potentially by providing structure, purpose, and opportunities for travel.

Key Finding 1 aligns with existing literature, which links employment to transportation access, quality of life, and enhanced mobility.^{148,168,262} Teissler's systematic literature review examined the impact of transportation on employment for

individuals with disabilities and emphasized the critical role of public transportation in accessing and maintaining employment. Barriers were linked to an ableist society that privileges able-bodied individuals. These barriers were categorized into four themes: (1) public transportation (e.g., service availability, accessibility, paratransit, cost), (2) employment (e.g., employer attitudes, job requirements, workplace accessibility), (3) personal factors, and (4) social networks. The review underscores public transportation as a key facilitator for employment among people with disabilities.²⁶² A study by Wilson et al. (2021) explored the relationship between community mobility, quality of life, employment, and further education for autistic adults. Access to transportation was not found to directly improve employment outcomes. However, the study found that access to transportation did contribute to improved quality of life.¹⁶⁸ This continues to suggest the relationship between employment and community mobility remains complex and potentially bidirectional, as employment may facilitate community mobility through increased resources and structured routines, while improved mobility may enable access to employment opportunities.

The multivariate analyses reflected that employment consistently suppressed other variables, suggesting that its influence extends beyond individual associations. Factors such as education, executive function, and self-determination, significant in bivariate analyses, appeared to more indirectly impact community mobility possibly through their connection to employment. This highlights the interconnectedness of these variables and reinforces the importance of employment-focused strategies to improve mobility outcomes.

Key Finding 2: Self-determination has significant associations with the most community mobility dimensions.

Self-determination was significantly associated with all four dimensions of community mobility. Specifically, self-determination showed p-values < .05 for frequency, sufficiency, satisfaction, and ease. Respondents with higher levels of self-determination reported greater sufficiency, satisfaction, and ease in their community mobility experiences. It emerged as the factor with the most associations with multiple dimensions of community mobility. Interestingly, while self-determination, self-efficacy, and executive function all had strong associations with mobility, none had more than one significant predictor relationship. Self-determination likely caused these other factors to be excluded in the multiple regression model because they are already embedded within self-determination itself. Since these factors are correlated with self-determination, their individual effects diminish when self-determination is included in the model. In other words, these factors contribute to or are a component of higher self-determination. Strong executive function skills are integral to self-determination, and increased self-efficacy is often a result of greater self-determination.

Self-determination significantly influences community mobility dimensions by enabling AYA to set goals, make decisions, and take actions that enhance their ability to navigate and participate in community environments.¹⁹⁴ It fosters confidence, problem-solving, and intrinsic motivation, which may improve the frequency, ease, and satisfaction of mobility. Additionally, self-determination supports advocacy for needed resources, empowering AYAs to overcome barriers and achieve greater independence.

Beyond mobility, self-determination has been linked to improved employment outcomes.²⁶³ Self-determination skills and behaviors have been found to be key to better post-school employment outcomes for high school-aged youth with disabilities, including those with serious emotional and behavioral disorders.²⁶⁴ In a randomized controlled trial involving 779 students with disabilities, those in the intervention group who received a self-determination intervention demonstrated positive outcomes in employment status.²⁶⁵ ^{266, 264}A study by Kim (2019) noted that self-determination was linked to five domains of life experiences for autistic adults: employment status, social participation, advocacy, positive identity, and stress management. ²⁶³

Key Finding 3: Surprisingly there is not a significant association between anxiety and frequency.

When examining the association between anxiety and mobility frequency, no significant relationship was found ($p = .661$). This result was unexpected, as many previous studies have suggested a link between anxiety and reduced participation in community activities. In a study involving 131 children with autism, anxiety was examined as a predictor of participation.²⁶⁷ After controlling for other factors such as social communication and demographics, anxiety emerged as a unique and significant predictor of the frequency of children's participation.²⁶⁷ Interestingly, anxiety was expected to be associated with frequency but in this study it was not. In other studies individuals often report avoiding participation when experiencing heightened anxiety.²⁶⁸

A link exists between anxiety and community participation.²⁶⁹ Anxiety was associated with ease and satisfaction. Its association with community mobility is expected. Anxiety and sensory sensitivity emerged as associated barriers to the ease and

satisfaction dimensions of community mobility, aligning with existing research that identifies them as obstacles to other community activities for AYAs.²⁷⁰

Key Finding 4: In contrast to existing opinions, neither race nor social communication shows any significant associations with mobility.

Among demographic variables, race showed no significant associations with any dimension of mobility, with all p-values above .05 (frequency: $p = .94$; sufficiency: $p = .237$; satisfaction: $p = .679$; ease: $p = .84$). Similarly, social communication was not significantly associated with any mobility dimension (frequency: $p = .305$; sufficiency: $p = .297$; satisfaction: $p = .620$; ease: $p = .876$). These findings differ from existing literature that highlights transportation inequities experienced by certain racial groups.^{271,272} This discrepancy suggests that systemic barriers may not be as pronounced within this AYA sample or may be masked by other factors. Similarly, age, gender, and co-occurring conditions demonstrated limited associations, each influencing only one dimension of mobility. These findings suggest that demographic factors alone may play a secondary role compared to body function/structure and environmental influences. Demographic factors, such as age, gender, and ethnicity, are largely fixed and less practical targets for interventions as identified in the health belief model.

Aim 3: Empirically Assess the Relationships Between Putative Environmental Factors with the Dimensions of Community Mobility (frequency, sufficiency, satisfaction and ease) among AYA.

Key Finding 1: When considered with multiple environmental factors, perceived social support and autism stigma remain significant predictors of frequency, satisfaction, and ease.

When considered alongside other environmental factors such as neighborhood characteristics, social support and autism stigma remained significantly associated with multiple dimensions of community mobility. Social support was significantly associated with frequency ($p = .001$), satisfaction ($p = .001$), and ease ($p = .001$). Similarly, autism stigma showed significant associations with satisfaction ($p = .008$) and ease ($p = .015$). Key Finding 1 underscored the critical role of supportive social networks in shaping mobility outcomes. Individuals with greater social support reported greater ease in navigating their environments and higher satisfaction with their mobility experiences. This finding suggests that beyond structural and personal factors, the presence of supportive relationships whether from family, friends, or community networks can enhance perceptions of mobility, reduce barriers, and improve overall mobility experiences.

A strong social support system is often linked to positive outcomes in areas such as employment, relationships, and community participation.⁶⁸ A study evaluating the transition experiences of AYA found that social support from caregivers and service providers was associated with positive transition outcomes.⁶⁸ Social support is important for the community mobility of AYA because it provides emotional encouragement, practical assistance, and skill-building opportunities. Travel training guides highlight the importance of natural support systems for AYA.²⁷³ Support Systems help AYA navigate transportation logistics, build confidence, and address challenges like sensory

sensitivities or unfamiliar environments. Individuals who feel supported and encouraged are more likely to engage in activities with confidence and comfort.^{200,201}

Autism stigma shows a negative relationship with satisfaction and ease, highlighting its detrimental impact on these dimensions of mobility. A person may feel less content with their mobility if they perceive autism-related stigma in their community. Literature consistently demonstrates that individuals who feel stigmatized are less likely to participate in activities.²¹⁰ A systematic review of experiences with autism stigma revealed that autistic individuals are highly aware of being stereotyped, judged, and discriminated against by others.²⁰⁴ Additionally, many autistic individuals internalize this stigma, making them more vulnerable to low self-worth, reduced participation, and poorer mental health.²⁰⁴ In this context, stigma appears to not only discourage community mobility but also diminish the overall quality of engagement with mobility.

Autism stigma was not significantly associated with frequency or sufficiency. Its relationship may be confounded as all dimensions of mobility are interconnected, with ease being most affected by feelings of stigma and overall satisfaction. Or, sufficiency and frequency to achieve an AYA's goal may be such basic mobility needs that they override stigma.

One might expect significant associations with frequency and sufficiency for both autism stigma and with social support. However, even if social support and autism stigma make it less likely or more difficult to move around the community, individuals travel to certain places out of necessity. As a result, frequency and sufficiency may remain unchanged, while ease and satisfaction are more directly impacted by the experience of support or stigma.

Key Finding 2: Environmental characteristics showed few significant associations with dimensions of community mobility.

Neighborhood characteristics appear to be less influential on community mobility for AYA compared to personal factors. However, in bivariate analyses, certain environmental variables such as violent crime ($p = .046$), property crime ($p = .038$), population density ($p = .019$), and walk score ($p = .018$) did show significant associations with the frequency dimension of community mobility. Environmental factors are not associated with or predictive of sufficiency with community mobility. No environmental factors showed significant associations with the sufficiency dimension of community mobility, as all p -values were above .05. Similarly, perceived safety did not emerge as a significant concern for AYA in relation to community mobility, with all associated p -values also exceeding .05. Crime rate (violent and property) may be a confounder for other environmental factors with community mobility.

This finding is notable because research has found that in other populations young adults' environmental factors are significantly linked to community mobility. In this study no physical environmental factors were associated with or predictive of sufficiency in community mobility while environmental conditions may impact ease of mobility

It is surprising that neighborhood environmental characteristics were not significantly associated with ease of mobility. This may be due to the use of zip codes to define neighborhood characteristics, rather than participants' specific addresses. Zip codes are a convenient and available data source originally designed to determine postal routes for efficient mail delivery. They do not adequately represent logical boundaries of infrastructure or neighborhood characteristics. In addition, this approach may restrict

analyses as it assumes that individuals travel primarily within their own zip code, which may not accurately reflect their actual mobility patterns.

Transportation planning and policy research frequently identifies neighborhood characteristics as key determinants of community mobility. Several urban mobility planning studies emphasize and evaluate environmental factors.^{274,275} These specific associations are noteworthy and warrant further investigation to better understand the potential impact of neighborhood changes from the perspectives of AYA. Prior research has shown that walkability, urban design, and active mobility infrastructure enhance perceived ease of movement.²¹⁷ Stigma and social support seem to be the most influential environmental factors affecting AYA mobility ease and may overshadow physical environmental characteristics.

Walkable neighborhoods with well-maintained sidewalks, safe crossings, and accessible green spaces typically reduce mobility barriers and improve navigation.²¹⁷ However, in this case, participants' geographic location or another unknown factors may be of greater influence. The studies data used zip codes and software to compute scores, but walkability may vary based on the exact location.

Contrary to expectations, perceived safety did not show a meaningful relationship with any dimension of mobility in this AYA sample. In the aging population perceived safety has been associated with decreased community mobility.²⁷⁶ A study in the UK shared that pedestrians' perceived safety was associated with community mobility levels.²⁷⁷ This study's findings may reflect differences in how AYA perceive threat and danger compared to other populations. Some literature suggests that caregivers and professionals may, in fact, be more fearful or anxious than their AYA associate and

therefore place greater emphasis on perceived safety. A survey of caregivers and parents highlighted the importance of prioritizing environmental safety when designing inclusive spaces.²⁷⁸ That may partially explain the discrepancy.²⁷⁸ In addition, Maslow's Hierarchy of Needs lists safety as a basic, second tier requirement. Employment is noted as a significant component of safety. As such, employment in this study may have confounded safety scores.

Ease and satisfaction with mobility, while not appearing as significant in the bivariate crime rate associations, emerged as significant predictors in the multivariate analysis. In a bivariate analysis, the relationship between two variables may be obscured by other factors. However, when these confounding variables are accounted for in a multivariate model, the true association can become evident.

Aim 4: Examine the Relative Contributions of Personal (PBSF) and Environmental Factors in Predicting Community Mobility Dimensions (frequency, sufficiency, satisfaction, and ease) among AYA.

Key Finding 1: When considered with all factors, personal and environmental, employment continued to emerge as the most consistent predictor of community mobility across dimensions.

This finding reflects results from the regression analyses that included both personal and environmental factors. Employment emerged as the strongest predictor across multiple dimensions of community mobility, consistent with results from earlier aims. In the regression model, employment was significantly associated with sufficiency ($p = .001$), satisfaction with mobility ($p = .003$), and ease of mobility ($p = .020$), even

when accounting for all other personal and environmental factors. Employment continued to emerge as the most consistent predictor of community mobility across all dimensions, which may be due to the structure and opportunities it provides for individuals to engage more regularly with their environments. This aligns with the broader literature, that frequently identifies employment as a key determinant of community engagement and participation.¹⁶⁸ The final aim employed a multivariate approach to examine the combined contributions of personal (PBSF) and environmental variables as predictors of community mobility dimensions. To optimize the analysis for the sample size, factors were created by combining related psychosocial and environmental variables. These new factors represented two overarching categories: empowerment (including psychosocial and environmental strengths) and vulnerability (encompassing psychosocial and environmental challenges). This approach highlights the interplay between personal (PBSF) and environmental factors, suggesting that they often interact in meaningful ways.⁸⁹ Consequently, interventions could be designed to target multiple skills or areas simultaneously, offering a more holistic approach to improving community mobility.

Key Finding 2: Addressing Empowerment (self-determination, executive function, self-efficacy) is a key to positively impact community mobility dimensions.

Key Finding 2 reveals that empowerment encompasses psychosocial factors such as self-determination, self-efficacy, and executive function, and is positively associated with mobility frequency and ease. The PF1 Empowerment factor showed significant associations with community mobility, specifically with frequency ($p = .020$) and ease ($p = .001$). Empowerment factors are largely individual related, amenable to training, and therefore improvable. This discovery is reflected in associations and predictors. These

findings highlight how personal autonomy, and cognitive abilities facilitate effective navigation of community environments.

This result is consistent with previous aims and existing research emphasizing the importance of self-determination, self-efficacy and planning skills in mobility outcomes. A study on young adults found that increased self-efficacy was associated with higher levels of physical activity.²⁷⁹ The study's measurements were grounded in Self-Determination Theory and Social Cognitive Theory, both of which highlight the importance of empowerment skills in promoting greater engagement in physical activity. This finding suggests that personal agency and confidence in one's abilities may be as important as external factors in shaping mobility outcomes.

Key Finding 3: AYA who exhibit higher levels of anxiety or sensory challenges may struggle with comfort and confidence in community mobility.

Anxiety and sensory sensitivities negatively predicted satisfaction and ease. The PF2 Vulnerability factor, which includes anxiety and sensory sensitivities, showed significant associations with ease ($p = .019$) and satisfaction ($p = .033$) in community mobility. These findings align with literature documenting the barriers posed by vulnerabilities, as individuals with higher levels of anxiety or sensory challenges may struggle with comfort and confidence in community mobility. Focus groups revealed that caregivers identified vulnerabilities as significant barriers to community mobility for AYA.²⁸⁰ Additionally, a systematic review highlighted that sensory sensitivities and anxiety were frequently mentioned in the literature regarding driving and transportation use.²⁸¹ Key Finding 3 identified the importance of addressing vulnerabilities.

Key Finding 4: Contrary to expectations social and functional support do not significantly predict mobility when considered with all personal and environmental factors.

Social and functional support did not emerge as a significant predictor in this analysis, diverging from expectations based on its known associations with other activities, such as employment and social participation. There were no significant p-values for any dimensions of community mobility frequency, sufficiency, satisfaction, or ease with the remaining personal and environmental factors. This inconsistency may reflect complex interactions between support systems and other variables, which could dilute its direct impact on mobility outcomes in a multivariate model. The inconsistency suggests that support systems interact with other factors, such as personal or environmental variables, creating complex dynamics. These interactions may reduce the apparent direct impact of support systems on mobility outcomes in a multivariate analysis.

Strengths and Limitations

The present study demonstrates several strengths in terms of the generalizability of its findings. Data were collected from 162 autistic individuals of transition age, providing a robust sample for analysis. This study improved upon previous work by having the survey completed exclusively by autistic young adults AYA. Additionally, the sample included meaningful representation from white, black, and other racial groups. Additionally, the study included a significant number of participants across gender categories, including male, female, and other, ensuring broader inclusivity.²⁸²

While participants self-reported their autism diagnoses, many were recruited through organizations that work directly with transition-age AYA. This recruitment method adds integrity to the sample by increasing the likelihood that participants genuinely belong to the intended population. These factors collectively enhance the representativeness and reliability of the findings.

The primary limitations of this study are related to the development of the survey, the recruitment process, and the characteristics of the respondents. Although the survey was developed and tested for accessibility, some questions were still interpreted differently by participants. For instance, when reporting the frequency of activities, some participants counted each place they visited as a separate trip, regardless of whether these visits were part of one outing or multiple outings. This may have inflated the reported number of trips. Support was available for many of the participants to mitigate these limitations. Individuals were provided additional guidance on how to properly report a trip. The understanding of an autism diagnosis varied among respondents. This variation was anticipated and prevented this demographic factor from being effectively used in the analysis.

The psychosocial measures included in the survey were not specifically developed for the AYA population and may have been less understandable for this population. Definitions and examples were included in the measures to reduce confusion. The social communication measure used in this analysis was derived from the RAADS autism screening tool, which is validated for identifying autism but not specifically designed to isolate social communication abilities. As a result, the social communication factor showed no significant associations with mobility outcomes. This raises the possibility

that the RAADS screener may not have adequately captured social communication as a distinct construct. To better understand the role of social communication in community mobility, it would be important to use a more targeted and validated measure. This would help determine whether social communication is truly unrelated to mobility outcomes or if the lack of association was due to limitations in measurement rather than the experiences of AYA themselves.

Another limitation involves the measurement of neighborhood characteristics such as crime rate, walkability, and population density, which were based on zip code-level data. Zip code was used because it did not require additional ethical review or collection of personally identifiable information. While not a perfect measure, zip codes have been used in many other research studies and can still provide useful, though approximate, information about geographic context.²⁸³ Zip codes can encompass diverse areas with varying conditions, making them an imprecise proxy for an individual's immediate environment. Using specific addresses would have provided a more accurate reflection of neighborhood context. Additionally, it is unclear which areas participants were referring to when reporting mobility or perceived safety. These areas may have extended beyond their residential zip codes, further limiting the accuracy of the environmental data.

Furthermore, the survey took approximately 30 minutes to complete. Although respondents were encouraged to take breaks, the length of the survey could have led to fatigue, potentially affecting the validity of the responses.

Recruitment was conducted using a combination of direct outreach to past participants and a convenience sampling strategy. These approaches limit the

generalizability of the findings, as those who responded to the survey may have had a greater interest in research than others. Additionally, many respondents were from urban and suburban areas, versus rural areas, which could have skewed the results when considering community mobility.

Finally, a portion of the sample came from organizations sharing the survey link. Many of these organizations provided on site assistance with the link and survey reading. Several checks were implemented to ensure that participants were genuine AYAs. Security features included monitoring IP addresses, user agent platforms, and confirming mobile device usage. However, the self-reported nature of the survey makes it difficult to be completely certain. The survey offered a \$20 compensation, which may have also led to some false representation. These factors may collectively limit the study's generalizability and suggest that the findings should be interpreted with caution.

Overall Implications

This research highlights critical factors and actionable insights that may impact future efforts or results to improve community mobility among AYA. An understanding of and integration with current community mobility intervention efforts to address personal or environmental factors affecting mobility will help inform implications and recommendations. Study derived significant implications and recommendations may also point to new interventions designed to improve efforts to facilitate AYA mobility.

Study derived Community Mobility Implications and Recommendations

Significant Implication 1: These findings underscore the need for and may lead to the development of a comprehensive framework that considers the interconnected nature of mobility dimensions.

Future research should explore how improving one aspect of mobility influences others. For example, increasing ease through social support, reduced stigma, and empowerment factors (self-efficacy, self-determination, executive function) may enhance perceived sufficiency and satisfaction. Intervention studies should evaluate programs that strengthen these factors while engaging families and community providers to foster supportive environments. A holistic approach is essential, addressing multiple dimensions to promote greater independence and community participation for AYA. Advancing mobility research requires larger-scale studies using Geographic Information System (GIS) tools and improved tracking methods. Qualitative research can also provide deeper insights into lived experiences and the relationships between mobility dimensions.

Significant Implication 2: Understanding which mobility dimensions, frequency, sufficiency, ease, and satisfaction, are most critical to quality of life may guide targeted interventions.

While frequency and sufficiency reflect activity levels and accessibility, ease and satisfaction capture emotional and experiential aspects. Examining their interplay will help refine interventions that enhance mobility outcomes.

Significant Implication 3: These findings supply meaningful targets for efficient and effective person-centered strategies and interventions that address both psychosocial and environmental barriers, ultimately benefiting AYA and other vulnerable populations.

Many current interventions prioritize travel training skills. *Drive Focus*, a technology-based tool, targets executive function by building hazard perception, visual scanning, and decision-making skills. While executive function showed some significant relationships with dimensions of community mobility, incorporating additional personal factors like self-determination and self-efficacy may further support independent travel. Programs like *Chance to Ride* and *Ready to Ride* address various aspects of using public transportation but could be strengthened by incorporating components that foster social support networks and strategies to address autism-related stigma.

Future interventions should focus on the most impactful factors to promote independence and equitable access, leading to better mobility solutions, greater inclusion, and improved well-being. A person-centered approach should be pursued. By understanding an individual's strengths, needs, and environmental influences, interventions can be tailored to enhance abilities while addressing barriers, ultimately improving ease of mobility, a key factor linked to other mobility dimensions. Identifying desired and necessary destinations, through improved AYA self-determination skills is also crucial, as motivation for mobility begins with knowing where one needs and wants to go. Once established, targeted strategies can be implemented to remove barriers and increase ease of travel.

One immediate benefit of this study is its utility as a source of data to inform travel training programs. Travel training programs should prioritize factors most associated with mobility. Self-determination, self, efficacy, and executive function should be at the top of the list. Social support, autism stigma, and psychosocial

vulnerabilities including anxiety and sensory sensitivities, are legitimate targets to address to further build confidence and reduce barriers to AYA mobility.

Systemic interventions, such as reducing stigma, strengthening social support, and increasing vocational opportunities, should be pursued to significantly impact AYA mobility. Urban planning should prioritize safe, accessible, and inclusive environments that support independent travel, while policies promoting affordable and accessible transportation can further reduce barriers. The mixed results regarding crime and neighborhood safety suggest further research is needed to understand how environmental factors influence perceptions and behaviors. Future studies should explore tailoring interventions for different populations, considering sociodemographic and psychosocial differences.

Efforts to improve community mobility should leverage social support through peer networks, mentorship, and community programs. Reducing stigma and fostering supportive environments can play a crucial role in enhancing mobility outcomes. Additionally, caregivers emphasize the importance of environmental safety in designing inclusive spaces. The mixed findings on crime suggest a need for further exploration into how neighborhood characteristics shape mobility perceptions and behaviors.

Significant Implication 4: These findings may inspire AYA targeted employment programs.

The strong link between employment and community mobility underscores the need to explore this relationship further and its implications for intervention strategies. Employment may drive community mobility by requiring regular travel, building

confidence in transportation use, and expanding activity spaces. Additionally, skills essential for employment, such as education, executive function, and self-determination, are also crucial for successful community mobility, and vice versa.

Conversely, greater mobility can improve employment opportunities by increasing access to job locations, interviews, and professional networks. Future research should examine the directionality of this relationship to determine whether enhancing mobility supports employment attainment or if securing employment inherently leads to greater mobility. Understanding this dynamic is key to developing interventions that address both employment and transportation barriers simultaneously.

Policymakers and service providers should consider integrated approaches that improve transportation access while fostering vocational opportunities, ensuring mobility solutions align with employment goals. Mobility functions both as a means and an outcome of meaningful community participation, particularly for autistic young adults entering the workforce.

Interventions should incorporate workforce participation, recognizing employment as both a driver and an outcome of community mobility. Transition programs such as *Project SEARCH* and *Project Career Launch* highlight the importance of mobility for vocational success. These programs require participants to complete travel training within the first few weeks as a condition of continued participation. Their strong employment outcomes underscore the close link between community mobility and employment readiness. Strategies that enhance self-determination and self-efficacy, such as skills training, goal-setting, and autonomy-building, can improve mobility experiences for autistic young adults. The findings from Aim 2 highlight the importance of

considering socio-demographic factors and focusing on modifiable personal and environmental influences. Strength-based, person-centered approaches that leverage these factors, as seen in frameworks like PEO and the WHO Disability Action Plan, may lead to more effective mobility and employment outcomes. ^{89,284}

Conclusion

This study supports that community mobility is multidimensional, with its dimensions deeply interconnected. The findings highlight the need for a comprehensive mobility framework to better understand and address these relationships. Both personal and environmental factors significantly influence different aspects of mobility, with employment, social support, and autism stigma emerging as the most frequently associated factors.

Employment consistently emerged as the most significant factor influencing mobility across multiple dimensions, reinforcing its central role in promoting mobility success. Empowerment and vulnerability factors appear to play a crucial role in mobility outcomes. Many factors previously suggested in the literature but not empirically validated are suggested to be significantly related to at least one dimension of mobility, as reflected in AYA perspectives.

Psychosocial factors, including self-determination, anxiety, sensory sensitivities, and executive function, also play a significant role across mobility dimensions. Notably, different dimensions of mobility are linked to distinct variables, underscoring the importance of tailoring interventions to individual goals and priorities. Among these

dimensions, ease is the most consistently associated with personal and environmental factors, positioning it as a key target for intervention.

This study offers unique insights into the barriers and facilitators of mobility. Given resource constraints, prioritizing empowerment skills and addressing vulnerabilities presents a practical and impactful approach to improving mobility outcomes. These findings lay the foundation for person-centered strategies that enhance mobility and quality of life for AYA.

The core challenge is not simply recognizing that removing barriers improves mobility but strategically identifying the most influential factors and integrating this knowledge into individual and societal decision-making. Goals for AYA mobility should be both practical and aspirational. Achieving sufficiency ensures access to basic needs, while achieving satisfaction fosters self-actualization, both of which AYA deserve.

Ease of mobility is fundamental to achieving sufficiency and satisfaction. This study emphasizes the need to remove barriers and improve personal factors such as self-determination, self-efficacy, and executive function, key areas where targeted interventions can enhance mobility. Additionally, addressing autism stigma through public education is essential.

Finally, AYA need employment. Jobs emerged as a critical predictor of mobility, raising the question: does employment enable mobility, or does mobility facilitate employment? Likely, it is both. Future research should explore this dynamic further, but immediate action is needed. Society must prioritize job opportunities, training, and workplace inclusion for AYA. Progress in mobility and employment should not be stalled

by the pursuit of perfection, practical, effective solutions are needed now.

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APPENDIX A

SURVEYS SUBMITTED TO AYA AND IRB APPROVAL DOCUMENT

Consent

Page 1

Please complete the survey below.

Thank you!

Please read the following pages of the Informed Consent. After you have read all of the pages, you will be able to choose whether or not you want to participate in this study.

Blank Copy of informed consent for download if participant wants.

Please click on the PDF document below to download and save to your computer.

[Attachment: "Consent12.07.23_clean.pdf"]

04/13/2025 4:11pm

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Screener

Page 1

Please complete the survey below.

Thank you!

Date Screened	_____
IP Address	_____
Platform	_____
User Agent	_____
Is Mobile	_____
Participant first name:	_____
Participant last name:	_____
Participant email address:	_____
Where did you hear about our survey?	_____
Are you 18 - 31 years old?	<input type="radio"/> Yes <input type="radio"/> No
What is your current age today?	_____
Do you have Autism Spectrum Disorder?	<input type="radio"/> Yes <input type="radio"/> No
Are you your own guardian and able to make your own decisions?	<input type="radio"/> YES <input type="radio"/> NO

04/13/2025 3:18pm

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Demographics

Page 9

Please complete the survey below.

Thank you!

Are you on the autism spectrum? Yes
 No

Which of the following do you think best describes your autism diagnosis? Autism Spectrum Disorder (ASD) I
 Autism Spectrum Disorder (ASD) II
 Autism Spectrum Disorder (ASD) III
 Asperger's Syndrome
 Pervasive Developmental Disorder (PDD)
 Autism Spectrum Disorder (ASD) Not sure of level
 Other
 I don't know

Please specify other autism diagnosis

Many autistic young adults require help with communication, social behaviors, planning, and other activities. I do not need any support or help
 I need a little support or help.
 I need some support or help.
 I need a lot of support or help.

An example of this could be a teacher helps you organize or plan your shcedule. This could also be someone helps you talk with friends.

What level of support or help do you believe you need?


Are you answering this survey by yourself, or is someone helping you? Answering by myself
 Someone is helping me answer the survey

Who is helping you answer the survey? Parent
 Legal Guardian
 Support Staff
 Teacher Educator
 Friend
 Spouse
 Other

Please Specify:

Which best describes your race/ethnicity? Check all that apply White/Caucasian
 Black or African American
 Asian/Asian American
 American Indian, Alaska native
 Native Hawaiian or Pacific Islander
 Hispanic/Latinx (may also select race)
 Another race or ethnicity
 Not Listed
 Prefer Not to Answer

04/13/2025 3:18pm

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What is your gender?

- Male (boy)
- Female (girl)
- Transgender
- Gender Variant Nonconforming
- Not Listed
- Prefer not to answer

Has a doctor, health professional, or school professional ever told you that you have any of the following?

	Yes	No
Attention Deficit	<input type="radio"/>	<input type="radio"/>
Blind or Visually Impaired	<input type="radio"/>	<input type="radio"/>
Epilepsy Seizure Disorder	<input type="radio"/>	<input type="radio"/>
Learning Disability	<input type="radio"/>	<input type="radio"/>
Mental Health Condition	<input type="radio"/>	<input type="radio"/>
Anxiety	<input type="radio"/>	<input type="radio"/>
Depression	<input type="radio"/>	<input type="radio"/>
Obsessive Compulsive Disorder (OCD)	<input type="radio"/>	<input type="radio"/>
Substance Use Disorder	<input type="radio"/>	<input type="radio"/>
Physical or Mobility-related challenges	<input type="radio"/>	<input type="radio"/>
Speech Related Disability	<input type="radio"/>	<input type="radio"/>
Other Chronic Condition (autoimmune disease, cancer, diabetes, heart disease)	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>

What is your zip code?

What is the highest level of education you completed?

- Currently in high school
- Completed High School (earned GED, Diploma or Certificate)
- Left High School, Dropped out of High School
- Some Vocational, Trade or Business school
- Some College/University
- Associate degree or Vocational graduate
- Bachelor's degree
- Some Graduate or Professional school
- Completed a Master's degree or higher

What is your current work status?

- Employed full-time
- Employed Part-time
- Internship or volunteer
- A student
- Unemployed
- Unemployed looking for employment
- Homemaker
- Unable to work due to disability or health condition
- Other

Community Mobility Survey

Page 12

Please complete the survey below.

Thank you!

The following questions will ask you how often you leave your house to get to activities you need or want to do in a typical week (it does not include a week with holidays and vacations).

Activities in a typical week might include; work/school, shopping, exercise, visiting friends, eating out, and appointments.

During a typical week, how many times do you leave your house to go to work? _____

Some people might leave their house once per day to go to work on a typical week that would mean they leave their house 5 times per week to go to work.

If you go to work from a location other than home it would not count as a time you left your house.

During a typical week, how many times do you leave your house to go to school? _____

Some people might leave their house once per day to go to school on a typical week, which means they leave their house 5 times per week to go to school.

During a typical week, how many times do you leave your house to visit with friends/family? _____

For example, some people might leave their house to visit family and friends 8 times during a typical week. They might leave 3 times Monday, 2 times Tuesday, and 3 times Saturday to equal 8 times during a typical week.

During a typical week, how many times do you leave your house to go to the grocery store, shopping and other errands? _____

For example, some people leave their house 3 times during a typical week to go to run errands, one time on Monday to the grocery store, one time on Friday to clothing shopping, and one time on Saturday to the bank.

During a typical week, how many times do you leave your house for entertainment (eating, movies, concerts)? _____

For example, some people might go out for entertainment 2 times a week, 1 time Friday and 1 time Saturday.

During a typical week, how many times do you leave your house for exercise like walking, running, or bicycling? _____

For example, some people might leave their house 8 times a week, 2 times Monday, 2 times Wednesday, 2 times Thursday, and 2 times Saturday.

During a typical week, how often did you go out for other activities? _____

For example, some people might go out 2 times a week for other activities.

During a typical week, how often do you leave your house to get to activities you need and/or want to do? 0 days a week
 1-2 days a week
 3-4 days a week
 5-6 days a week
 7 days a week

This includes all activities you need or want to go like school, work, doctors, visiting friends, eating out, running errands and others.

Do you leave your house often enough to do activities you need and or want to do? Not enough
 Enough
 Too much

This includes all activities you need or want to go like school, work, doctors, visiting friends, eating out, running errands and others.

How satisfied are you with the amount of times you leave your house to get where you need or want to go? Very Dissatisfied
 Dissatisfied
 Neither Satisfied nor Dissatisfied
 Satisfied
 Very Satisfied

This includes all activities you need or want to go like school, work, doctors, visiting friends, eating out, running errands and others.

"Satisfied" means feeling content or pleased with something. If you say you are satisfied with how many times you go out, it means you are generally happy or okay with it.

How easy is it for you to leave your house to get where you need and/or want to go. Very Difficult
 Difficult
 Not difficult or Easy
 Easy
 Very Easy

The following questions will ask how often you use certain types of transportation to get to the places you want to go.

Walk

Are you able to walk?

- Yes
- No

How often do you walk to get to where you need and/or want to go?

- Once or a few times a day
- Once or a few times a week
- Once or a few times a month
- Once or a few times a year
- Never

How easy is it (or would it be) for you to walk to where you need and/or want to go?

- Very Difficult
- Difficult
- Not difficult or Easy
- Easy
- Very Easy

For example, if you have challenges walking, you might say very difficult or difficult.

Drive a car

Do you have a drivers license?

- Yes
- No

How often do you drive a car to get where you need and/or want to go?

- Once or a few times a day
- Once or a few times a week
- Once or a few times a month
- Once or a few times a year
- Never

How easy is it (or would it be) for you to drive a car to get where you need and/or want to go?

- Very Difficult
- Difficult
- Not difficult or Easy
- Easy
- Very Easy

For example, if you do not have a driver's license or access to a car, this might be very difficult for you.

Passenger in a Car (Someone drives you)

How often are you a passenger in someone's car to get where you need and/or want to go?

- Once or a few times a day
- Once or a few times a week
- Once or a few times a month
- Once or a few times a year
- Never

How easy is it (or would it be) for you to be a passenger in a car to get where you need and/or want to go?

- Very Difficult
- Difficult
- Not difficult or Easy
- Easy
- Very Easy

School Transportation/ School Bus/ Agency Transportation

How often do you use school and/or agency transportation to get where you need and/or want to go?

- Once or a few times a day
 Once or a few times a week
 Once or a few times a month
 Once or a few times a year
 Never

How easy is it (or would it be) for you to use the school and/or agency bus to get where you need and/or want to go?

- Very Difficult
 Difficult
 Not difficult or Easy
 Easy
 Very Easy

For example, if you don't use or have access to a school bus or agency, this might be very difficult for you.

Public Transportation (Bus, Subway, Train)

How often do you use public transportation (bus, subway, train) to get where you need and/or want to go?

- Once or a few times a day
 Once or a few times a week
 Once or a few times a month
 Once or a few times a year
 Never

How easy is it (would it be) for you to use public transportation (bus, subway, train) to get where you need and/or want to go?

- Very Difficult
 Difficult
 Not difficult or Easy
 Easy
 Very Easy

For example, this would be very difficult if public transportation isn't in your area. You might say this is difficult if you have never learned how to use public transportation.

Public transportation is (or would be) timely and reliable to get me where I need and/or want to go.

- Never
 Almost Never
 Sometimes
 Almost Always
 Always

Private Transportation (Uber, Lyft)

How often do you use private transportation like uber, lyft to get where you need and/or want to go?

- Once or a few times a day
 Once or a few times a week
 Once or a few times a month
 Once or a few times a year
 Never

How easy is it (or would it be) for you to use private transportation (Uber, Lyft) to get where you need and/or want to go?

- Very Difficult
 Difficult
 Not difficult or Easy
 Easy
 Very Easy

Paratransit (CCT, DART, ACCESS)

How often do you use Paratransit to get where you need and/or want to go?

Once or a few times a day
 Once or a few times a week
 Once or a few times a month
 Once or a few times a year
 Never

How easy is it (or would it be) for you to use paratransit to get where you need and/or want to go?

Very Difficult
 Difficult
 Not difficult or Easy
 Easy
 Very Easy

For example, if you don't have paratransit set up, this might be very difficult.

Bike

Are you able to ride a bike?

Yes
 No

How often do you bike to get where you need and/or want to go?

Once or a few times a day
 Once or a few times a week
 Once or a few times a month
 Once or a few times a year
 Never

How easy is it (or would it be) for you to bike to get where you need and/or want to go?

Very Difficult
 Difficult
 Not difficult or Easy
 Easy
 Very Easy

"Other"

How often do you use another way to get where you need and/or want to go?

Once or a few times a day
 Once or a few times a week
 Once or a few times a month
 Once or a few times a year
 Never

Please tell the other way you get where you need or want to go.

How easy is it for you to [other_mode_text] to get where you need and/or want to go?

Very Difficult
 Difficult
 Not difficult or Easy
 Easy
 Very Easy

The following question asks what makes it easy or hard for you to leave your house to get where you want to go.

Please select which of these makes leaving your house to get where you need and/or want to go challenging.

You can select multiple answers.

- I have physical concerns that make leaving my house to get places challenging
- I don't want to leave my house to get to places
- I am not confident in my ability to leave my house to get places
- The sensory environment bothers me (sounds, lights, smells)
- I am anxious of leaving my house to get places
- I don't have the support from family/friends
- I get too distracted
- I feel unsafe
- It takes too much time
- Transportation in my area is unreliable
- Transportation in my area doesn't go where I want to go
- I never learned how to use public transportation
- Other

What other things make it challenging?

Please select what makes leaving your house to get where you need and/or want to go most helpful.

You can select multiple answers.

- I feel safe leaving my house to get places
- I know how to leave my house to get places
- I have support from family and friends
- Someone is always around to take me to where I want to go
- I have been trained to use transportation
- I have enough money to use transportation
- Transportation is easy for me to get to.
- Other

What other things are helpful?

Do you feel safe when you leave your house to get where you need and/or want to go?

- Never
- Almost Never
- Sometimes
- Almost Always
- Always



CITY OF PHILADELPHIA

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Jessica M. Robbins, PhD
Administrator

March 13, 2024

Amber Davidson, MPH, PhD(c)
Temple University REACH Lab
201G Mitten Hall
1913 North Broad Street
Philadelphia, PA 19122

Re: 2023-65 Person and Environmental Factors Predicting Community Mobility of Young
Autistic Adults

Dear Ms. Davidson:

The City of Philadelphia Department of Public Health Institutional Review Board [OHRP
IRB#49, operating under FWA#3616] has approved the revisions for the above subject
research proposal submitted on February 16, 2024. We note the following revisions were
approved on March 11, 2024:

- Modifications to the survey.

You may proceed with this project through January 11, 2025, or closure, if sooner. An
update report will be required at least one month before the expiration of the approval
period. Remember to report changes in study personnel, contact information, procedures
or consent procedures or forms to the Institutional Review Board before they are
implemented. Any intentional or serious protocol violations or serious adverse events must
be reported to this office within two working days of discovery. Non-serious adverse events
and unintentional protocol deviations should be reported upon your receipt of a DSMB
summary report or with your continuing review update report.

Approval by the IRB does not, in and of itself, constitute approval for the implementation
of this research. Other City approvals may be required before study activities are initiated.
Research undertaken in conjunction with individuals or entities external to the City will
typically require a data license agreement or other contractual arrangement. If any of these
approvals require changes to the IRB-approved protocol, recruitment materials, or informed
consent/assent document(s), the changes must be submitted to and approved by the IRB



CITY OF PHILADELPHIA

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Frank A. Franklin, PhD, JD, MPH
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Jessica M. Robbins, PhD
Administrator

January 12, 2024

Amber Davidson, MPH, PhD(c)
Temple University REACH Lab
201G Mitten Hall
1913 North Broad Street
Philadelphia, PA 19122

Re: 2023-65 Person and Environmental Factors Predicting Community Mobility of Young Autistic Adults

Dear Ms. Davidson:

The City of Philadelphia Department of Public Health Institutional Review Board [OHRP IRB#49, operating under FWA#3616] approved the above subject research proposal through full committee review. Conditional approval was granted on December 5, 2023, and full approval was granted on January 12, 2024. A copy of the assurance/certification form for this project is attached. Since the implementation of the electronic submission system, we no longer stamp consent/assent forms.

Any intentional or serious protocol violations or serious adverse events must be reported to this office within two working days of discovery. Non-serious adverse events and unintentional protocol deviations should be reported upon your receipt of a DSMB summary report or with your continuing review update report. Changes in study personnel, contact information, procedures or consent procedures or forms must be reviewed and approved prior to implementation, except where necessary to eliminate apparent immediate hazards to the human subjects. An update report for continuing review must be submitted and receive continuing IRB approval by January 11, 2025, and at the closure of this project.

IRB approval of the study does not obligate any City agency or department to participate in the study, or to carry out any specific activities. Participation in all research activities is at the discretion of unit managers.

Approval by the IRB does not, in and of itself, constitute approval for the implementation of this research. Other City approvals may be required before study activities are initiated.

**Protection of Human Subjects
Assurance Identification/IRB Certification/Declaration of Exemption
(Common Rule)**

Public Research activities involving human subjects may not be conducted or supported by the Department and Agencies subjecting the Common Rule (45CFR46), June 18, 1981 unless the activities are exempt from or approved in accordance with the Common Rule. See section 101(b) of the Common Rule for exemptions. Institutions submitting applications or proposals for support must submit certification of appropriate Institutional Review Board (IRB) review and approval to the Department or Agency in accordance with the Common Rule. Institutions must have an assurance of compliance that apply to the research to be conducted and should submit certification of IRB review and approval with each application or proposal unless otherwise advised by the Department or Agency.

1. Request Type <input checked="" type="checkbox"/> ORIGINAL <input type="checkbox"/> CONTINUATION <input type="checkbox"/> EXEMPTION	2. Type of Institution <input checked="" type="checkbox"/> GRANT <input type="checkbox"/> CONTRACT <input type="checkbox"/> FELLOWSHIP <input type="checkbox"/> COOPERATIVE AGREEMENT <input type="checkbox"/> OTHER: In House	3. Name of Federal Department or Agency and, if known, Application or Proposal identification No. Brandon's Voice sponsor Temple IRB grant # 30923
4. Title of Project or Activity 2023-24 Paines and Environmental Factors Predicting Community Mobility of Young Adults		5. Name of Principal Investigator, Program Director, Fellow, or Other Arthur Davidson, MPH, PhD (c)

6. Assurance Status of this Project (Respond to one of the following)

This Assurance, on file with Department of Health and Human Services, covers this activity:
Assurance Identification No. FD0250032838, the expiration date 02/28/24 IRB Registration No. JR000000632

This Assurance, on file with (agency/office), the expiration date _____ IRB Registration/Identification No. _____ covers this activity.
Assurance No. _____, the expiration date _____ IRB Registration/Identification No. _____ (if applicable)

No assurance has been filed for this institution. This institution declares that it will provide an Assurance and Certification of IRB review and approval upon request.

Exemption Status: Human subjects are involved, but this activity qualifies for exemption under Section 101(b), paragraph _____.


7. Certification of IRB Review (Respond to one of the following IF you have an Assurance on file)

This activity has been reviewed and approved by the IRB in accordance with the Common Rule and any other governing regulations.
by: Full IRB Review on 1/26/24 and/or Expedited Review on 1/26/24
 If less than one year approval, provide expiration date _____

This activity contains multiple projects, some of which have not been reviewed. The IRB has granted approval on condition that all projects covered by the Common Rule will be reviewed and approved before they are initiated and that appropriate further certification will be submitted.

8. Comments
N/A

9. The official signing below certifies that the information provided above is correct and that, as required, future reviews will be performed until study closure and certification will be provided.

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16. Signature  Frank Franklin (207 12, 2024 0067 587)	17. Date Jan 12, 2024

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