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Uncovering the obstacles: creating a typology of contextual factors that affect participatio

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BOSTON UNIVERSITY
SARGENT COLLEGE OF HEALTH AND REHABILITATION SCIENCES

Doctoral Project

**UNCOVERING THE OBSTACLES:
CREATING A TYPOLOGY OF CONTEXTUAL FACTORS
THAT AFFECT PARTICIPATION**

by

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“For to be free is not merely to cast off one’s chains, but to live in a way that respects and enhances the freedom of others”- Nelson Mandela

DEDICATION

I would like to dedicate this work to my dear friend and model for how to be a good human being Mychel Namphy, who the world lost in April 2019 to Brain Cancer. You have been a supporter, a mentor and a guiding light.

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I would like to acknowledge Dr. Nancy Doyle whose patience, wisdom and guidance have been essential to bringing an idea to reality

I would like to acknowledge my wife, Cheryl Comeau-Kirschner and daughter Evangeline whose endurance and understanding of my endless hours of reduced availability in completing this journey will always be appreciated

I would like to acknowledge all of those along my path whose inspiration has brought me to this point

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ABSTRACT

Increasingly, disability related literature recognizes the environment as an important factor in the participation in roles and in engagement in activities for individuals with disabilities; which would naturally make the environment an important concern for occupational therapists (Hammel et al., 2015). The language and methods to describe and analyze the characteristics of the environment that support or limit client participation in occupations are not as well developed in occupational therapy (Whiteneck & Djickers, 2009). This is an important gap in our practice that must be addressed. Guided by Person-Environment-Occupation Theory (Baptiste, 2017), this project attempted to address this need by developing a typology of terms for contextual factors that affect participation. It was completed with the belief that providing the terminology will increase the attention provided to these factors in practice. Environmental interventions can be more universal, are often less expensive, and change the focus from the individual's deficits to how society can be more just and inclusive.

We created the typology using a scoping review methodology to identify source literature and by searching through the selected literature for the environmental and

contextual terms describing factors that impact participation. The resulting typology is divided into four areas with twelve categories of terms and 54 total terms. It aligns with the International Classification of Function (WHO, 2001) and the performance factors in the Occupational Therapy Practice Framework (AOTA, 2014).

The typology is designed and meant for use across OT practice areas, in OT education, research and scholarship. This will require wide spread dissemination. A dissemination plan based on Diffusion of Innovations Theory (Rogers ,2010) starts by refining the typology with the guidance of assessment from stakeholders. After this refinement process, the typology will be introduced via outreach to occupational therapy programs, publications, and conference presentations. Widely used, this typology has the potential to expand the scope of occupational therapy and to make our interventions more effective in improving and increasing participation for more people.

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CHAPTER ONE- Introduction

Introduction

Occupational therapy (OT) recognizes that participation in life's roles and activities is the result of interactions among individuals, their activities or occupations, and the environment or context within which they occur (Strong et al., 1999). OT has created well-defined language and methods to describe and analyze the components of the individual and to a lesser degree the task involved in supporting or diminishing client participation. For example, there are multiple tools within the occupational therapy community to assess aspects of the person and activities. The Allen Cognitive Test (Allen, 1990), the Sensory Integration and Praxis Test (Ayres, 1996), the Arnadottir Occupational therapy Neurobehavioral Evaluation (A-ONE) (Arnadottir, 1990), and the Sensory Profile (Dunn, 1999) are diagnostic for body level impairments. Task and activity analysis, used to dissect and understand activity (Kielhofner, 2009), and other occupational therapy tests such as the Pediatric Evaluation for Disability Inventory (Haley, Coster, Ludlow, Haltiwanger & Andrellos, 1992) or the Functional Independence Measure (Uniform Data System for Medical Rehabilitation, 1997) identify problems with activities. Tests such as the Assessment of Motor and Process Skills (Fisher, 2003) and the Evaluation of Social Interaction (Fisher & Griswold, 2010) evaluate participation in activities. They do so through the lens of performance skills, which are "the abilities *clients* demonstrate in the actions they perform" (AOTA, 2014 p. 7), and where the disabilities of the individual are seen as the causal factors for whether the individual can successfully perform an activity or engage in an occupation within a given context.

This focus on the person or persons in occupational therapy training, evaluation, practice and scholarship likely diminishes consideration by occupational therapy practitioners (OTPs) of the effect of environmental factors on occupational performance (Hammell, 2015; Mousavi, Forwell, Dharamsi, & Dean, 2015; Pereira, 2017).

Identified Problem

The problem addressed in this project is that the language to describe and analyze the characteristics of the environment that support or limit client participation in occupations are not well developed in occupational therapy. Occupational therapy lacks universal terms that could provide guidance for how assessment and intervention are performed. Without this language the consideration of environmental factors as important sources of information in occupational therapy is reduced (Brown & Bowen, 1998). Despite greater attention given to contextual factors by theory, occupational therapists continue to focus primarily on individual factors (Hammell & Iwama, 2012). Though individual factors are a valuable source of information in regards to creating intervention, the lack of common language regarding contextual factors diminishes the importance of environmental interaction with the individual and participation, thereby decreasing the likelihood that therapists will consider all of the possible factors involved. For example, the lack of attention provided to contextual factors by therapists can be associated with poor adherence to occupational therapy recommendations which is linked to poorer outcomes (Radomski, 2011). Inattention to these factors can be linked to other difficulties (Fisher & Marterella, 2019). Such difficulties present themselves in several ways. Among these are difficulties such as repeated failure of intervention to improve

function or ecological barriers to participation that are often unnoticed.

There is evidence that mastering occupational skills leads to a greater sense of wellness and willingness to participate for youth (McPherson, King, Kudzik, Kingsnorth & Gorter, 2016). Conversely, youth who have disabilities have lower self-concepts and feelings of efficacy than their “typical” peers (Popovici & Buica-Belciu, 2013). A model of therapy that focuses on identifying and “fixing” impairments rather than providing children manners in which they can successfully participate in activities is less likely to improve participation (Dahl-Popolizio, Doyle & Wade, 2018; . Considered this way, therapists focusing persistently on the effect of what is “wrong” with the person who has a disability or how they do things is detrimental to increasing that person’s participation in everyday activities (Darrah, Law, Pollock, Wilson, Russell, Walter, Rosenbaum, & Galuppi, 2011; King, G., Law, King, S., Rosenbaum, Kertoy & Young., 2003). In contrast, self-efficacy and self-determination might be better developed through successful participation in various roles and activities via a more inclusive approach with accessible environments and activities. As a result increasing participation may increase motivation to do, which would further increase participation (Algozzine, Browder, Karvonen, Test & Wood, 2001; Nota, Ferrari, Soresi & Wehmeyer, 2007). For example, Solberg, Howard, Greshem, and Carter (2012) found a link between supportive learning contexts that allowed for success and the development of an array of vocational, academic, and social-emotional learning skills associated with the long-term success of youth. In education and other contexts, it is likely that ‘success breeds success.’ Bandura (1995) stated that the “most effective way of creating a strong sense of efficacy is

through mastery experiences” (p. 3). He further finds that having this sense of efficacy allows individuals to attempt, work on, persist through and solve challenging situations. Thus by changing the availability of mastery experiences through environmental or contextual change, we can provide a sense of efficacy that may change not only the opportunities to participate but also the willingness to attempt participation.

The gap in environmental terminology must also be addressed because intervention at the level of the environment can have more universal effects on participation. For example, it may take months of training for one individual to gain the strength, planning balance and motor control to do a “wheelie” that gets a wheelchair up a curb. This intervention is expensive and only increases the community participation to one individual. In contrast, environmental interventions such as curb cuts improves the participation of many wheelchair users as well as others who are affected by the difference in vertical height, such as families with children in strollers, work people pushing handcarts, people who use shopping carts, and people who walk with canes or walkers. Other successful environmental examples include automatic doors, auditory alerts going along with “walk” crossing signals and enlarged bathroom stalls (Cook & Polgar, 2014). By considering and addressing environmental factors, far less money and time are invested and participation improves for many. Environmental interventions can be more universal, are often less expensive, and change the focus from the individual’s deficits to how society can be more just and inclusive. By eliminating barriers to participation, we take responsibility for inclusion of all and do not make individuals feel responsible for their own difficulties.

Relative Scope of Problem

Consideration of the effect of contextual factors on participation is clearly within the domain of occupational therapy, as it is included repeatedly in documentation by influential occupational therapy organizations such as the WFOT and in the AOTA's OT Framework (2017). However, references to the environment in the documentation are limited in frequency and in specificity. In the guidelines for accreditation of OT schools, ACOTE includes environment only as part of other broader guidelines for education (ACOTE, 2012); it does not receive significant independent attention. WFOT accreditation guidelines include more consideration of context and environmental factors but do not provide terminology for particular aspects of the environment. The current Occupational Therapy Practice Framework provides terms for performance skills (motor, process and social interaction) that describe the capabilities of the individual doing the activity within given contexts (Smith-Roley DeLany, Barrows, Brownrigg, Honaker, Sava, Youngstrom, 2008). This language focuses the occupational therapist on what is not working for the person rather than how the activity as it is set up or how the environmental context does not afford the client the opportunity to participate in certain roles or tasks. This gap in environmental terminology and analysis appears to be pervasive throughout occupational therapy, affecting how the profession operates and how we serve our clients. This being the case, the purpose of this project is to identify common terms for environmental characteristics and categorize these into a common language or terminology for occupational therapy.

Contributing Factors

Several factors have been identified as causal to the problem. Understanding these factors helps us to figure out how we can work to address the problem. They are as follows:

- A. The dependence of occupational therapy on the medical model. The medical model is inherently based on the body systems/impairments of the individual. Addressing these problems is assumed to have the potential to bring the person to a point of “wellness” and participation in roles is assumed to be possible when “wellness” is achieved (Kielhofner, 2005; Mousavi, Forwell, Dharamsi, & Dean, 2015)
- B. Reimbursement systems shape how practitioners evaluate and provide interventions. Historically, these funding sources base reimbursement on outcome “markers” that are measurable and reflect changes in components of performance-such as strength (Jongbloed & Wendland, 2002). For occupational therapy this payment pattern strongly favors remedial therapy, that is, therapy that is designed to improve the individual’s performance of activities, particularly via improvements in body level abilities rather than therapy that addresses contextual and environmental factors (Jongbloed & Wendland, 2002; Foye, Kirschner, Brady Wagner, Stocking & Siegler, 2002). This results in therapeutic evaluation and intervention that focus on individual factors that are designed to comply with the reimbursement regulations more than to align with more occupationally based practice models (Jongbloed &

Wendland, 2002).

- C. Tradition in Occupational Therapy Education and clinical work reinforces that remediation is definitive occupational therapy practice, in effect minimizing the impact that environmental or task modification can have on changing the participation (Jones, 2010). Families and many individuals have been trained to understand health in this manner as well (Liu, Chan & Hui-Chan 2000).
- D. Occupational therapy is just beginning to integrate ideas of occupational justice into its core thought processes. The idea that society owes access to participate in multiple aspects of life to all individuals regardless of abilities is relatively new to occupational therapy. If this is not a core principle, the focus goes toward how the individual can change themselves or their behavior to accommodate a society that is not inclusive (Kuper & Weber 2011).
- E. Measuring environmental factors and defining environment and roles is difficult due to the diverse nature of and individual responses to contextual factors when performing activities (Whiteneck & Dijkers, 2009). Individual response differ significantly to contextual factors. This complexity has been a factor in impeding the development of universal terminology for environmental factors (Whiteneck et al., 2004). Currently the theory available inadequately focuses research on those aspects of the environment that interact with individuals' impairments and functional limitations affecting activities and participation (Dickinson & Colver, 2010). There are few measurement models for those aspects. Research that does exist uses varied

frameworks and is difficult to generalize as it is frequently done in specific contexts (Whiteneck & Dijkers, 2009).

Proposed Solution

This doctoral project will address the under-utilization of environmental factors in occupational therapy assessment and intervention by developing a typology of terms to describe factors in the environment or context that support or impede participation. These terms then could be consistently used throughout the profession, and even by other professions, to describe environmental factors and how they support or diminish participation. The typology will be used to address the difficulties individuals or groups are having with particular types of activities from the point of view of what aspects of the environment are interfering.

The idea that language is both a reflection of the thought process and a guiding framework for thought processes comes from “relative linguistics” (Degeneffe & Terciano, 2011) and is based on the idea that concept that language shapes thought and molds perception (Tohidian, 2009). Our choice of words has the power to guide our own perceptions and choices and influence and change the perceptions of others including those people whom the language may have negative effect upon. By providing the language to speak about the environment, this project seeks to change the perceptions of OTPs and thus change practice.

Plan

The plan then is to create a typology of terminology that will identify the contextual factors that affect participation (whether they support or diminish

participation). In order to utilize the most robust wording, it is necessary to apply a manner in which the knowledge base of a wide variety of fields that address the environment can be accessed. For this reason, the methodology selected for locating the terms and creating this terminology was a scoping review.

Target Audience

This program is designed for all occupational therapy practitioners (OTPs) with the purpose of adding to and expanding their practice to include greater consideration of environmental factors in evaluation and intervention in hopes that this can be beneficial to improving the participation of various types of individuals and groups

Groups Benefiting from the Program

The proposed program serves both participants in occupational therapy and occupational therapists. For occupational therapists, having better tools to observe, measure and understand the environment will make designing interventions that help participants to improve their participation in life's roles and activities more effectively and efficiently. For participants in therapy, having therapists better consider all of the aspects involved in facilitating or diminishing participation will likely lead to better outcomes in terms of increased participation in activities and roles. On the macro scale there are potential benefits to health care systems and health insurers, who can spend less resources on trying to remediate skills over long periods of time. This author is also a firm believer that by improving the diversity of people who are participating in the many aspects of our society, through inclusion of people who might otherwise be excluded due to environmental barriers, society benefits from greater involvement and more and

different “voices”.

CHAPTER TWO – Defining the Problem

Causal Factors

There is inadequate consideration of environmental and contextual factors in occupational therapy practice (Hammell & Iwama, 2012); the lack of terms for environmental and contextual factors that influence (i.e., support or diminish) participation is a part of this problem (Whiteneck & Dijkers, 2009). The inadequate consideration of contextual elements is the sum of many factors. The medical model is an important player in this equation. The adoption of the medical model as an important guide to the provision of occupational therapy brought with it both the strengths and the weaknesses inherent in the medical model. While the focus of this statement is on the United States, as one of the largest providers of occupational therapy, the influence of the adoption had global effects.

The model available in figure 2.1 provides a visual guide to how this influence manifested itself. In addressing disability, the medical model (factor 1) prioritizes individual deficits as the focus of evaluation and intervention, often excluding the environment/context and the activity/occupation from adequate consideration (Rothman, 2010). As a result of the influence of the medical model, the structures that support occupational therapy (factor 2), such as the governance organizations (American Occupational Therapy Association, National Board for Certification of Occupational Therapists, Accreditation Council for OT Education), academic researchers and educators, policy makers and administrators, tend also to focus on individual factors rather than the interaction between the person, the environment and the occupation.

These organizations exert influence on individuals that provide occupational therapy which directly affects how service is provided as well as exerting influence on organizations, whose policies and procedures indirectly reinforce the provision of services without optimal consideration of environmental/contextual factors. Funding sources (mediator 1) such as insurance for occupational therapy adopted the medical model resulting in payment formulas that prioritized intervention aimed at addressing the impairments of individuals. Funding further influences OT structures (factor 2), which, in turn, affect OT education (factor 3) and the official documents (factor 4) designed as guidance for OT practice- leading to changes in general clinical decision making of OTs who had to work within those structures. The structures of OT (factor 2) also are in part shaped by the continued inadequate focus on occupational justice (mediator 2). Within the occupational justice framework there is a strong orientation towards considering contextual factors. When it is integrated into the training of therapists, it is believed that those therapists will more strongly contemplate the inclusion of the environment in assessment and intervention (Aldrich & Peters, 2019). As a result of the OT structures utilizing a model that focuses on the individual, occupational therapy education (factor 3) and occupational therapy's official policy and documents (factor 4) also support a model that is not inclusive of sufficient attention to contextual factors, thus influencing occupational therapists to consider environmental and contextual factors to a lesser degree (problem). Finally, the relative complexity of environmental factors (moderator 2), and the understanding and application of how to assess and act upon them, exacerbates the decrease in consideration of these factors by occupational therapists

(problem).

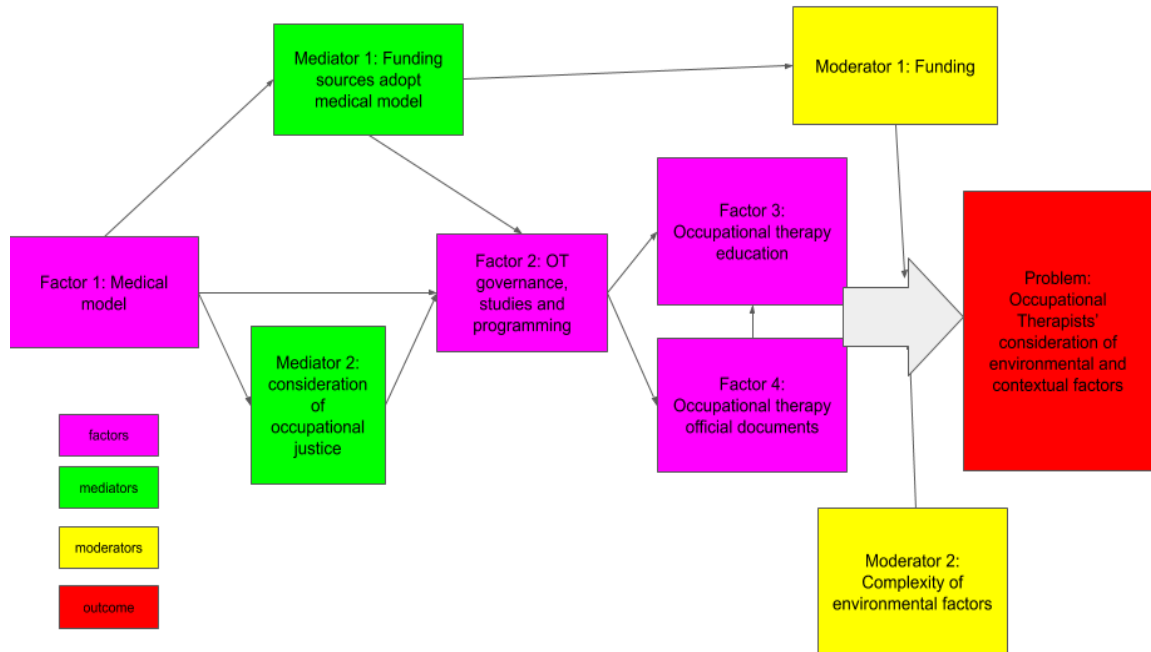


Figure 2.1 *Visual Model of Contributing Factors*

Theoretical Frameworks

The problem addressed in this project is that therapists do not consider environmental factors to the degree that they consider personal factors – not recognizing them as important sources of information in occupational therapy assessment or as potential targets for occupational therapy intervention (Brown & Bowen, 1998). We examine the causes of this problem primarily using two theoretical frameworks as guidance. These are the Person-Environment-Occupation (PEO) model which considers the core tenant of the problem (that contextual factors are important in the performance of occupations) and Diffusion of Innovations (DOI) theory, that helps to explain why contextual factors, recognized to some degree in theory and scholarship have not been more widely adopted into OT practice. Additionally, there is strong influence from the

Biopsychosocial model that forms the basis of the ICF and from Sen's Capabilities approach (Riddle, 2017).

The conceptual understanding of the relationship between individuals, the activities and roles they participate in and the context in which this take place comes from the Person-Environment-Occupation Model (PEO). In this model, factors regarding the individual (Person), the context (Environment) and the life activity (Occupation) are considered as transactional with each other and are treated co-equally, with no assumption of one being of greater influence than the others globally. In each individual transaction, the interaction differs. The better the "match" between the person, the environment and the occupation, the more likely that successful participation will occur (Strong et al., 1999). It is clear that both the difficulties that limit participating and the solutions to these limitations are related to the interactions between the person, the environment and the occupations that they engage in. Yet if one were to consider the Occupational Therapy Practice Framework (2014), a document that puts forth the vision that the American Occupational Therapy Association has to define the field of OT, it is clear that a great deal of attention is given to person and occupational factors, which are examined and explained in depth while the environment is described briefly and in broad strokes (physical, social, cultural, temporal and virtual contexts). Although this is a result of a multitude of factors it nonetheless promotes an incomplete scope of practice (Metzler, 2010). Thus, having terms to identify and describe environmental/contextual factors that affect the quality, quantity and characteristics of participation for an individual in any given occupation would be consistent with the constructs and

transactional relationships of the PEO model (Christiansen, Baum, & Bass-Haugen, 2005).

The biopsychosocial model that forms the basis of the International Classification of function has been used by the World Health Organization for more than 2 decades. In this model “impairment” occurs as the manifestation of difficulties with physical structures within the person at the “body level”. Activity restrictions occur at the level of the individual, who is the integrated whole of multiple “body level” systems. Disability is defined by participation level restrictions that stem from society not accommodating the needs of the individual. Environmental factors are facilitators or barriers to participation (Schneidert, Hurst, Miller, & Üstün, 2003). The model for participation and environmental factors were important influences on the development of the typology. In the Capabilities model- based on the work of Sen- an individual’s capability is understood by via practical opportunities rather than the presence or absence of physical, mental or emotional abilities. Functioning is the actual achievement of the individual (Mitra, 2006). By including of factors that consider the ecology of choice- what influences one to attempt or not attempt activities, this model provides a more complete picture of how an individual participates. Considering when factors discourage participation in activities before they are ever initiated provides a more complete picture of how individuals are functioning (Morris, 2009). This perspective is not well integrated into clinical reasoning amongst OTs (Mousavi, Dharamsi, Forwell, S & Dean, 2015).

The PEO, biopsychosocial model and the capabilities model have all existed for more than eighteen years. It is important for us to consider then, why there has not been

greater diffusion of these ideas into OT practice. Therefore, a theoretical framework is needed to understand why “new” ideas thrive or fail to thrive in usage and influence. For these purposes, the Diffusion of Innovations theory is being used as a guiding framework (Rogers, 2010). This theory postulates that individual and social factors have an influence on the “adoption” of novel ideas, methods or objects and that these influences follow a path that can be predicted with reasonable accuracy for different groups. Factors include aspects of the “innovation” such as personal factors (cost and perceived effectiveness), compatibility with current methods, and complexity of using the new typology; factors relative to the person such as their personal comfort with change, their social characteristics, the level of “need”; and the social factors, including norms, social/societal tolerance of deviance and how the media reacts. Different stages of “adopters” are more or less influenced by each of the factors (Dearing & Cox, 2018). In examining the problem, we consider this theory and the importance of the innate features of the “innovation.

“Relative advantage,” defined as benefit in terms of cost of time, money or effort, relates to compliance with official policies for regulatory and reimbursement organizations. “Compatibility,” defined as how well the innovation fits with the current model, relates to the difficulty in adding contextual factors to already established practices in evaluation and intervention. “Observability,” defined as the ease in seeing results of innovation, relates to the lack of visibility of these practices in most settings where OTs work. It is clear that it is important that in order to successfully increase the consideration of these factors, they must be presented in a more accessible way, making it

more likely for them to be adopted. Another key to successful “diffusion” is finding innovators and early adopters to initiate the diffusion and to keep the diffusion occurring by addressing the needs of adopters later in the process. While there have been influential early adopters in OT scholarship, their adoption of these principles has not been a sufficient catalyst to widespread diffusion. These constructs of the Diffusion of Innovations Theory are important to understanding how contextual factors continue to be deprioritized.

The purpose of this doctoral project is to create a typology of terminology for environmental factors that affect occupational participation in order to advance, consideration of the environment in occupational therapy assessment, practice and scholarship. The design of the typology will be based in the PEO model. In order for this typology to be widely used within occupational therapy assessment and intervention, there needs to be a diffusion of the typology throughout the profession. The Diffusion of Innovation theory will direct the design of methods to disseminate the typology of environmental factors for occupational therapy.

Literature Review: Contributing Factors

A literature search was performed to investigate the factors (see Figure 2.1 Visual Model of Contributing Factors) in occupational therapy thought to be responsible for the dearth of terms describing specifics of environments and contexts. Literature was found primarily through searching on CINAHL, with additional resources found by using the reverse search feature on relevant articles using Google Scholar. Details of the search will be provided below for each segment of the search. The following questions were

used to guide the literature search:

1. Is there evidence that the study of occupational justice promotes inclusion of the environment in OT practice? (see how this works; is modifiable)
2. Is there evidence that the official documents used in OT education standards prioritize focus on the individual rather than the environment in practice?
3. Is there evidence that the use of the medical model is related to decreased consideration of environmental factors in occupational therapy?
4. Is there evidence that funding for direct intervention promotes the use of remedial therapies over environmental modifications?
5. Is there evidence that the complexity of environmental factors decreases the likelihood that these will be considered therapeutically?

There is some evidence supporting each of these factors as relevant to the lack of discourse on the environment within occupational therapy. While the scarcity of evidence on some of these theoretical factors can be seen as indicative of the lack of validity of these factors, it may, in fact suggest that the problem is not widely acknowledged or recognized for the same reasons that the problem exists. Each of the factors will be addressed in the form of a question.

Question 1:

Is there evidence that exclusion of the concepts underlying occupational justice until only recently within occupational therapy studies and training has impeded the integration of environmental assessment and modification into the occupational therapy canon?

The CINAHL Database was used to search for resources about this question. The terms used were “occupational+therapy AND occupational+justice; occupational+therapy AND enablement+model” as well as “occupational+therapy AND international+classification+function”. A reverse search was also done from Magasi et al. (2015) using Google Scholar. The search yielded a variety of articles addressing the how these factors affected the problem.

Over the past decade, occupational therapy documentation and literature has indicated the occupational therapy exists “within the ideological parameter” (Hammell, 2015, p. 80) of the United Nations and World Health Organization frameworks for disability. These frameworks present disability as a function of society not accommodating differing needs more than as a result of individual deficits (Hammell, 2015). Ivanoff, Iwarsson, and Sonn (2006) indicated that the increased inclusion of the environment in OT thought is a recent development with greater attention to a biopsychosocial understanding. However, these concepts do not to have truly broad integration into occupational theory and practice (Hammell, 2015). Hammell (2015) theorizes that this is in part due to a lack of operationalizing and measuring environmental factors and that doing so in a person-centered, theoretically sound manner is difficult. In this way, consideration of the environment and its role in the origins of, interventions, and continued solutions to decreased participation in activities for people with disabilities continues to be something more present in theory than it is in practice. Mousavi, Forwell, Dharamsi and Dean (2015a) considered the development of an approach that includes contextual factors to foster engagement and limit deprivation for

individuals with disabilities as crucial for the ongoing development of occupational therapy.

The consideration of context is an important shift away from “deconstructionism”- a manner of assessing and intervening that focuses on problems in body level systems of an individual with the expectation that these changes will improve function and participation in activities. This shift is strongly promoted by the Biopsychosocial model the basis of the International Classification of Function (ICF) model, which is the World Health Organization’s system for understanding disability. Prodinge, Darzins, Magasi, and Baptiste (2015) have found the adoption of the ICF into occupational therapy is impeded by multiple factors. These factors include only partial integration into OT school curriculum, low knowledge of the ICF by researchers, faculty and clinicians, and a lack of integration of ICF concepts and terminology into documentation across all spheres of OT practice. Prodinge et al. (2015) and Cieza and Stucki (2005) further have further suggested that the inclusion of the ICF ideas is complicated by “cross-walking” different terminologies and taxonomies. Without common language, concepts may be forgotten, misinterpreted, or ignored completely. For example without familiarity of common concepts and terms, evaluation with ICF-based tools that include environmental considerations took longer periods of time (Kjellberg, Bolic & Haglund, 2012) with a group of therapists studied. Such time requirements may be detrimental to inclusion of environmental considerations into planning of occupational therapy interventions.

As occupational therapy curriculum was implicated as a factor related to

decreased inclusion of the environment in occupational therapy theory and practice, the next question addresses the role of OT education and curriculum in the exclusion of environmental considerations in occupational therapy.

Question 2:

Is there evidence that the official documents used in OT education standards prioritize focus on the individual rather than the environment in practice?

The CINAHL Database was used to search for resources about this question. The terms used were “occupational+therapy+education AND environment”. Additionally, ACOTE (2012) standards and WFOT’s (2016) “Minimum standards for the education of occupational therapists revised 2016” were used for this investigation.

Dickie, Cutchin and Humphry (2006) critique the current occupational science theory that underlies occupational therapy education as being focused centrally on the individual. Occupational science theory acknowledges the environment as a factor with a focus of on how occupation “occurs as an action on the environment or as a response to its challenges” (Dickie et al., 2006 p. 84). This indicates that the direction of influence is individual and/or occupation “on” environment rather than a more complex transactional approach (Fisher & Marterella, 2019; Cutchin, 2004; King, Imms, Stewart, Freeman & Nguyen, 2018.) similarly states that occupational therapy treats the environment as external and further posits that occupational therapy literature treats the context or environment as the vessel within which occupation occurs rather than as an actor upon occupation. Hammell (2015) issued a position paper indicating that the focus on the individual over the context is detrimental to quality of life of individuals with disabilities

and that while OT professes to exist within the ideological parameters of the UN and WFOT, the proclamations and publications emanating from these bodies is rarely cited within OT literature. Thus, occupational therapy scholarship and by extension, occupational therapy education is not adequately inclusive of environmental perspectives. Wong and Fisher (2015) identified therapist lack of understanding as well as a lack of consensus and consistency of theoretical concepts as a factor impeding the use of occupational concepts such as the environment clinically. Insufficient consideration of environmental factors on the part of occupational therapists, clinically, is, at least in part, a result of the lack of inclusion of these concepts in OT literature.

In OT literature, the environment has mostly been broadly categorized, such as built versus natural, or social versus physical (Whiteneck & Dijkers, 2009, Whiteneck et al., 2004). The change from uniform terminology (Gutman, Mortera, Hinojosa & Kramer, 2007) to the OT Practice Framework (AOTA, 2002) increased the discussion of the environment as an actor upon participation. Even though it acknowledges contextual factors, the terms officially presented by the American Occupational Therapy Association in the OT Practice Framework (AOTA, 2014) are problematic in how context is integrated into occupational performance. “Performance skills” meant to reflect occupational performance can still be seen as reflecting a “client” factors underlying belief system (Nelson, 2006) these are problems that the individual has in “doing” the occupation (Nelson, 2006). Further, the category of “context” is not focused exclusively on factors outside of the individual. As an example, it includes personal factors such as an individual’s “spirituality” (Nelson, 2006). The wording in our professional documents

reflects the “official” understanding of the factors involved in participation by the OT community. The continued focus on individual factors more than on other factors reduces understanding and inclusion of the role of environmental factors in OT education and in clinical practice.

In a 2016 Australian article (Di Tomasso, Isbel, Scarvell & Wicks), occupational therapists’ perceptions of occupation in practice was explored. Consideration of the environment is a part of the fullness of “occupational practice”. In interviews with eight therapists, discussions of occupation within OT curriculum was addressed. Di Tomasso and colleagues (2016) found that the study and inclusion of occupation-based practice was confounded by the dominance of the medical model and the lack of explicit and consistent guidelines from professional organizations. Additionally, they found that education is the main avenue where OTs learn about occupation, but the lack of theory-to-implementation match in transition from academic to clinical settings adds to the factors impeding the implementation of occupation-based practice (Di Tomasso et al., 2016). This identifies the role that fieldwork, guided by occupational therapy organizations and designed to be the transitional stage from academic to clinical setting for OT practitioners, plays in maintaining the dominance of individual factors in the practice of occupational therapy.

In order to fully understand the treatment of the environment within occupational therapy, the standards for occupational therapy education, both at the assistant and the therapist level were considered within the United States, which is set by the Accreditation Council for Occupational Therapy Education (ACOTE) as well as the international

standards, set by the World Federation of Occupational Therapists (WFOT). The ACOTE accreditation standards (ACOTE, 2018) were explored with a search for the word “environment”. It came up on twelve of the 68 pages of the core document. However, in all but the objectives/criteria for accreditation, the inclusion of the word “environment” was not relevant to the purposes of this project. Within objective B. 2.7-4.4 there are four mentions of environment, all guiding coursework and how it should be related to evaluation, development of intervention (via task analysis, for example), provision of services, health promotion and monitoring of individual and programmatic success. Further references within objective 5.1, 5.17, 2.23-4 and 5.29 identify specific skills to be taught within OT education including considering environment within evaluation, grading and adapting environment, tools and materials, and preparation for discontinuation of services and reintegration into the “natural” environment for people post therapy. The most comprehensive mention of the environment comes in criteria 5.9 which states that coursework must teach to evaluate and adapt processes or environments (e.g., home, work, school, community) applying ergonomic principles and principles of environmental modification. Although overall the environment is mentioned infrequently and deprioritized, there is some inclusion of including analysis and adaptation of the internal and external environment in which function is taking place within the ACOTE standards.

The WFOT accreditation standards (WFOT, 2016) are less binding, as a school can be recognized nationally in an individual country without meeting these standards. There is a greater philosophical bend toward inclusion of the environment in the

curriculum by these standards. In particular, there is frequent mention of the Person-Environment-Occupation model (Law et al., 1996). There are eighty mentions of environment in the WFOT accreditation document. It is addressed in the preamble as a factor that needs to be addressed in OT schools. It is addressed in the introduction, the background and in the section concerning local context as part of the minimum standards with references to the ICF model and the PEO model indicating that these theories are important for the development of new therapists. In essential knowledge, skills and attitudes for practice understanding of the PEO is mandated. Further in the document the role of the environment and environmental assessment is specified and it there is a statement that “extensive knowledge (of environmental details)” (p.29) is expected of OT graduates, including knowledge of various types of environments (physical, social, cultural, etc.). Despite the partial inclusion of environmental factors in United States accreditation standards and the extensive inclusion of environmental concepts within the WFOT, the environment is often neglected by occupational therapist academics, researchers and practitioners (Hammel, Magasi, Heinemann, Gray & Hahn 2015; Magasi et al., 2015). Thus, the guidelines for inclusion of environmental factors have been ineffective at promoting the inclusion of environmental factors into consciousness of OTs in academic settings.

Practice in OT is shaped by forces internal to the practice setting, such as worksite culture and expectations, interdisciplinary relationships, and management structure; as well as external to the worksite, such as education, inter and intra institutional policies, policies and reimbursement arrangements (Metzler & Metz, 2010). The decreased

presence of the theoretical framework supporting environmentally-oriented discourse and the lack of formal support within the occupational therapy academic community are linked by the pervasiveness of the medical model in healthcare and consequently in the funding structures that support occupational therapy. Thus, the next questions address the relationship between the medical model, the payment structures that are heavily based in the medical model and the priorities of occupational therapy.

Question 3:

Is there evidence that the use of the medical model is related to decreased consideration of environmental factors in occupational therapy?

The CINAHL Database was used to search for resources about this question. The terms used were” (Occupational+therapy) AND (environmental+considerations) AND (medical+model)”.

The American Occupational Therapy Association (AOTA) states that the purpose of occupational therapy is enhancing or enabling participation in roles, habits, and routines in home, school, workplace, community, and other settings (AOTA, 2014). As a discipline, OT goes about reaching the goals related to this using multiple intervention methods. These methods are tied together by foundational theories in occupational therapy (Yerxa, 1992). Although occupational therapy was not born out of the medical model, occupational therapy adopted medical model thinking and theories over the course of the mid-twentieth century (Gillen, 2013). As the century progressed, occupational therapy became increasingly linked to the medical model. The medical model became a core element of occupational therapy, the thinking behind this model influenced the

theoretical foundations of occupational therapy (Stamm, 2009). The medical model proposes that disability results from limitations within the individual (physical, mental or psychosocial) and that the experience of disability is largely unconnected to context (the geographic and social environment; Conway & Halota, 2008). Based on this line of thinking, the solution to the difficulty that the person is having is helping the person to improve or otherwise overcome their individual impairments. Thus, it seeks to “normalize” people with disabilities. In this, when context is recognized, it is recognized as a secondary factor. If the label of disability is defined by the disease or health condition that limits abilities to perform desired or expected individual and societal obligations rather than the interaction of the person’s individual skills with the context within which they are performing those activities, a significant portion of the difficulties encountered by individuals and groups are potentially missed (Patel & Brown, 2017).

Question 4:

Is there evidence that funding for direct intervention promotes the use of remedial therapies over environmental modifications?

No usable results were found using CINHAHL. For this question Google Scholar was used with the search terms “reimbursement AND occupational+therapy AND clinical+decision+making”.

The dominance of remedial therapeutic interventions over environmental modifications is reinforced practically by the payment structures. Funding and cost control mechanisms have a powerful influence on the practice of occupational therapy (Jongbloed & Wengland, 2002). Structures are set up based on fulfilling how the funding

is provided, for the most part by third party payers such as government agencies or insurance companies (Hildenbrand & Lamb, 2013). This includes how referrals are provided, how documentation is done, the schedules on which a person engages with therapy, how the person engages with therapy, what type of equipment is available and many other aspects of therapy. In turn, these ecological factors strongly impact the provision of services. For example, the use of a modality is promoted by the presence of the modality in both the documentation and the therapy room where as environmental modification may not be present as a section or have a place on documentation forms utilized by occupational therapy within treatment settings. Engaging in environmental modification may involve leaving the typical treatment space or location. Intervention supported in the context within which the therapist practices are more likely to be selected and used.

Occupational therapy students form the basis of their understanding of what it is to practice occupational therapy in school and fieldwork (Grenier, 2015). As previously discussed, the current accreditation standards do not prioritize consideration of the environment in practice. In their fieldwork experience, where student occupational therapists become more familiar with the practice of occupational therapy, students are often placed in settings that are traditionally medical, such as hospitals and clinics, and/or may be placed in clinics that operate under funding systems that promote medical model type thinking. Since operating under these systems traditionally relegates consideration of the environment to a secondary position, therapists learn that the use of environmental interventions is not a primary focus of occupational therapy. Continued work within the

confines of systems operating within the medical model and dependent on funding oriented to the medical model continues the prevalence of this type of thinking.

Question 5:

Is there evidence that the complexity of environmental factors decreases the likelihood that these will be considered therapeutically?

Searches were conducted in the CIHAHL database with the terms “occupational+therapy” AND environmental+considerations”. Reverse searches were completed in Google Scholar for Whiteneck et al. (2004) and Whiteneck and Dijkers (2009).

Clearly, including the environment more in the clinical reasoning and practice of occupational therapists is a complex problem with roots in multiple overlapping factors. Similarly, the environment or context itself is a complex idea that does not always lend itself to more simple cause and effect thinking (Whiteneck & Dijkers, 2009). In their writing, Whiteneck et al. (2004) and Whiteneck and Dijkers (2009) further detail how multiple theories exist about how the environment is included in various manners within prevailing theories, from as a secondary consideration, to an important participant in interactions with individuals and groups, to a primary factor causing the disability. Additionally, the environment may be a causal factor in the choices made to leading to the avoidance of the activity. Trying to quantify the relation of factors to the absence of an action further adds to the intricacy of the endeavor (Noreau & Boschen, 2010). This intricacy leads to inconsistency in the manner in which environmental factors are communicated. With this level of inconsistency it is hard to articulate the role of the

environment clearly enough so that factors could be operationalized for use by therapists. Partially as a result of this complication, there is a lack of empirical data to clarify how the interaction among the person, the activity, and the environment contributes to participation (Noreau & Boschen, 2010).

Synthesis

Participation in roles and activities is related to the complex interactions of multiple factors. The environment has been identified as one of those factors in the last 2 decades in occupational therapy literature, teaching and policy (Hammell, Magasi, Heinemann, Gray, & Hahn, 2015). However, the environment continues to be considered less practically in occupational therapy practice. There is not a simple answer for the reason why the environment continues to be deprioritized, rather it seems to be the complex interaction of multiple factors. A principle reason for this lack of consideration is the medical model and resultant reimbursement system which filters into the culture of occupational therapy education, training and the workplace environment. This contributes to person-centered rather than person-activity-environment focused priorities in occupational therapy (Hammell, 2015; Pereira, 2017). The influence of the medical model furthermore made it more difficult for ideas inclusive of the environment such as the social model, the Person-Environment-Occupation model and the Ecology of Human performance to be more central within occupational therapy practice.

The complexity of identifying and defining environmental factors itself further discourages therapists who often lack the time to address complex problems and instead may direct their attention towards more tangible aspects of the problem such as body

level factors that may be defined in simpler terms (Whiteneck & Dijkers, 2009). There was some support in the literature for the idea that the lack of definitive terms to define environmental features is a factor in the inattention or deprioritization given to environmental factors (Hammell, 2015). This also may act reciprocally: where the lack of attention to environmental factors may lead to an absence of language to effectively describe the environment, and the lack of language may further impede the environment from receiving detailed attention within the occupational therapy canon.

The proposal, then, is to create terminology that is universally accepted within occupational therapy that can be used in assessment and intervention planning. Our hope is that this will facilitate increased consideration of the involvement of the environment within the person-environment-occupation interaction.

CHAPTER THREE – Description of Project

Introduction

The current understanding of disability, as presented through theory, models and research both in and out of occupational therapy, increasingly recognizes the role of environmental factors in the relationship between disability and participation. This understanding supports assessment and intervention to address the how, where, when, and to what degree the environment is a supporting or limiting factor in participation. This is particularly true within the context of occupational therapy (Hammel, Magasi, Heinemann, Gray, & Hahn 2015; Magasi et al., 2015) whose goal is to improve participation in life's occupations. More and more, disability related literature recognizes the environment as an important factor in the participation in roles and in engagement in activities for individuals with disabilities; all of this would naturally make the environment an important concern for occupational therapists (Hammel et al., 2015).

Despite this increased attention, the language and terminology to describe and analyze the characteristics of the environment that support or limit client participation in occupations are not well developed in occupational therapy scholarship, education, research, theory, and assessments (Hammell, 2015; Pereira, 2017). The goal of this project is to create and disseminate a typology for environmental and contextual factors that influence occupational engagement. This project used a scoping review to examine literature from a variety of fields that work with people with disabilities (e.g., therapies, public health, engineering/design, etc.) and to identify the terms used to describe factors in the environment that impede or support participation for individuals with disabilities.

These terms were then organized into a typology describing environmental and contextual factors that impact occupational engagement and participation.

Methods

Method selection. The terminology sought in this project came from varied sources. This included different source countries, different fields of study, different types of publications, and a diverse background of authors. As a result, the methodology needed to seek this terminology and create a basis for a new typography required utilizing a method designed to capture information from widely disparate sources (Maclean, Kantarzis, McCormack & Pentland, 2019). Systematic reviews require tighter commonality amongst sources (Munn et al., 2018), and so was not applicable for this project. Using the Delphi method, which involves seeking consensus among a group of experts, had interesting possibilities. However, without a basis to work from (since no typologies are currently available), this would require the inclusion of factors without a scholarly basis before the panel and was logistically difficult given the time and availability restraints on all of those involved (Okoli & Pawlowski, 2004). In contrast to these methodologies, a scoping review can consider data from multiple sources for review and analysis. A scoping review has 5 main steps.

Step one is identifying the research question. This scoping review was guided by the following question: *What terminology is available in the literature that describes discrete factors in the environment that support or diminish the participation of individuals and groups of people?* The Arksey and O'Malley (2005) scoping review guidelines with updates by Levac, Colquhoun, and O'Brien (2010) were used to structure

the steps of this scoping review. The steps in the process are detailed below.

Step two is a structured search. The author searched electronic databases including the Avery Index of Architectural Periodicals, CIHAHL, ERIC, EMBASE, Engineering Village, Medline and the search engine Google Scholar, which was used for reverse searching some of the older articles that were yielded. The author included prominent assessment measures by looking for articles that might yield the terminology from those assessments. A few configurations of search terms were attempted using the same wording at each site:

- A) environmental factors AND participation AND people+disab
 - 1) “Context” was also used for environment
 - 2) “Aspects” and “barriers” were also used for factors

- B) Assessment+environment+factors AND participation OF people+disabilities
 - 1) “Evaluation” was also used for assessment
 - 2) “Context” was also used for environment
 - 3) “Aspects” and “barriers” were also used for factors

For the structured search, results were tracked in RefWorks, a web-based commercial reference software package where user reference databases are stored online, allowing them to be accessed and updated as needed. A spreadsheet was used to track the search process with the search terms that yielded them, limitations such as the period of time or type of periodical, the number of citations yielded, and some other details. A sample of how articles were tracked including the database or search engine, the

terminology, limitations in the search and any other techniques used to do the search (such as reverse searching particular articles to see where they were cited or going through the references of particular articles) appears in Figure 3.1. All citations were imported to Covidence for step 3 of the scoping review.

Step three is selection of studies. In Covidence, a web-based software platform designed to streamline the process of systematic reviews, two reviewers (the author and his academic mentor) first screened titles and abstracts for relevant articles and then conducted full-text reviews of the remaining articles. Published resources met the inclusion criteria if they focused on 1) participation among people with disabilities, 2) environmental factors that facilitate or diminish these, and 3) specification of what aspects of the environment were perceived as barriers, whether it was a tangible barrier or a barrier that led to intentional avoidance of activities or roles. Studies were excluded if they focused on a) body level difficulties as opposed to environmental factors, b) only broad categories or contexts (e.g., transportation without saying what makes transportation inaccessible, space design without specifics), or c) solutions to problems (e.g., ramps, signage or noise reducing windows) without describing the problem that was being solved. The PRISMA process for article selection is available in *Figure 3.2*.
PRISMA process.

Article	Search site	search terms	Search method	yield
<u>Akyurek, G., & Bumin, G. (2018). The Measure of Quality of the Environments' Turkis</u>	EmBASE	environmental+fac		158
Alvarelhaõ J, Silva A, Martins A, et al. Comparing the content of instruments assessing er	Google Scholar		from the references in Magasi	
Anaby, D., Hand, C., Bradley, L., DiRezze, B., Forhan, M., DiGiacomo, A., & Law, M. (2013). The effect of the environment on participation of children and				
Arvidsson, P., Granlund, M., & Thyberg, M. (2008). Factors related to self-rated particip	ERIC	environmental+factors AND participat		37
Athayde, F., Mancuzo, E. V., & Corrêa, R.,de Amorim. (2017). Influência ambiental sobr	CIHAHL		Google Scholar reverse search	
Badia, M., Orgaz, B. M., Verdugo, M. A., Ullan, A. M., & Martinez, M. M. (2011). Perso	ERIC	environmental+factors AND participat		37
Batten, H., Lamont, R., Kuys, S., McPhail, S., & Mandrusiak, A. (2019). What are the bar	EmBASE	environmental+factors AND participat		158

Figure 3.1: *References with associated search strategies*

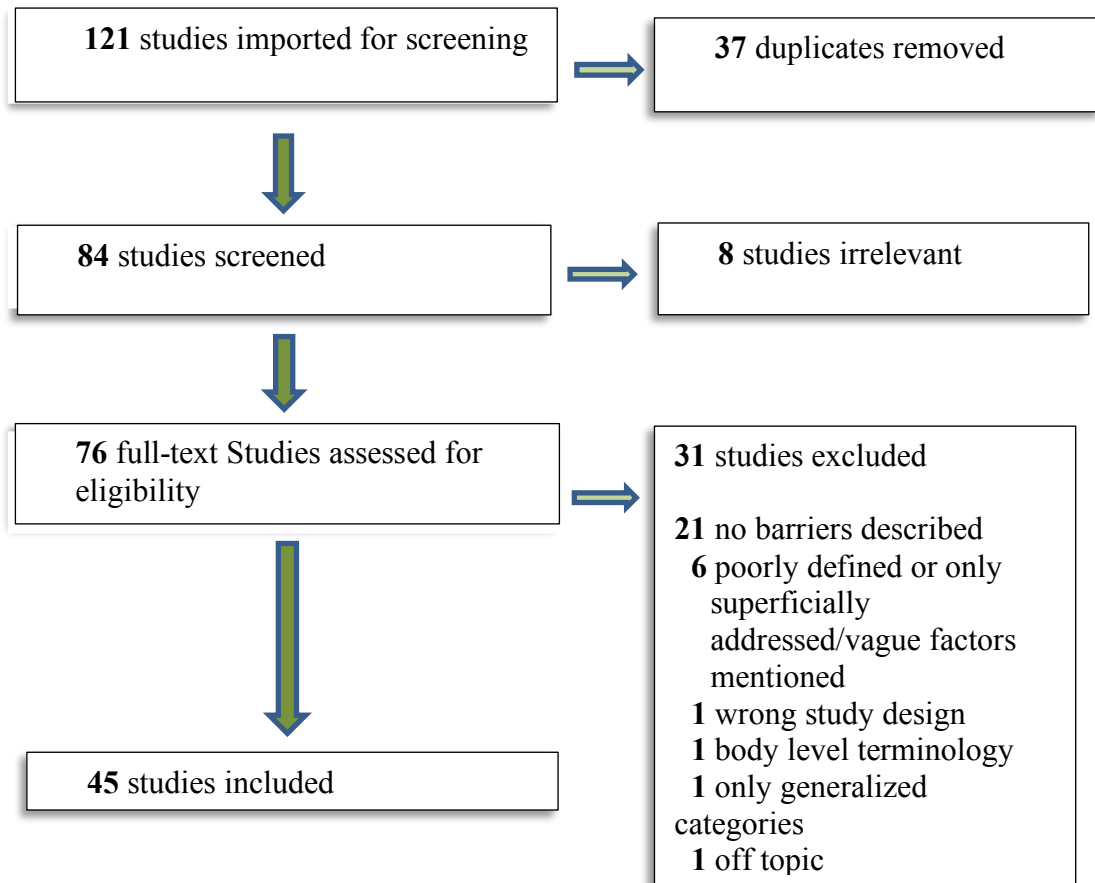


Figure 3.2 PRISMA process

Step four is charting the data. The articles selected were combed for terminology describing contextual factors that affected function. Reviewers highlighted the words in each of the articles that represented components of the environment that interfered with participating in activities. We entered all selected words in a spreadsheet that listed each article and the general and specific terms found in it. General terms described a number of environmental aspects while specific terms referred to one aspect. A total of 139 possible general factors were found among the articles. A total of 292 possible specific factors were identified. Figure 3.3 provides an example of the table we used to track the factors from each article.

In-text citation	Terms found: general categories	Terms found: specific barriers
Akyurek & Bumin (2018)	1. social network 2. income 3. public service 4. physical environment 5. technology 6. political orientation 7. social support 8. resource availability 9. accessibility 10 accommodation 11. Equality	
Anaby et al. (2013)	1. attitudes 2. finances 3. society 4. living arrangements 5. social support	1. routines 2. opportunity for autonomy 3. integration into community 4. supervision/assistance
Arvidsson et al. (2008)	1. natural envt. 2. built envt. 3. accessibility of building/structure 4. access to public transportation 5. use of equipment or devices to address vertical distances between floor surfaces 6. attitudes/values/culture 7. social systems and policies	1. parking for wheelchairs 2. family support 3. overprotectiveness 4. size/layout 5. crowds 6. terrain/distance 7. limited services
Athayde et al. (2017)	1. family relationships 2. natural resources/AT 3. transport 4. social attitudes 5. systems and public policies 6. economy 7. products and technologies 8. climate 9. social relationships 10. health services/social security 11. physical space 12. Transportation	1. flooring-slope 2. width 3. reduced circulation space 4. "high" sidewalks" 5. presence of vehicles 6. traffic 7. familiar environment
Badia et al. (2011)	1. transportation 2. residential modality 3. socioeconomic status	1. physical size of residence 2. permission to perform activities/activities/another person decides 3. income 4. emotional support 5. negative attitudes 6. amount of support 7. lack of knowledge for others 8. cost 9. not having enough time 10. time 11. money 12. stigma 13. unusable equipment 14. negative attitudes
Batten et al. (2019)	1. physical 2. social 3. terrain 4. climate 5. access 6. parking 7. transport 8 preparation	1. crowds, 2 financial 3-"unwanted attention" 4. distance 5. steepness 6. uneven surfaces 7. timed postural activities (escalators) 8. crowds 9. temperature 10. humidity 11. rough ground 12. social support

Blakeley-Smith et al. (2009)	1. physical environment 2. social environment 3. terrain 4. Climate	1. crowds 2.
Blauwet et al. (2017)	1. lack of transportation 2. socioeconomic disadvantage	1. live closer 2. Cost
Carignan et al. (2008)	1. nonhuman environment	1. lighting 2. color/contrast 3. presence of landmarks (visual, tactile, auditory, kinesthetic), 4. organization/familiarity, 5. size of elements 6. potential for change 7. social understanding 8 social expectations/concerns

Figure 3.3: *Sample of spreadsheet linking sources to general and specific terms*

We then moved all of the terms collected in the spreadsheet (e.g., Figure 3.3) into a word processing document. Terms were further grouped together when they were identical or very similar in meaning. For example “width”, “large/wide” and “narrow passageways” were found to be describing the same thing and were grouped together. Groupings were then either categorized as “general” or “specific”. Words that were more general or categorical were highlighted in one color (in this case yellow) and terms related to specific factors were highlighted in another (green). Throughout the whole process we linked terms to their sources by tracking each selected term with the source that it came from (numbered for brevity). In this manner, not only could the terms be identified, but the source of the terminology could be tracked.

The general terms were grouped first. Forty-five potential groupings were identified. As an example of this, (social) attitudes is a general term as it refers to “the observable consequences of customs, practices, ideologies, values, norms, factual beliefs and religious beliefs,” while discrimination is “unjust or prejudicial treatment of different categories of people,” referring to one aspect of social attitudes. Next the specific terms

were categorized. A total of eighty-one groupings were created. The same process used for the general terms was used for the specific terms and the source for each term was always tracked. The charting processes for the “specific terms” are available in Appendix F. We tracked how many terms came from each source as well. The numerical count is available in Appendix E.

In step five the reviewers worked together to further categorize and define the terms. This process included collapsing some categories together as well as refining and moving some terms. As in step four, we used the same processes for categorizing and defining both the general and specific terms. The general terms were done first. We selected the groupings that we found most relevant from the list created in step four. Factors to determine relevance included frequency of appearance (i.e., how many articles a word or concept appeared in), similarity to other terms, the “strength” of the terminology (i.e., considering terminology that were the principal determinant in an article or research study) and expert opinion. These were selected in grouped terms and then from the groupings of terms, one term that was identified as the best to capture the meaning of the various terms was selected to name the group, thereby creating terminology. These terms selected were defined by each of the reviewers based on the usage of the terms in the source literature. Through a series of revisions, we wound up with fourteen general terms that formed categories. Some of the broadest terms such as “physical space” were used to link the categories. Identifying “specific terms” followed the same process. Using our process of defining relevance, a total of fifty-four terms for specific aspects of the environment were included.

We put the specific terms into the fourteen categories that had been created of “general terminology” and reviewed the results. This was done with color coding and a new document was created with the fifty-four terms grouped into the fourteen categories. Seven specific items did not fit clearly into any of the fourteen general categories. For this a fifteenth category was created that ties these items together. This category “activity specific factors” comes from previous work done in conjunction with several experts in the field, who had formulated the word to identify a preliminary grouping of terminology found from various sources. We recategorized until agreed upon matches were complete for each section. A spreadsheet was used for these purposes. Samples of the spreadsheet are too large for this document and are available upon request.

Each of the selected categories was further defined by searching through the articles and establishing meaning for the words. Additionally, a rereading of the ICF categories led to the classification of several of the “General” categories selected in this work into larger groupings under the ICF headings. The “areas” and “categories” are defined in Appendix E. This process also led to some reshuffling of “general” and “specific” terminology. The final product is divided into 4 “areas” linked to ICF categories with 12 categories (formed from general terminology) and 54 terms (specific terminology). Finally, the number system used to identify which article different terminology came from (on a spreadsheet) had to be readjusted for the reference postings done in APA format. This required putting the numbers together and converting the number systems on already created forms.

Results

This scoping review consists of 45 published resources about how contextual factors affect participation for individuals and groups. The resources are from a variety of disciplines including medical, rehabilitation, engineering/design, public health, and related practices and sciences. The resources included two meta-analysis, two randomized control studies, four systematic reviews, three scoping reviews, ten qualitative studies, seven cross-sectional studies, one mixed methods study, one instrument development study, one prospective study, two single subject study, two retrospective studies, two chapters in books, seven expert reviews or panels, and one position paper. They covered populations of all ages, disability status and diagnosis, and various contexts from schools to homes, communities, and many other types of environments. The types of documents selected are in table 3.1.

Table 3.1 Documents from Scoping Review

In-text citation, country	Type of document	Peer Reviewed	Country of Origin
Akyurek & Bumin (2018)	RCT to establish validity and reliability of measure	Yes	Turkey
Anaby et al. (2013)	Scoping Review	Yes	Canada
Arvidsson et al. (2008)	Systematic review	Yes	Sweden
Athayde et al. (2017)	Systematic review	Yes	Brazil
Badia et al. (2011)	Cross sectional design	Yes	Spain
Batten et al. (2019)	Qualitative analysis from focus groups	Yes	Australia
Blauwet et al. (2017)	Retrospective cohort study	Yes	USA

Blakely-Smith (2009)	Single subject research design	Yes	USA
Carignan et al. (2008)	Qualitative study focus groups and semi-structured interviews	Yes	Canada
Chien et al. (2017)	Secondary analysis of cross-sectional parent survey	Yes	Australia
Clarke et al. (2011)	Retrospective multi-stage representational study	Yes	USA
Colver et al. (2012)	Cross sectional survey	Yes	USA
Coster et al. (2013)	Secondary analysis of cross-sectional parent survey	Yes	USA
Escorpizo et al. (2011)	Expert review	Yes	USA
Foley et al. (2014)	Questionnaire for specific population, cross sectional data	Yes	Australia
Forsyth et al. (2007)	Prospective questionnaire	Yes	United Kingdom
Gray et al. (2012)	Content analysis by expert panel	Yes	USA
Hammel et al. (2015)	Position paper	Yes	Canada
Hammell (2015)	Constant comparative qualitative meta-analysis from focus groups and research projects	Yes	Australia
Heerkens et al. (2017)	Expert review and scoping review	Yes	Netherlands
Heinemann et al. (2016)	Qualitative survey	Yes	USA
Heinemann et al. (2015)	Instrument development	Yes	USA
Hemmingson & Borell (2002)	Qualitative study done by interview	Yes	Sweden
Jaiswal et al. (2019)	Qualitative study using directed content analysis	Yes	Canada
Kramer et al. (2012)	Qualitative meta-synthesis	Yes	USA
Lai et al. (2016)	Qualitative approaches to develop and refine items	Yes	USA
Maciver et al. (2019)	Systematic search and synthesis	Yes	UK

Magasi et al. (2015)	Expert Academic Review	Yes	USA
Moore & Lynch (2015)	Scoping Review	Yes	Ireland
Noreau & Boschen (2010)	Expert Academic Review	Yes	Canada
Pope & Brandt (1997)	Book chapter	No	USA
Purc-Stephenson et al. (2017)	Meta-ethnography	Yes	Canada
Rantakokko et al. (2015)	Cross sectional interview	Yes	Sweden
Reinhardt et al. (2011)	Qualitative Literature Review	Yes	Switzerland
Robinson & Thompson (1999)	Book chapter	No	USA
Rosenberg et al. (2013)	RCT	Yes	Israel
Snogren & Sunnerhagen (2009)	Mixed method Survey	Yes	Sweden
Verdonschot et al. (2009)	Systematic review	Yes	Netherlands
Waldman-Levi & Erez (2015)	Preliminary/pilot study "counterbalanced" single-subject research design	Yes	Israel
Wee & Paterson (2009)	Qualitative study	Yes	Canada
Whedon (2000)	Expert academic review	Yes	USA
Whiteneck & Dijkers (2009)	Expert academic review	Yes	USA
Whiteneck et al. (2004)	Expert panel item review	Yes	USA
Wong et al. (2017)	Cross sectional observational study	Yes	USA

As a result of the process detailed previously in the methods section, we have created a typology of terminology, linked to ICF environmental and contextual factors, that describes contextual factors that affect participation of individuals and groups. The areas were defined by their ICF definitions, with colloquial terms used for explanation. The general terms became the categories. Two of the ICF areas addressing physical environments and products/technology were merged as the “physical obstacle” category in this typology because they both address different aspects of physical access. Note that both ICF sections can be seen in Table 3.2.

For the sake of clarity, the typology was broken up in the text here so that individual parts could be discussed. To view the typology in its complete form, refer to Appendix H.

Physical Obstacles

The physical obstacles section of the typology addresses various obstacles that by their presence or absence affect participation. We did our best to capture the core problem. Vertical distance, for example, covers anything related to how one must travel, upward or downward to reach something. In this way steps are addressed, but so are very high cabinets or storage in very low areas. When objects are stored or positioned in this manner, they are unobtainable without stepping up or bending down, which creates disadvantages for persons for whom these movements may be difficult such as people who have reduced balance, have orthopedic problems with the knees or back, or people of small or larger stature who have to do extra work to perform activities where vertical distance is an important aspect. Similarly, all of the terms are designed to represent not

one action but the core principle that links the environments and supports or diminishes participation.

There was a surprisingly small amount of literature that addressed environmental aspects related to sensory qualities. Whole categories of sensory experiences that might impact participation by limiting choices such as smells and tastes were not addressed in the literature included in this scoping review. From clinical experience, these were factors that this author has seen affect children and adults in the quality of their participation and in the choices of what they participate in. For these terms, we used supplementary literature that addressed these factors indirectly to support the clinical identification of such factors.

Several terms in the typology did not fit in any category that we had identified in the general terminology. When they were listed and analyzed for commonalities, they could all be addressed as factors specific to a task. Many of these had to do with object features or how necessary equipment was accessed. Other features of specific activities included timing- which differs from activity to activity. The timing, for example, that might be needed to participate in a game of “catch” differs from the timing needed to step effectively on an escalator without falling.

Table 3.2 Typology: Physical Factors

IICF category: Natural Environment and Human Made Change; Products and Technology Category: Physical Factors			
Term	Definition	Examples	Source of Terminology
Category A. Physical Space (6, 7, 43, 24 41)			
1. Vertical Distance	The amount of separation between two horizontal surfaces/planes	Stairs, low ceilings, height of cabinets, shelves, door lips, etc.	4, 10, 11, 13, 22, 42, 44,
2. Horizontal Distance	The amount of space between things, how physically far one must travel to get to desired outcome	Long or repetitive distances that affect performance, classes that are in distant classrooms within a school	8, 11, 10, 34, 36, 44
3. Width	The lateral measurement or extent of something	Narrow hallways, doorways, lacking space to turn wheelchair or walker	4, 17, 22, 44, 42
4. Orientation	The relative position of something or someone (especially oneself) to something else; also space to maneuver/ readjust positioning	Activities requiring certain positions that may not be attainable to all people such as mammography equipment that requires a woman with mobility impairment to stand	3, 5, 17, 4, 30, 11 This term did not come directly from literature but the concept was present. Author created term to capture concept.
Category B. Sensory Qualities (of Environment) (28)			
1. Cognitive/sensory cues	Lack of alternative usable cues for directions, communication, etc. when one sensory system cannot be used	Lack of audio component for walk/do not walk affects street crossing for people with low vision; lack of captioning during emergency instructions	23

2. Lighting	The arrangement or effect of lights	Darkness or brightness of light affect performance	23, 9, 19, 44, 22, 34, 21 25, 14, 42, 25
3. Visual Size	The size of an object or aspects of the object relative to seeing it	Threading a needle; small print on medication; small print in a book or sign	10
4. Noise Level	The amplitude of noise present in the environment	Extraneous noise making it difficult to pay attention to teacher in classroom, noise from train making it difficult to hear conductor	11, 19, 21, 22, 23, 42, 14 ,37
5. Contrast	Visual differences between an object and the background	Difficulty differentiating hands of a teacher signing from teacher clothing; differentiating edge of step	9, 42
6. Smell	Odors or scents in environment impact on participation in specific activities	Aversion to odors in cafeteria reduce participation in lunch	Not found in scoping review; ideas based on information from Baker, Lane, Angley and Young (2008)
7. Taste	Flavor of items in mouth	Taste of certain foods make it difficult for someone to participate in meals; aversion to toothpaste	Not found in scoping review; ideas based on information from Baker, Lane, Angley and Young (2008)
8. Texture	Feel or consistency of surface, object or substance	Grassy texture prevents person who is averse to this texture from participating (e.g., grass or sand)	Not found in scoping review; ideas based on information from Baker, Lane, Angley and Young (2008)
9. Movement	Activities requiring movement of surface on stable body; movement of body with moving surface or movement	Movement of school bus causes nausea; movement of vehicle makes maintaining body position difficult (e.g., while riding bus)	Not found in scoping review; ideas based on information from Baker, Lane, Angley and Young (2008)

Category C. Specific Task Parameters-Context Specific: How task is organized or set up			
1. Speed/Timing	Rate something moves or operates, a particular point or period of time when something happens	Getting on/off escalator, catching something thrown	Not found in scoping review; clinical experience supported by Kenyon and Blackinton, (2011).
2. Number of steps (actions) in sequence	Number of different events make up a sequence	Following recipe; making art project; task with too many steps	Not found in literature; clinical experience supported by Maynard and Hackel (1997)
3. Access to equipment	Equipment is usable with adequate equipment support, is accessible equipment for use, not stored out of sight, misplaced or abandoned and usable with the skills of the individual technology	No proper mounting system for Alternative and Augmentative Communication (AAC) device on wheelchair or other environments; AAC is left behind or disregarded, power wheelchair is not plugged in regularly	5, 22, 24, 30, 25, 39
4. Usability of objects	Aspects of objects and object use that promote or diminish physical interaction with one or more objects; include universal design characteristics	Writing utensil requiring pressure/ manipulation, opening packaging to get to something, buttons/snaps to do shirt, turning on light switch	5, 17, 19, 24
5. Object holding	Object that can be easily held or maintained in positions needed for effective use	Sustaining grasp long enough to drink a juice from a glass; holding a zipper to zip	30, 9, 17 wording comes from manageable grips, size of objects inaccessible equipment and design features
6. Weight of objects	Resistive force to lifting something caused by the force of gravity on an	Weight of objects makes carrying groceries, lifting drink to pour, getting dishes	11, 17, 42

	object.	from cabinet difficult	
7. Scheduling	Arrangement or plan of an event to take place at a particular time	Limited time for participation in desired activity (sign interpreted church service available once a week)	Not in scoping review; based on King et al. (2006)
8. Time	Amount of time that activity takes is unavailable to the person or group	Do not have time to get to child's school when parent works hourly or lives at a far distance	5. 13, 21 41, 12, 24, 42
9. Repetitiveness	Task that requires doing the same task for a prolonged time or repeating over and over leads to decreased quality or results in not completing task	Activity requires using the same technique or motions over and over (e.g., work in chicken slaughterhouse conveyor belt)	9, 11, 17, 21, 42
Category D. Physical Climate (4, 6, 14)			
1. Weather (inclement weather)	The state of the atmosphere in terms of temperature, atmospheric pressure, wind and moisture	Rain, hail, snow making it difficult to participate in activities	41, 19, 23, 34
2. Temperature	Degree or intensity of heat present	Warmth or cold interfering with doing activities	22, 42, 27, 41
3. Humidity	Amount of moisture in air	Humidity in air making it difficult for those with respiratory conditions to participate	21, 42
4. Air Quality	The air bound presence of a substance which has harmful or poisonous effects	Peeling paint, construction, etc. making breathing more difficult when attempting to participate in activities	14, 19, 23, 42, 21

Category E. Natural and Built Environment/Terrain (3,43, 44,18,19)			
1. Floor surface	Traction provided by support surface	Irregular surface with tree roots makes it difficult to maneuver wheelchair or walker, Marble floor makes it difficult for individuals to move across	4, 22, 42, 44, 3, 41
2. Clutter	A collection of things filling space	Unorganized office desk; “busy” classroom,	40,42, 22, 9
3. Traffic/ crowds	Variable movement in environment of other living beings and vehicles	Having to move through a crowd on a street or hallway make it difficult to move/change directions quickly	3, 6.7, 19, 23, 28, 30, 4, 11, 34
4. Obstructions (obstacles)	A thing such as object that impedes or prevents passage/progress; obstacle/blockage	Things in the way of walking or traversing path one has to move around/over/under	25, 42

Social Obstacles

Attitudes that represent social obstacles is an area that addresses factors that are of utmost importance (Fisher & Marterella, 2019) in their effect upon individual participation, but are often factors that act ecologically; that is, they influence the choices about whether or not to attempt participation more often than they change ongoing participation. Individuals, knowing that they may face discrimination, stigma, or even a language barrier may choose not to participate in activities that they otherwise may have wanted to take part in. For example, an individual who is deaf may avoid sports leagues because they are using verbal language that he or she does not have access to or may not

choose to participate for fear of stigma for being deaf. Because these factors work in such a manner, they are harder to quantify and may be harder to identify consistently. Markers should be created in the future to clearly indicate when these factors should be identified as affecting participation. For now, the most important marker of the existence of these factors is the individual's self-report of feeling these factors. The individual's perception and experience of these factors determines how the factor affects performance, regardless of other's perceptions (Simplican, Leader, Kosciulek & Leahy, 2015). This makes external measures, such as the assessment that we hope comes out of this typology, more complex. These factors would have to be separated from physical factors in such an evaluation as there is not a "goodness of fit" between the ratings for these two different types of factors (Fisher, Bryze, Hume & Griswold, 2005).

Another notable aspect of the "Attitudes" terminology is that there are although we attempted to avoid value-laden language in the terminology, there are some terms that can easily be classified as positive, such as "Amount of Support" or "Presence of Social Network" and other terms that would likely be perceived as negative such as "Stigmatization" or "Discrimination". These concepts were difficult to capture without using the value-laden terms, and were not found in value-free usage within the literature that we reviewed. For such terms, the absence of social networks or support would be barriers rather than facilitators and the absence of discrimination or stigma would be facilitators rather than barriers. The words chosen present a whole system of tenets related to how disability is viewed. Even carefully selected words may communicate increased value of one state (non-disability) over another (disability). Value laden

language is commonly used in regards to disability (Swain & French, 2000) and thus is difficult to avoid entirely in discussions of disability. It is important to be conscious of the “subtext” of term usage when we select to use words, even when using a typology that was developed conscious of these issues.

Table 3.3 Typology: Social Factors section

II. ICF Category: Attitudes Social Factors			
Term	Definition	Examples	Source of Terminology
Category A. Social factors (6, 7, 41)			
1. Amount of Support (Emotional/ Family/ peers/caregivers)	Supportive of trying, being involved, participating; emotional support/amount of support from family; quality of peer and friendship support; nurturing	Family brings child to playground or involves in sports to participate, encourage elder to be involved in clubs or go with to events at library, etc.	3, 5, 12, 28, 31, 39
2. Social expectations/ concerns,	Characteristic of how person is treated by their social surroundings- assumptions made about capacity, care-giving and participation	School aged child uses diapers although having success with adapted toileting; young adult spoken for when device taking a long time or stuttering; older adult discouraged from having romantic relationships by family	9, 41
3. Presence of social network	Existence of people who will assist and support when needed for emotional or physical/logistical needs	Grandparents watch siblings when mother takes child with disability to adapted sports team	Idea from Law, 2002, 1, 19, 3, 28

4. Routines	The typical manner in which activities are done, the timing and order of when they are done, where they are done, how they are done	Early dinner at nursing facility may not fit resident's time to eat or hunger; morning meeting after long bus ride to school may not be best for attention; lunch in busy cafeteria difficult for students who have difficulty with noise or social situation; everyone sitting in circle for group or on floor may be difficult for person but seen as expectation, sitting on alternative	2, 24
Category B. Attitudes (2, 25, 28, 30, 31, 39, 44)			
1. Threats by others	(direct) An intention to inflict pain, injury damage or other hostile action on someone in retribution for something done or not done	Fear of bullying restricts use of playground; threats of violence by police limit the interactions between police and communities of color	11, 19, 21, 22
2. Stigmatization	Others set some mark of disgrace or infamy upon	Limiting participation due to being perceived negatively by others (expressed displeasure when user of wheelchair boards crowded bus). Special seating surface makes individual "different"	5, 19, 33, 41, 39
3. Stereotyping	A standardized mental picture that is held in common by members of a group and that represents an oversimplified opinion, prejudiced attitude or uncritical judgement	Sales clerk treats adult with cerebral palsy who speaks with difficulty differently than they would treat others (rushes them, ignores them)	41

4. Marginalization	Treatment of the needs of a group or individual as insignificant or trivial-not worthy of engaging or addressing	Complaints that the paratransit (access-a-ride in NYC) shows up very early or late and is not reliable are not addressed for years by system; 30 years after ADA, only 24% of subway stations in NYC (Murray, 2017) have elevators	19
5. Discrimination	Unjust or prejudicial treatment of different categories of people	Clubs, organizations, jobs that exclude certain individuals on the basis of belonging to a group	19, 21, 43, 41 also in Widehammar et al., 2019
Category C. Communications (21, 37)			
1. Information	Information is purveyed in a manner in which it is usable to individuals	Written sign is incompressible by child who has learning disability; speaker at conference or no audio cueing at crosswalk for people with lower vision	11, 12, 17, 19, 23, 27, 41
2. Reading level/literacy	Written instructions are comprehensible	Court affidavit written in legal language; medical terminology used with patients who might not know words; manuals for machinery	17, 19, 23
3. Language	Using a system of communication compatible with the function and common use of the person communicated with	Classroom, museum, store not usable by person because the language they use is not usable there; AAC device that only produces English words	17

Services Systems and Policies

The services, systems, and policies section refers to the factors that are part of the structures that we organize our society and organizations around. These differ from social factors in the manner in which they manifest themselves. Rather than coming from individuals or communities, these factors manifest themselves in the “commons”- those things that we share within organizations, neighborhoods or societies. The cost or availability of resources generally are not based on individually held discriminatory beliefs but rather are a result of the general understanding and values of the specific community or society. Similarly signage and transportation are determined by the choices and resources of communities. Safety issues are not specific to individuals but to communities. These are complex issues since they act on multiple levels. Safety issues act in multiple time frames. From past experiences, safety may make individuals hesitant to attempt activities in the present (Kamphuis et al., 2008). Safety concerns may affect performance as it occurs; for example, an individual who may have to discontinue activity due to toxic fumes from a local paper mill. Safety concerns also act as potential limiters for future participation as they may cause or exacerbate body level conditions leading to increased struggle and disability (Emerson, 2007).

Table 3.4: Societal and Organizational Factors section of typology

III. ICF Category: Services, Systems and Policies Societal and Organizational Factors			
Category A. Financial Situation (34)			
1. Economic	The financial means necessary to participate in activities. Expensive adaptive or individualized equipment required to participate	Adaptive device is unaffordable or not covered by insurance	5, 8, 13, 27, 30
Category B. Systems and Policies (4, 44)			
2. Laws, Policies and Regulations	Rules, regulations and administrative codes; standards and conventions used by empowered agencies (work, community or government) that affect participation of individuals and groups	Denying reasonable accommodations to qualified individuals with disabilities so they can perform the essential functions of the job for which they have applied or have been hired to perform	30, 31, 43
3. Availability of Transportation	Multiple factors involved: transport to and from events and places that is accessible, usable, affordable and convenient	Difficulty with time and effort spent on transportation limits vocational setting possibilities for young adult with disabilities	1, 3, 4, 5, 6, 17, 18, 23, 26, 39
4. Accessible Signage	Purveying information in a manner that can be understood by all parties involved in the interaction, allowing for participation in the related activities	Written sign is incompressible by child who has learning disability or low vision; no audio cueing at crosswalk for people with lower vision	17; 42; 44
5. Variety of available activities	Availability of various activities that are accessible to individual for leisure, self-care, work, community life, education, etc.	Activities provided for socialization for residents at group home limited, lack of adapted activities in community leads to selection that is not meaningful to individual	2, 24, 21, term comes from King et al. 2006

Category C. Safety Concerns (41)			
1. Exposure to hazards	Presence of bacterial, biological, chemical, electrical, radiation, toxin, vibratory, viral, or otherwise known dangers within the environment	High risk decreases continued involvement in activities, workers in dry cleaners or nail salon, miners, etc.	19, 21, 42
2. Security	Environment provides perception of imminent danger against person or property	Changing participation due to fear of crime against oneself (such as not going to park)	11, 21,22
3. Harassment	Unsafe/disempowered by individuals or environment based on characteristics of individual or group, such as gender/gender identity, results in reduced participation or choices	Woman does not participate in expected social gathering for workplace due to feeling "hit on" and expectations for relationships with males from workplace	21

Support and Relationships

The final set of factors addresses the internal dynamics of how individual support and care systems affect the participation of those who operate within them. There is evidence, for example, that among students with disabilities, opportunities for autonomy granted by the care providers (families and schools) influences the level to which children attempt to participate and participate independently (Waldman-Levi & Erez, 2015). Staffing levels and training may be a factor in having the necessary support when it is needed. Supports for caregivers create the environment and the availability of assistance where it is needed so that people can participate in desired activities. These factors are not as much related to individual attitudes as they are to the logistics of the situations and environments that people operate from within. For example understaffing

or lack of time supports (such as daycare for other children) may limit the availability of a family or staff member to take a young adult to a sports league or dance class they want to participate in. Programming at a daycare center or daily routines in the home may be rigidly done in a manner that is “for” the child with disabilities rather than “with” the child, reducing the child’s experience with activities and feelings of competency. Table 3.5 displays the support and relationship factors.

Table 3.5: Typology: Support/Relationship Factors

IV. ICF Category: Support/Relationships			
Support and Relationship Factors			
A. Social Support (2, 14)			
1. Staffing	Access to help when needed but not so much authority that choices and actions are limited	Lack of 1:1 paraprofessional when needed in classwork, aid for home independence; too many adults during independent play	10, 12, 22, 3, 13
2. Opportunities for Autonomy	Involvement in decision making; permission to perform activity that one decides on rather than having it decided for you; integration into community	Long term care facility dresses clients passively for “efficiency”; child with cerebral palsy not allowed by Home Health Aide to free play with other children; special education counselor chooses classes rather than the student selecting classes	2, 39, 5, 25, 28
3. Supports for the family and/or caregivers	Ease of financial, temporal, emotional and physical burdens related to caregiving allows the family to be available more frequently and effectively	Stipend or lack of to help pay for adapted sports league; respite for families who take care of family members in the home	Links concepts of other factors but comes from King et al. (2006)

Discussion

The goal of this project was to create a typology of terminology from the published literature that occupational therapists could use to identify factors in the environment part of the person-environment-occupation relationship that affect participation. A great deal was learned in the process of reaching the goal. The process of reviewing what literature exists on this subject provided insight into how disability is currently addressed by people with disabilities, therapists, and society. Identifying the terms used highlighted the aspects of the environment that received attention in studies and literature. As we organized and reorganized the information, it also became clear that it would be necessary to expand the way that the typology would be presented to better integrate it with current ideas and other systems, in particular with the ICF. Finally, the process led to a discussion of the different types of obstacles. There are considerable differences in the way that different types of environments interact with the individual to facilitate or diminish participation.

The impact of the environment on participation as a whole has been explored by many fields. The studies within the scoping review by medical doctors revealed interest in contextual factors. Blauwet et al. (2017) included factors such as socioeconomic status, social attitudes and transportation as well as the absence of particular equipment. Colver et al. (2012) and Forsyth, Colver, Alvanides, Woolley, and Lowe (2007), also medical doctors, did not classify aspects of the environment so much as they inventoried the specific absences of different adaptive features or equipment. This might be more aligned with the medical model's prescriptive manner of "solving" problems (Conway &

Halota, 2008). Many of the design, engineering and architecture articles screened were not selected due to a lack of language regarding environmental factors. These were also “solution oriented”. Articles selected with authors in these fields such as Pope (1997) and Robinson & Thompson (1999) while presenting some important concepts, tended to offer solutions but were older, therefore offering solutions with less relevance to the current context.

The rehabilitation therapies and rehabilitation science also have created a body of literature in regards to the environment. The work from these groups, including occupational therapy, tend to fall into two different schools of thought. One school of thought consisted of literature that focused on the person in the person-environment-occupation interaction; some of these, such as Carignan, Rousseau, Gresset, and Couturier (2008), offered less useful terminology regarding the environment. The other school of thought, mostly from the rehabilitation community, focused on the role of the environment in the person-environment-occupational interaction. Of this literature, a large number of studies (Akyurek & Bumin, 2019; Anaby et al., 2013; Chien, Branjerdporn, Rodger, & Copley, 2017; Kramer, Olsen, Marmelstein, Balcells, & Liljenquist, 2012; Noreau & Boschen, 2010; Rosenberg, Bart, Ratzon, & Jarus, 2013; Wong et al., 2017) were done by occupational therapists and considered mostly broad, generalized areas rather than more specific features. In many ways, these broad categorizations, consciously or not, mirrored the broad categorizations provided for the environment by the ICF model. This also may be due to the difficulties noted in Whitehead and Dijkers (2009) in regards to the complications of identifying, classifying

and using specific wording for the complexities involved when considering the environment. Also among the studies done by rehabilitation professionals there were some articles that provided more specific terminology for factors, often so specific that the factors were identifying solutions for the difficulties (voice output technology as a solution for example, rather than communications, what the problem is). These articles may have been influenced by prescriptive philosophies, seeking to “solve” the problem at the individual level through extremely localized consideration of context rather than identifying more generalized features that could increase accessibility of a larger group of people. Another school of thought was reflected in articles that utilized terminology for the environment, but focused only on more universal aspects of the environment. Articles flowing from this school of thought did not attempt to provide terms for more generalized use but rather used the terms internally to describe the aspects of the environment of interest to the articles.

Literature that included environmental terminology covered not just physical factors, but also social, societal, and systematic factors. Literature not related to physical factors made up a surprisingly large part of the canon of literature on the subject. Social factors such as amount of support and social networks, societal attitudes such as stigma and discrimination, communication of information, availability of transportation, and staffing concerns were repeatedly found in literature (Arvidsson, Granlund, & Thyberg, 2008; Batten, Lamont, Kuys, McPhail, & Mandrusiak, 2019; Coster et al., 2013, Hammell, 2015, Waldman-Levi & Erez, 2015; Whedon, 2000). On the other hand, tangible, physical factors that are sometimes clinically cited were addressed by less

articles or, in some cases, were not addressed at all. For example, the majority of the sensory based factors were not addressed in resources included in this scoping review. Rather, documentation of sensory difficulties was found in other articles (Baker, Lane, Angley & Young, 2008; Kientz & Dunn, 2012) known by this author. These articles were not captured in the literature search process of the scoping review because their focus was on remediating individual responses to the environment rather than considering changing the environment.

As each of these four categories of factors differs significantly in how they reveal themselves, so too are the types of interventions that occupational therapists may develop to address these factors. Physical factors are often changeable by addressing the physical aspects of the environment or objects involved. Attitudes require a change in the thought processes of others. This often is addressed with programs that educate persons whose attitudes are affecting participation and integrating people who were previously excluded in the activities. Societal and organizational factors require broad change and may lead occupational therapists to build advocacy, community organization and social action skills for people working with them. Interventions related to social supports may involve organizing caregivers and caregiving organizations to create more effective approaches to providing supports.

The absence of literature found in this search on multiple physical aspects of the environment might be related to the manner in which those difficulties are perceived. Traditionally, the culpability for lack of participation due to physical aspects of the environment has been placed on the individual by society as a whole and the medical

model in particular (Conway & Halota, 2008). Thus, the focus of assessment and intervention has been on the individual. This focus seeks to identify what individual deficits are and how they can be remediated so that they could better fit the environment. The other perspective could be how could the environment could be changed so that it would better fit the needs of a variety of individuals and groups (Conway & Halota, 2008). Consistent with this, some aspects such as the speed/timing needed to perform an activity, the scheduling/time of day that activities occur, or the number of steps in a sequence were not found in the literature and were added based on the author's clinical expertise, with documentation outside of the scoping review used to support the ideas presented (King et al. 2006, Law et al., 2002; Widehammar, Lidström, & Hermansson, 2019).

Different types of obstacles act on individuals in different manners. Two types of obstacles were identified in this study, and it is evident that a third type exists as well. The first type of obstacles we identified are ones that may act as immediate impediments. Many physical obstacles may be seen this way. For example, getting through narrow turns or moving long distances or on unstable surfaces may affect efficiency, effort, effectiveness, safety and or independence, even causing task breakdown (Fisher, 2003). Other obstacles are more ecological and impact the willingness of an individual or group to initiate or attempt participation. Most of the social barriers act in this way (Rimmer, Riley, Want, Rauworth & Jurkowski, 2004). Rather than interfering with participation in the process of attempting to participate, due to foreseen consequences, these social barriers act to influence the individual or groups to choose not to attempt to participate.

The barrier acts before the attempt to participate, diminishing the likelihood of trying the activity. Interestingly, in many places, violence is legally codified in this manner. While “battery” indicates the act of physical violence, “assault” is used for the threat of harm; it is understood with assault that the threat of harm is used, with or without the violent act, to influence the behavior of those the threat has been made to (Byrn, 1965). Similarly, social expectations, stigma, difficulties with information, availability of transportation, potential exposure to hazards, and social supports among other factors may act to discourage participation and may diminish the chances that it is even considered. This is a different perspective than we usually take toward obstacles. By identifying an obstacle to participation before the attempt at participation takes place at all, occupational therapists can be working at a primary level to improve the participation of individuals and groups with disabilities.

The third type of obstacle are restrictions that do not permit the person to participate of their own volition. If the time, movement, or resources necessary to participate are controlled by others, the availability of participation is limited. This occurs frequently with people who have developmental disabilities (Badia, Orgaz, Verdugo, Ullán, & Martínez, 2011). This also may occur in conditions with limited resources or when the activity does not match aspects of the physical location well. None of these classifications of obstacles is mutually exclusive. Obstacles to participation that are immediate this time, creating problems for the individual trying to participate, will become ecological next time, when the individual decides not to attempt participation due to difficulty. Restrictions on performing an activity created by others currently may be

secondary to immediate factors in the environment or may cause hesitancy before attempting to participate in the future. For example, if getting to an accessible station on the subway with clients who use wheelchair is difficult for the employees at a day program, they may choose to restrict trips using the subway. Their attitude about this may, in turn, influence the client's choices about using the subway in future activities.

Implications for Practice

The ambition of this project was to create a usable typology of terminology describing environmental factors that facilitate or diminish participation for individuals and groups. The typology creates an effective way to access the terminology to describe contextual features and their impact on participation. In the United States, this typology was meant for use by the occupational therapy community as a supplement to the terminology already available from the American Occupational Therapy Association (e.g., the Occupational Therapy Practice Framework; AOTA, 2014). However, the terminology is by no means meant to be limited to occupational therapists or to the United States. The availability of such language about context and environment will increase consideration of environmental factors by occupational therapy practitioners worldwide (Hammel, Magasi, Heinemann, Gray, & Hahn 2015; Magasi et al., 2015), and perhaps by other professions. Specifically, the detail of environmental factors included in this typology will add to occupational therapy assessment and intervention and will result in more effective and efficient interventions for individuals with disabilities as well as facilitate environments that allow for greater participation for more people overall in the

US and elsewhere (Hammell, 2015; Mousavi, Forwell, Dharamsi & Dean, 2015b; Pereira, 2017).

Implications for Research

The creation of the typology was done with a scoping review of the literature, and measures of practicality (usability) and utility (usefulness) were not performed during the initial development. Before going forward with promoting the use of this typology, it would be beneficial to select a variety of people in the field who would potentially utilize this terminology, let them trial the use of the terminology and then ask for feedback from those who have used it. Ideas for how this may be done will be detailed in Chapter Four. It would be interesting to engage patients as stakeholders in this process and understand how they perceive it, but may require a specific subset of stakeholders who are familiar with the terminology currently used by therapists. Continued research to refine and improve the typology will be helpful in its further development.

The ultimate research goal for this project would be to develop a standardized assessment utilizing the terms. This could be modeled in the AMPS format (Fisher, 2003), using Likert scaling with intensive use of RASCH analysis to provide quantitative numbers of the degree that contextual factors support or limit function. Factors that do not fit this format, particularly ones that are more ecological may fit better into a descriptive format, such as the one used by the REIS (Fisher, Arriaga, Less, Lee, & Ashpole, 2008). More details on what this process would entail and the costs are available in Chapters Five and Six.

Limitations

There are several potential limitations to this work. Three particular limitations are notable. These have to do with the methodology for creating a typology, the lack of expert consultations or focus groups, and limiting the scoping review to published literature. Many of these limitations were due to limited resources in terms of time and budget.

Our research on the methodology to develop this type of typology did not yield a clear answer. Several contacts involved in the development of the performance skills in the Occupational Therapy Practice Framework (AOTA, 2017) were consulted (personal communication with Anne Fisher, June 3, 2018; personal communication with LouAnn Griswold June 25, 2018). The methodology used for determining motor, process and social interaction skills was a “focus group” like gathering of experts in a guided discussion, watching videos and describing what they saw. However, it was not possible to utilize this technique for this doctoral project due to logistical constraints such as time and lack of budget. Nor did literature searches yield a standard of practice for creating a typology. Without this standard of practice, we selected a scoping review methodology as a structured way to identify environmental terminology from a variety of published resources. However the specific strategies to identify and select terminology from the resources included in the scoping review was created by the author without example of a similar model.

Using expert panels and focus groups that represent stake-holding parties, such as persons with disabilities, would add different perspectives to the process of developing

the typology and would make the selection and classification of information sources and terminology less dependent on the perspective of one person. This is consistent with the optional sixth step for scoping reviews detailed in the article by Arksey & O'Malley (2005). The typology could benefit from adding the perspectives of more people, with different areas of expertise and different experiences. Creating opportunities for this type of feedback should be part of the plan going further with the typology (see Chapter 4 and 6).

As previously mentioned, the information gathered in this project was done utilizing scoping review techniques. This scoping review, however, was limited to published and accessible resources. As publishing is heavily academic or research based, the only expertise available from clinicians involved in the direct selection of articles and terminology was by the author himself. We could not expand the types of sources utilized in the scoping review due to limitations, primarily in time available. An advantage of scoping reviews is that they allow for the use of various types of information, which would garner multiple perspectives. It would be advisable to expand the scope of the types of information included in future endeavors similar to this one.

A frequent criticism of the Occupational Therapy Framework is that terms utilized in the framework are neither mutually exclusive (rule of precision) nor fully individual (one may be assigned to another- parsimony) and therefore lack the consistency necessary for defined terms (Nelson, 2006). Further criticism comes from the system of classifying terms into categories when they may fit in other categories as well and not classifying all relevant particulars (Nelson, 2006). Viewed this way, these

problems similarly exist in this typology. However, it is important to note that if we consider occupation to be a complex transactional interaction that differs within varying contexts, it is not only expected but necessary for there to be some level of overlap and fluidity between the borders of categories and terms.

Conclusions

In this project, we developed terminology for environmental and contextual factors that may influence participation for individuals and groups. To do this, we used a scoping review methodology and integrated theory from the World Health Organization's ICF, the Person-Environment-Occupation theory, and the Capabilities model. Through the process of creating this typology, a considerable amount was learned about the underlying beliefs and perceptions that form the basis of how we understand the interaction between individuals or groups with the environment and different occupations forming the basis for participation in roles. Scoping reviews allow for iterative processes; in this scoping review this occurred as information taken in during the process of creating the typology was reintegrated into the typology itself, thereby transforming the manner of categorization and presentation of the information.

Hopefully, this typology can be the beginning of a discussion that will lead to increased consideration of how the environment interacts with individuals or groups and the activities that they are undertaking to facilitate or diminish participation. Occupational therapy at its core is about facilitating the participation of individuals in the activities that make up the roles in their lives. These activities occur within real contexts. It is often the context or the activity parameters, rather than the individual, that limit the

participation of individuals in their chosen roles and activities. Thus it is vital that we as occupational therapists continue to build our understanding of how the environment impacts participation which may change our perspective on how participation occurs for an individual. This typology may improve our evaluation skills, perhaps encouraging the creation of tools designed to identify agents in the environment affecting participation and perhaps quantifying their effect. Evaluations that more fully account for all of the aspects that are involved in participation yield better information to guide development of interventions. Our interventions, then, can be based on a better understanding of all of the factors involved, potentially making them more effective. As a result, we ultimately would be making a greater difference by improving participation for more than just individual clients but instead for many people. The change in our language can change our philosophy, the change in our philosophy can change our practice, the change in our practice can change lives.

CHAPTER FOUR: A Plan for Program Evaluation of “Uncovering the Obstacles”

Introduction

This is the plan for program evaluation of “Uncovering the Obstacles”, a program that involves the creation of a typology of terminology for occupational therapists (and potentially others) that describes contextual and environmental factors that affect the participation of individuals and groups. The initial typology has been developed but as part of the process of creating this document, refinement has always been part of the plan. As it is still developing, the evaluation is mostly being used for formative purposes, in order to direct modifications and changes meant to refine and improve the typology before its presentation for use by the occupational therapy community. The evaluation also will gather, to a lesser extent, summative feedback indicating to what degree the typology is effective in its early stages. The results of this evaluation plan will lead to a stronger, finalized typology for widest dissemination to the occupational therapy profession.

Vision for the Program Evaluation Research

The program evaluation research will be utilized in several manners. In the short term the feedback will be used to adjust and adapt the typology to make it more usable and more useful. This should be reassessed in the short to intermediate term to see if the changes made improve the acceptance of the typology of environmental terminology. This process may be repeated until the typology is stably accepted at a rate that the authors feel is appropriate.

In the intermediate term, the type of data produced by this program evaluation

could be used to influence and convince significant stakeholders and “opinion leaders” to adopt this typology based on data indicating compatibility, lack of complexity and trialability (usability), and the “relative advantage” of the novel features that the terminology in this typology offers (utility). This is based on the Diffusion of Innovations Theory (Rogers, 2010). This would mean introduction of the typology into some local institutions, such as an OT or COTA program or into a local clinic or homecare provider.

In the long term, data from a program evaluation such as this may be helpful in getting the typology published, particularly if some of the stakeholders that participate in the assessment are considered “opinion leaders” or are respected in the academic field. The ultimate goal is to increase the consideration of environmental factors to foster evaluations and interventions that better address the influence of the environment on participation. The vision is reflected in the logic model in figure 4.1.

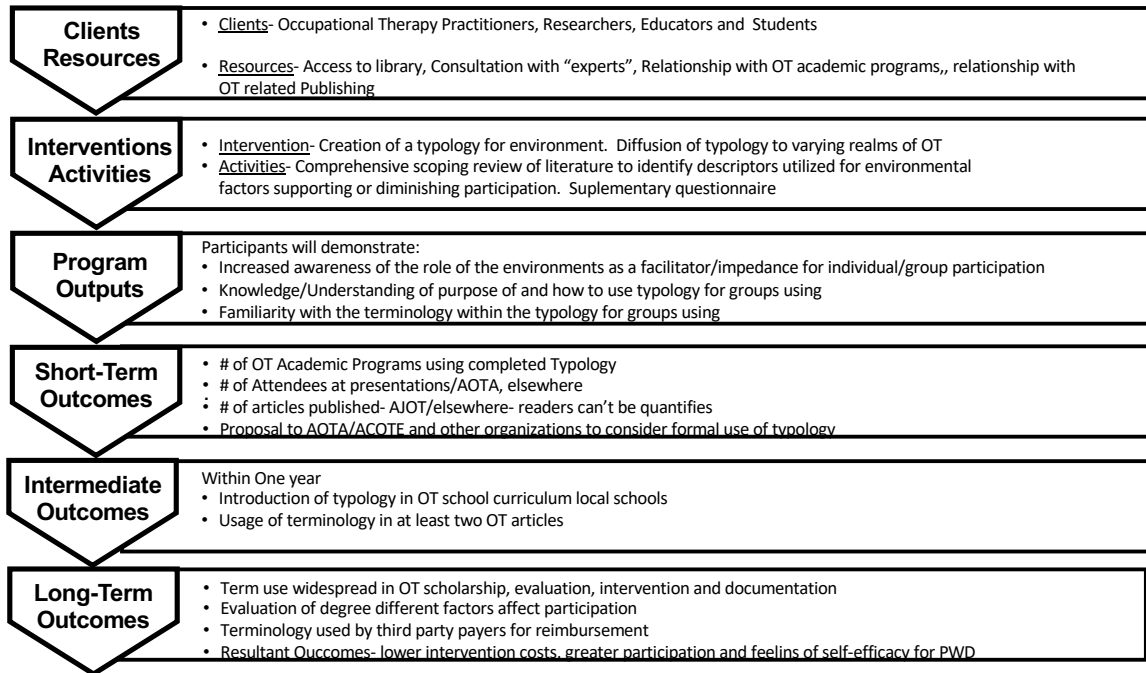


Figure 4.1. Simplified logic model program evaluation

Simplified Logic Model for Use with Stakeholders

The above simplified logic model provides an overview of the program that will be evaluated. The logic model summarizes “Uncovering the Obstacles” typology development and evaluation. The creation of this typology via a comprehensive scoping review of literature is the first step. Then, this typology will be evaluated for usability and utility by a group of OTP academics, students, practitioners and researchers to improve the quality of the typology and increase the likelihood of its diffusion and widespread usage. This will increase the chances that the terminology can be adopted by some opinion leaders, presented to students and staff, and perhaps in the intermediate term be included in classwork. Hopefully these intermediate term developments will help lead to publications, presentations and ultimately adoption by the national

organization and widespread usage. The end-goal of the program is to diffuse the typology amongst occupational therapy practitioners to increase the consideration given to the role of the environment in the person-environment-occupation interaction.

Engagement of Stakeholders

Rationale for stakeholder involvement and program evaluation research. This project notes and attempts to bridge the gap in terminology available to occupational therapists to identify contextual factors. There are multiple stakeholders whom this may affect. Consulting stakeholders is essential for developing health related programs (Kelly & Johnson, 2006). The feedback from the stakeholders will ensure that the development of the typology considers all of the concerns of the various communities that would be affected by the typology. The following communities are important stakeholders whose consultation would help to facilitate the creation of the typology that is a more useful tool. The communities identified were 1) professors in occupational therapy programs, particularly those familiar with typology and assessment 2) occupational therapists who are experts in environmental modification and inclusive design 3) leaders in disability rights from within the disabled community and 4) occupational therapy managers, particularly in areas such as homecare where therapists are more likely to be able to assess and address contextual factors. The guidance sought in this case will help develop both the typology and the program used to evaluate the typology. In order to ensure clear, concise guidance on this, one representative of each of those categories will be selected.

Means of communication for stakeholder feedback. The author will contact each of these individuals by e-mail and/or phone. Many are personal contacts, reducing the effort required to locate these people and enhancing the likelihood that they will respond. They will be given a short description of the program and asked if they would like to participate. For those who opt to participate, open-ended questions will be provided in written form on the e-mail that will allow for a wide variety of feedback.

Method of engagement for stakeholders. All stakeholders will be provided with the typology and supporting documents. They will answer questions sent by e-mail. This allows time for thought and consideration of each question and allows them to operate on their own schedule. The different stakeholders have different experiences and different expertise and can provide different insights that may be helpful to the program. Therefore, the types of questions provided to each set of stakeholders will be unique.

- 1) Professors (1 of each) from occupational therapy and occupational therapy assistant programs will be asked questions regarding the usefulness of the typology in their curriculum, how well it fits with the other curriculum, the expected ease or difficulty that students may have with it, and what changes would be helpful in making the typology more useful and usable for them. An academic who has a background in assessment and typology creation can also be asked about the processes involved in validating and operationalizing terminology for use in evaluation.
- 2) Occupational therapists who are experts in environmental modification and inclusive design are already practically assessing and modifying

environmental factors (although less of some of the other contextual factors) and can provide useful information on whether the terminology in the typology matches the factors that they typically see, whether the words as they are presented and defined are easily usable, as well as further details or overlap between factors and factors that they commonly see that do not fit within any of the categories provided.

- 3) Leaders in disability rights need to be a part of the process. In general, the medical fields and rehabilitation align with the philosophies of bioethics (Silvers, 2003). Bioethicists works on an underlying assumption that disability is intrinsically bad, and that reducing the incidence of disability is unquestionably good (Silvers, 2003). Disability rights activism in its purist form understands disability as being imposed upon the disabled individual by society only (Silvers, 2003). It represents the opposite side of the coin from bioethics, which is strongly represented in rehabilitation. The typology is designed to supplement current OT practices, not to replace them. Disability rights leaders should be asked what are the most important and significant barriers, how we balance what is good for one person (curb cuts for someone with a wheelchair) and difficult for another (curb cuts for a person with low vision), and if they feel that factors are discrete and able to be separated or are part of a greater whole.
- 4) Occupational therapy supervisors are aware of constraints such as regulation, auditing and reimbursement as well as policies and procedures of their

workplace. They look at outcome measures for success and are made aware of concerns of their staff. This gives them a unique perspective in implementing use of the new terminology. They will be asked to respond to questions regarding how well the typology can fit in their current documentation; how well the typology will be usable with second-party payers, auditors and regulations; whether they feel the new typology will put extra burden on the therapists and how therapists could be supported in using the new typology.

Program Evaluation Design and Methodology

The program evaluation will be done using an online survey with Likert scaling. The practicality of the online format and the use of Likert scaling will maximize responses by making it easier and requiring less investment of time and effort by the participants (acknowledging that most therapists are pressed for time). There will also be feedback mechanisms that will allow for stakeholders to have input on the questions and design of the program evaluation.

Program Evaluation Research Questions by Stakeholder Group

Purpose. The program evaluation of the typology created in this doctoral project (see Chapter 3) has formative and short-term summative aspects. The formative evaluation will collect information about aspects of the terminology that will be useful in promoting the dissemination/diffusion of the terminology within the OTP community. The results of this formative evaluation will support revisions of the typology so that it can be more widely disseminated throughout the occupational therapy profession. The outcome-based

data that will be gathered will relate to the immediate results of exposure to the typology. This may provide information regarding the potential for the typology to expand the clinical reasoning processes of therapists that are participants. It is important to recognize that the information gathered at this stage on outcomes is very preliminary and may or may not be consistent with outcome-based measures during the intended fruition of the program, which may be years away. However, it should give an idea of how the terminology will be received and interpreted in the short term. Table 4.1 presents the types of research questions considered.

Table 4.1. *Types of research questions asked to Stakeholders by Group*

Stakeholder or Stakeholder group	Types of Program Evaluation Research Questions
Formative/Qualitative Questions	
OTP Professors, academics (COTA or OTR)	<ul style="list-style-type: none"> ● Are the new terms conceptually easy to understand for new therapists? Are they too complicated? Are they redundant with other concepts that students are already learning or have already learned? ● Do the new terms fit in with the curriculum that I am teaching? The general occupational therapy curriculum? ● Are the new terms demonstrable/trailable? ● Will these new terms be useful in helping evaluate for and provide interventions?
OT Students (COTA or OTR)	<ul style="list-style-type: none"> ● How do these new terms fit with the framework and curriculum I have already learned? ● Will I be able to use these terms easily?
OTP Directors/ Management	<ul style="list-style-type: none"> ● How do these new terms benefit the participants in occupational therapy at my site? ● How do these new terms benefit the providers of occupational therapy at my site? ● How much training do I need to provide for my staff to use this terminology effectively/efficiently? ● What type of training do I need to provide? What type of resources will I have to train staff? What type of support will I

	<p>need to give for usage?</p> <ul style="list-style-type: none"> ● How will the services provided using this terminology be reimbursed?
OTP staff level	<ul style="list-style-type: none"> ● Is this new terminology easy to use? ● Is this new terminology effective at describing the factors that it claims to be describing? ● Will this benefit my clients? If so, how?
OT administrators, policy makers and advocates-national or regional	<ul style="list-style-type: none"> ● Are these terms consistent with occupational therapy's stated philosophy? ● Do OTPs using the terms to evaluate and provide intervention fall within the defined scope of occupational therapy services? ● Does this terminology fit with the current practice framework? ● Is addressing this area important for occupational therapy's future vision?
OT Researchers	<ul style="list-style-type: none"> ● Are the terms defined so that may be studied and used for research? ● Are these terms valid in describing what they claim to be describing?
Summative/Quantitative Questions	
OTP Professors, academics (COTA or OTR)	<ul style="list-style-type: none"> ● (after introduction) Did students gain knowledge of terminology? ● (after the introduction) Did students gain skills consistent with the new terminology in assessing the environment and providing intervention relative to the environment?
OT Students (COTA or OTR)	<ul style="list-style-type: none"> ● Is the terminology usable at my fieldwork site? ● Will the terminology be usable at my work site?
OTP Directors/ Management	<ul style="list-style-type: none"> ● Do staff trained in the new terminology show knowledge of the terminology? Do they present with skills related to utilizing the new terminology? ● How much monetary resources will be needed to facilitate and support the implementation of this terminology? How much staffing/time resources will be needed? ● How will the services provided using this terminology be reimbursed?
OTP staff level	<ul style="list-style-type: none"> ● How much training will I need to use it? ● How much time do I need for the added responsibilities related to using the terminology? ● What is the difference in time (increase or decrease) in my documentation?

OT administrators, policy makers and advocates-national or regional	<ul style="list-style-type: none"> ● Will services provided using this framework be reimbursed? Do reimbursement agencies need to be consulted or trained in order to reimburse for services provided relative to this terminology? ● How much monetary resources will be needed to facilitate and support the implementation of this terminology? How much staffing/time resources will be needed?
OT Researchers	<ul style="list-style-type: none"> ● Are these terms operationally defined so that the terms are used in a consistent manner?

Research Design

The proposed program evaluation is primarily formative. It is looking at the processes involved in the creation of the typology of terminology for environmental factors rather than considering the results of the program which are mostly long term and dependent on short and intermediate term events, making them very difficult to measure in a useful manner. Some quantitative measures will be created and used when the program takes shape. Summative information is important to ensure that the program is having its desired effect. For the purposes of the project and keeping within reasonable time constraints, the type of summative information that can be gathered is very preliminary and will be reviewed cautiously. As the typology develops and diffuses, outcome-based measures specific to the various occupational therapy settings can be used at that time to measure the usage of the terminology (how often used), the added or decreased costs and time in rehabilitation per patient when using the terminology, and even understanding of the terminology among different groups of OTPs. Since there is a wide variance in whether, to what degree and how idea acceptance diffuses, it would be unwise to plan assessments at this time, since they may not match the context within

which the typology is used in the future.

The main purpose of this evaluation will be to gather information related to the utility and usability of the terminology. This relates to many of the anticipated questions from various groups regarding the terminology. Being a formative and exploratory type of evaluation, the evaluation utilized will be qualitative. The type of qualitative evaluation that will be used will be a Likert scaled questionnaire. Statements will be made that relate to the anticipated questions of various stakeholder groups. The Likert scale will provide six levels of agreement 1) Strongly Agree 2) Agree 3) Neither agree nor disagree 4) Disagree 5) Strongly Disagree or 6) Not applicable. An example is available in figure 3.4

Evaluation Sample

Question for OTPs
Circle if you agree

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Not Applicable
New terminology is easy to use	😊😊	😊	😊	😞	😞😞	X
Terminology is describing factors that relate to my clients	😊😊	😊	😊	😞	😞😞	X
Terminology will benefit my clients	😊😊	😊	😊	😞	😞😞	X

Figure 4.2 Evaluation Sample

The questions concerned with outcomes are based on the concept that having reviewed the typology and the reasoning behind it, there will be some level of change in the individuals participating in the evaluation. By using a multiple-choice format with an option to select as many choices as desired and an option to add in one's own under "other", information can be gathered to quantify the amount (percentage) of people within the group whose outcome matches the desired effect of the program.

Methods

Number of anticipated participants. In this sample of convenience, 20-25 participants would be optimal to provide diverse information without creating an overwhelming workload or too much information that might hinder rather than assist the development of the terminology. There should be more than one representative from each category of OTP: COTA student, COTA, OT student, OT, academic (OT and COTA professors), management/supervisor, OT administrator, OT advocate/national administrator, and OT researcher. Information will be gathered for groups as well as for the whole, so the "weighting" of a responses for a group that may represent more members than it would proportionately represent within the OT community will be identifiable within the averages for the whole group.

Inclusion and exclusion criteria. For now, the terminology is intended for the use of occupational therapists and requires some level of background knowledge and understanding of occupational therapy principles. Therefore the inclusion criteria will be persons in occupational therapy (e.g., OTS and COTA students at the fieldwork level, occupational therapy practitioners, administrators, advocates, academics and researchers).

The exclusion criteria will be students before the fieldwork level (since they do not have clinical experience yet) and people who are licensed COTAs or OTRs but have not been involved in any aspect of OT practice for 5 years or greater (as they will not have a feel for the current environment).

Recruitment. The proposed recruitment strategy is to outreach to several influential occupational therapists who are available to this author. These OTPs are directors of local occupational therapy programs at two schools, fieldwork coordinators at a COTA and OT programs, directors of occupational therapy at outpatient hospital-based facilities and homecare agencies, and a researcher. They will be provided with a presentation (live/livestreamed/video) with the opportunity to ask questions live or by e-mail. They will be asked if they want to participate in the project. If they choose to participate, they will be asked to select students or practitioners to fill out the questionnaire.

Confidentiality/Security. The information will be collected anonymously and securely using an online survey tool such as Qualtrics. Qualtrics has the features needed for data gathering; follow up activities such as making sure the participants respond in a timely manner, completing the survey and having all questions answered; secure data storage; and preliminary descriptive data analysis. There will be only enough identifying information on the form to be able to classify what type of position the respondent is in and how long they have been practicing for data analysis purposes. Analysis of the data and reports will be done on a password protected computer with access to the programs and information only available to the program analyzer.

Background Information and Supporting Documentation -

The following information will be provided to those who are be involved in the evaluation process:

- 1) Occupational therapy (OT) recognizes that participation in life's roles and activities is the result of interactions among individuals, their activities or occupations , and the environment or context within which they occur (Strong et al., 1999).
- 2) The language and methods to describe and analyze the characteristics of the environment that support or limit client participation in occupations are not as well developed in occupational therapy (Whiteneck & Dijkers, 2009).
- 3) Though individual factors are a valuable source of information in regards to creating intervention, the lack of common language diminishes the importance of environmental interaction with participation, thereby decreasing the likelihood that therapists will consider all of the possible factors involved (Nota, Ferrari, Soresi & Wehmeyer, 2007). With a focus on the individual's role in the person-environment-occupation interaction important aspects of evaluation and intervention may be missed, possibly diminishing the effectiveness and efficiency of the efforts of OTPs (Mallinson & Hammel, 2010).
- 4) By creating terms for the factors within the environment to go along with the other performance factors, we can further encourage therapists to view

the problem, assess and intervene on the environmental level more frequently and in a more structured and articulate manner (Mousavi, Forwell, Dharamsi & Dean, 2015b).

- 5) The typology itself will be provided shortly before the evaluation with some supporting documentation.

Formative or process research data gathering. As described previously, the survey will use Likert-scale questions with a one-to-six scale. This gives a selection of choices but is closed-ended. There will be two to three possible questions that are open ended which will provide opportunities for feedback that might not otherwise be provided by the fixed questions. The survey will be offered by e-mail invitation. Reminder emails will be sent 5 and 10 days later to all survey recruits. The “opinion leaders” who will initially receive the survey will be asked to select other practitioners that match the criteria to be participants in the survey. Those recommended by the opinion leaders will be sent invitations via email. All of the data will only be available to the administrators of this program (password protected). Currently, Qualtrics appears to have the features needed to perform the survey in the intended manner.

Formative or process data management and analysis. Verbal responses are not being used so transcription will not be an issue. By using the Likert scale data, responses can be numerically quantified to indicate level of perceived usefulness and utility of the typology. The intent is to keep the technology use simple and put responses into a spreadsheet that can perform necessary mathematical operations on the data. These descriptive statistics will include the mean for each grouping of therapists and the mean

for all of the therapists together, the median for all of the therapists together and standard deviations for individuals and groupings of therapists from the mean so as to see if any individuals or groups are outlying (and try to determine why). By looking at the responses by grouping (e.g., students, academic staff, practitioners, etc.), amount of years of practice, and in total for individual items in the survey, the feedback can be used to evaluate how well the terminology may be accepted as usable and useful and what aspects might need to be adapted or changed.

Summative or outcome research variables and measurement. As previously mentioned, the summative research for this project will be a lesser part of the total evaluation process, but is important for keeping the project consistent with its stated goals. The manner in which outcome measures can be created at this stage of the program is by providing a sample of the typology along with a short explanation of the rationale and purposes of the typology to the sample that will be completing the evaluation. This will be done by providing multiple choice questions not limited to a single choice and with the option for providing one's own answer (open ended) by selecting the choice of "other," which will lead to the opportunity to write in another answer. The reason for the preselected choices is to reduce the variance in expression in finding out whether people were identifying changes in themselves related to their experience and the changes made in clinical reasoning related to use of the typology. The open-ended selection allows the participants to offer novel input that is not included in the preselected terms. Currently, Qualtrics appears to have the features necessary to perform the survey in the intended manner.

Summative or outcome data management and analysis. The resources available on Qualtrics should be adequate for collection of data including a tally of how many people selected each of the choices provided. By using the multiple-choice format, we can tally how many people chose an answer. As an example the question might be:

What ideas or concepts in this material was novel to you?
A. Assessing how the environment affects participation rather than the person's ability to participate within the environment
B. Adding focus in interventions on modifying the environment
C. Considering the effects on participation of diverse aspects of the environment such as material use and community organization
D. Other _____

Figure 4.3 Sample Outcome related question

Using descriptive statistics we can determine the frequency of each response, both within the total evaluation and within the various categories of therapists evaluated. This will be helpful in determining how well each of the goals of the program are being met and allowing for unforeseen outcomes to be included as well. The assumption made here is that the frequency of the identified outcomes among those evaluated correlates with the strength of the outcomes.

Evaluation for Disseminating the Findings of Program Evaluation Research

The research has both internal and external usages. The formative data is useful “internally” for the authors in helping to refine and modify the typology to maximize its

usefulness and utility. The summative data is useful “internally” for making sure that the language is on target. Additionally, participants of the study also have the right to see the results of the study upon request. The summative data also has the ability to give us indications of how the typology will be used externally once it is fully refined and developed. Research in regards to utilizing the typology will also yield “external usage” information.

As a whole, the evaluation process will be useful to mold and improve the typology and to help it to better fit what practitioners want and will use. Considering the input of the people that will be using this typology is a way to ensure that the resultant product will have utility and usability in real settings. This process should improve the typology and improve the likelihood that it will truly be used. Even a tool that is academically perfect has limited worth if it is not actually used. The grand intentions for this tool depend on practitioners using it. This evaluation should help in that process.

CHAPTER FIVE – Funding Plan

Project Description

This project used a scoping review methodology to create a typology for describing features of context and environment that will be useful for the occupational therapy profession. The availability of such language about context and environment will increase consideration of environmental factors by OTPs (Hammel, Magasi, Heinemann, Gray, & Hahn 2015; Magasi et al., 2015). Specifically, this detail will add to occupational therapy assessment and intervention and will result in more effective and efficient interventions for individuals as well as facilitate environments that allow for greater participation for more people (Hammel, 2015; Mousavi, Forwell, Dharamsi & Dean, 2015b; Pereira, 2017).

Funding Plan Introduction

Funding is needed for refinement of the typology before dissemination as well as for the dissemination process itself. Refinement of the typology will occur in two stages. The first stage is via evaluation of the typology, as detailed in Chapter 4. The second stage is to engage specific stakeholders that were not possible to reach during the initial development due to time and financial restraints. After the typology is refined and finalized, funding will be needed for dissemination to the occupational therapy profession (see Chapter 6 for Dissemination Plan). Dissemination is vital to the success of this program. The largest portion of the budget for this program will be for activities related to dissemination.

Available Facility and Community-Based Resources

Among the needed resources (table 5.1), many will not need separate funding as they are “built in” to the context where events are taking place.

- Labor costs: The time and services of the creators of this project will be voluntary.
- Further research: For the short term- time and research facilities such as libraries are available to persons working on this project at the current stage of this project, library resources are available to the author at no additional cost.
- Evaluation: A volunteer is available to do the transcription of the focus group and Delphi method group.

Other resources will depend on connections to local experts who can provide help with different aspects of the program.

- Evaluation: Recruitment of student occupational therapists will be done via outreach to familiar academic resources.
- Further Development: Several of the “experts” in the field are associates who have expressed willingness to assist with this project.
- Meeting place: The anticipated academic setting where the author will be working will provide meeting space.

Needed Resources: Budget

Tables in the next section provide detailed description of the expenses anticipated for “Uncovering the Obstacles.” We include costs for the specific items addressed and the phase during which they will be needed. It is important to note that the cost estimates are based on the following assumptions:

- 1) Labor related to the administration of the evaluation, the review of stakeholders, and the dissemination plan will not be charged since it is being “donated” by the author
- 2) The use of the Qualtrics survey instruments for surveying and analyzing data about the typology’s refinement (see Chapter 4 for more details) will be free while the author is associated with Boston University. The cost estimates for use of survey tools come from after this association has ended.
- 3) The dissemination plan will include at least two conference presentations: the American Occupational Therapy Association 2021 Conference in San Diego and the World Federation of Occupational Therapy 2022 Congress in Paris. Dissemination will also involve two journal articles, one potentially in an “open” journal. Dissemination efforts will also include involvement in AOTA’s Commission on Practice, which creates the AOTA Practice Framework, with two anticipated meetings at AOTA headquarters in North Bethesda, Maryland.
- 4) The true labor costs, the time spent by professionals in the development and dissemination of this project, are assumed voluntary and/or built in as part of the work the author will be doing. No effort is being made to replace salaried time with equivalent funding from grants.

Table 5.1 identifies the items and how they relate to the more specific cost and program areas, as well as the estimated price of such items and activities. The costs here are divided by the program areas that they address.

Table 5.1 Costs by Program Aspect

Aspect/Stage of Program	Estimated Cost
Further Development Stage 1: Usability and Utility	\$300
Further Development 2: Validity with Stakeholders	\$900
Dissemination*	\$8550
Total	\$9750
Future Directions: Assessment (gross estimate)**	\$300,000

*Costs for dissemination are line itemed in the dissemination chapter

** Cost estimates evaluable in future directions section of this chapter- estimated

Further Development Stage One: Usability and Utility

In the immediate stage of the project, there are costs related to evaluation of the typology.

The evaluation plan (Chapter 4) includes several short-, intermediate- and long-term methods to assess the usability and utility of the typology and the effect of using the typology on OTP clinical reasoning. This process is designed to adjust and improve the typology before it is distributed widely. The “evaluation costs” are associated with using an online survey tool such as Qualtrics. There are also labor costs associated with the time used to recruit participants, and to collect and analyze data from questionnaires.

Table 5.2 provides specific expenditures.

Table 5.2. Program Items and Estimated Cost: Further Development: Evaluation

Program Areas	Specific Costs	Itemized Areas	Estimated Cost
<i>Further Development: Evaluation</i>			
	<u>Labor</u> - time spent for outreach, organizing and processing data		Donated
	<u>On-line survey tool costs</u> - cost of data collection		\$300/year x 1 years= 300
Total Cost- evaluation			\$300

Further Development Stage Two: Outreach to Stakeholders

The second stage for typology refinement is focused on the input of specific key stakeholders and to determine validity of the terminology (i.e., that the words in the typology are describing what they intend to describe). This stage of further development includes the use of methods that were beyond the scope of the project at the time of initial development. Outreaching directly to “experts” in the field will ensure that the design of this program best matches current occupational therapy theory and understanding. Most importantly, outreach to include members of the disabled community will ensure that the project is sensitive to and focused on the needs of the community. Approaches such as using Delphi Method (Okoli & Pawlowski, 2004), where panels of experts systematically explore questions, will be used to improve the typology. Costs associated include the securing of space for this kind of meeting, honorariums for experts who participate in the panel, and refreshments. The same type of costs would be associated with efforts to include people with disabilities in focus groups, but with provision of a small gift rather

than an honorarium for their participation. The results of this “further development” will be in terminology and definitions that more effectively describe what they claim to be identifying. The costs are available in line item form in Table 5.3.

Table 5.3 Program Items and Estimated Cost: Further Development

Program Areas	Specific Costs	Itemized Areas	Estimated Cost
<i>Further Development</i>			
	<u>“Expert” panel (academic) and “consumer” panel</u>		
		Labor- time spent for development of questions, facilitation of discussion, note taking or transcription of data and processing of data	Donated
		Meeting Space/recording equipment- needed for discussion	Donated by University
		Copies of typology, poster, related documents printed-	\$100
		Refreshments- for participants	\$100
		Honorarium given to participants may include travel expenses	\$250
	<u>“Consumer” Panel”- Focus Group</u>		
		Labor- time spent for development of questions, facilitation of discussion, note taking or transcription of data and processing of data	Donated
		Meeting Space- recording equipment needed for discussion	Donated
		Transportation	\$100
		Refreshments- for participants	\$100
		Reward given to participants	\$250
Total Cost- Further Development			\$900

Typology Dissemination

Among the costs associated with the dissemination of the finalized typology are presentations at national and international conferences, which have material costs, tuition fees, travel fees, and food and lodging fees associated with them. Publishing is also an avenue that we intend to utilize to disseminate the typology. The publication of several different articles may be necessary to improve the consciousness of the typology among target audiences. Such audiences include “opinion leaders”; that is, people who may influence others to adopt a novel method (Rogers, 2010). While most journals do not have publication fees associated with them, it may be necessary to publish in “open journals.” These journals are generally published online and charge the authors fees to publish. Face-to-face meetings with academic leaders, publishers and relevant committees within the AOTA and other governing associations might also create travel costs. The total costs related to dissemination are noted in Table 5.1 above; specific costs are detailed in Chapter 6.

Assessment Tool Creation

Finally, the ultimate goal of the creation of this type of typology is to create an assessment tool. Assessment tool models are the Assessment of Motor and Process Skills, School Assessment of Motor and Process Skills and the Evaluation of Social Interaction Skills all of which are from the Center for Innovative Occupational Therapy Solutions and use the same format (Chard, 2000). These are assessment tools that are based on statistical analysis and require training of practitioners. While creation of such an evaluation tool is beyond the scope of the current project, a rough estimate of costs

associated with assessment tool creation is outlined in Table 5.4.

Table 5.4: Estimate of Budget for Creation of Assessment Tool

Program Areas	Specific Costs	Itemized Areas	Estimated Cost
<i>Creation of Assessment tool</i>			
	<u>Creation of evaluation/Manual</u>		
		Time for writing, research- Hourly rate x 10 hours per week x 156 weeks	$\$73.35 \times 10 \times 156 \text{ weeks} = \$114,426$ Paid for by OT department (done during work hours)
		Publishing/distribution of manual	(initial) Publishing $\$7.87 \times 150 = \1185 Distribution = $\$315$ Total = $\$1500$
Subtotal			\$115,926
	<u>Psychometrics and Creation of Analytical Method</u>		
		Statistician to help develop- average rate is $\$58/\text{hour}$ nationally x 100 hours (small pilot)	$\$58 \times 100 = \5800 (based on average hourly rate for statistician)
		Costs of establishing validity and reliability (small pilot)	$\$5200$ cost estimate comes from similar estimate for state examination (Topol, Olson, & Roeber, 2010)
Subtotal			\$10,000
	<u>Training of practitioners to use evaluation</u>		
		Labor- Development of curriculum for training course	$\$73.35 \times 5 \times 156 \text{ weeks} = \$72,213$ Paid for by OT department (done during work hours)

		Creation of materials needed for training	Cost of labor for creation- \$72,213 Cost of materials- \$27,787
Subtotal			\$100,000
Total			\$225,926
		Logistical costs of training (space, personnel, travel, refreshments, etc.)-	NOT INCLUDED in this analysis

Funding Sources

Potential funding sources for the two typology refinement phases, dissemination phase, and assessment tool creation phase are detailed in Table 5.5.

Table 5.5 Potential Funding Sources

Funding Type	Funding Source and Description	Stage Supported
Foundation grant	National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) at Administration of Community Living (ACL) Seeks to fund research and development that leads to rehabilitation practices and services improving health, physical, cognitive, sensory, and communication for individuals with a wide range of disabling conditions. The general organization seeks to improve the effectiveness of services authorized under the Rehabilitation Act by conducting advanced engineering research on and development of innovative interventions designed to reduce environmental barriers, facilitate service delivery system changes and provide training opportunities.	Refinement-phase 1 Refinement phase 2 Dissemination

Federal grant	<p>National Institute of Health</p> <p>Intervention Research Grants to Promote the Health of People with Disabilities</p> <p>The purpose of this research program is to develop, implement, and measure the effectiveness of interventions that promote the health and wellness of people with disabilities and prevent secondary conditions across the lifespan</p>	<p>Refinement-phase 1</p> <p>Refinement-phase 2</p> <p>possibly dissemination</p>
Non-profit Funding or Publishing House Funding	<p>The Center for Innovative Occupational Therapy Solutions (runs AMPS, ESI, School AMPS, etc.)</p> <p>Or</p> <p>University of Illinois Chicago, Model of Human Occupation</p> <p>Both organizations publish assessments and run programming based on ICF principles that would fit well with producing this type of assessment tool. Their support would be sought for its development.</p>	Assessment Tool Development
Non-profit grant	<p>The American Occupational Therapy Foundation (AOTF) is a non-profit organization focused on advancing the science of occupational therapy to support people's full participation in meaningful life roles and activities. The AOTF awards Interventional Research Grants which are meant to lay the groundwork for larger studies and implementation of evidence-based interventions in occupational therapy.</p>	<p>Refinement-phase 1</p> <p>Refinement phase 2</p>

Conclusion

Small changes, such as a change in language and words used, can have global effects. This doctoral project attempts to make a small change like this: by developing a typology of environmental and contextual factors that impact participation, occupational therapy practitioners may be better able to analyze and address contextual factors,

hopefully leading to broader change in the inclusion of context in occupational therapy as a whole, and perhaps beyond. The process of disseminating the project has some predictable costs that may be managed from a variety of sources. Further development of the typology via the refinement processes detailed in chapter six will have some costs that should be manageable with small grants from sources in occupational therapy devoted to this type of work. Funding for typology refinement will yield a useful and usable evaluation, which will lead to greater “diffusion” of the “innovation” as it is disseminated. With the relatively small investment needed to move this project forward, the typology potentially can be that small change with global effects.

CHAPTER SIX: Dissemination Plan

Project Description

This project focuses on developing a typology of terminology used in the occupational therapy profession for describing features of context and environment. Using a scoping review methodology, we first identified literature of interest, winnowing it down procedurally to the most relevant and useful articles, and then combed each article for terms used to describe environmental features. The terminology identified was further categorized into general terms, that described broad groupings of factors, and specific terms, that described particular aspects of the environment or activity that affect participation). Following this the specific terms were grouped under the general terms they related to. This created an effective way to describe find the words to describe contextual features and their impact on participation. The availability of such language about context and environment will increase consideration of environmental factors by OTPs (Hammell, Magasi, Heinemann, Gray & Hahn 2015; Magasi et al., 2015). Specifically, this detail will add to occupational therapy assessment and intervention and will result in more effective and efficient interventions for individuals as well as facilitate environments that allow for greater participation for more people (Hammell, 2015; Mousavi, Forwell, Dharamsi & Dean, 2015b; Pereira, 2017).

Goals for Dissemination

The creation of a terminology is not sufficient to make changes without widespread usage of the typology. The dissemination of the typology is thus equally important to the creation of the typology. In order to get widespread usage,

dissemination involves a multipronged strategy.

- Long-term goal: Widespread use of the typology will contribute to occupational therapy's efforts to improve occupational participation for the greatest number of people.
- Short-term goal: Inform occupational therapy practitioners regarding the benefits of using this typology to analyze environmental and contextual factors in their assessments and interventions.
- Short-term goal: Inform OT educators about this typology and its usefulness for increasing the focus in curriculum on how to address contextual and environmental factors and how they can enhance occupational therapy assessment and intervention in students' future practice.
- Short-term goal: OT students will use the typology as a tool for considering contextual/environmental factors in a structured and detailed way in their assignments/coursework.

Target Audiences

Primary audiences: The primary audience is the broad OT profession. This project looks to provide a tool that can expand the clinical reasoning of people in the profession so that contextual and environmental factors are considered more consistently. Using this typology will increase consideration of contextual/environmental factors in OT consultation and intervention and thereby can improve participation more effectively for a larger amount of people.

- OT Educators – Academics at occupational therapy schools have an important influence on occupational therapy scholarship and practice via writings, training of new therapists, and putting students into fieldwork sites. This makes them “opinion leaders” who facilitate the adoption of ideas to many practitioners.
- OT/COTA Students – Students are the future of occupational therapy. They also spread recent trends and ideas to practitioners via fieldwork experiences. They are less likely to have habitual therapeutic approaches or histories with particular approaches, so they are more likely to be open to novel approaches.
- OT Practitioners – Including consideration of these contextual/environmental factors more formally in their clinical reasoning will make it more likely that the resulting evaluation and intervention processes will also incorporate these factors, leading to occupational therapy practitioners’ more effective practice in improving participation for individuals and groups.
- OT directors and managers – OT directors and managers help to create the cultures and dynamics within programs. Their inclusion of the typology can facilitate its use.
- Occupational therapy researchers/Assessment Tool Developers – It is important to increase scholarship related to how environmental factors relate to participation in activities. The use of the typology will allow for ease and consistency in this type of research. The research will reinforce the use of the typology. The ultimate goal of creating an assessment tool with the typology requires that assessment tool developers become aware of the typology.
- OT organizations – The American Occupational Therapy Association (AOTA) and

other organizations create official documents and policies and publish periodicals that sanction manners in which therapy is provided. Inclusion of the typology will lead to increased exposure and acceptance of the typology as a part of OT practice.

Secondary audiences: There are multiple secondary audiences for this project.

- Persons who participate in occupational therapy services may benefit by increasing their consideration of how contextual factors are limiting their own participation. It may add to feelings of self-determination and help them to be a part of the interventions that lead to increased engagement in important roles in their lives.
- Practitioners in other health fields – The use of structured and defined terminology may be used by practitioners in other disciplines and could help create interventions that are more aligned/complimentary to those introduced by occupational therapy. This includes other therapies, such as physical and speech therapy, public health practitioners, social workers and others.
- Third party payers – By increasing the attention provided to environmental and contextual factors in occupational therapy documentation, it is possible that third party payers will increase their willingness to pay for environmental modifications and equipment.
- Civil engineers, city planners, product designers, rehabilitation engineers, architects- We can increase awareness of the language occupational therapy uses to identify elements of the environment and objects that are impeding participation so that it is familiar to the people involved in design of these environments and objects. In doing this, we can help people involved in design of those environments and

objects to better match the needs of various individuals and groups, particularly those with disabilities.

Key Messages: Primary Audiences

For Occupational Therapy Educators and Researchers:

1. The International Classification of Function (WHO, 2001) includes consideration of contextual factors in addressing activities and participation. Use of this typology is consistent with the International Classification of Function and respects the skills of people with disabilities.
2. A holistic view of wellness is advocated by the World Health organization (WHO), the World Federation of Occupational Therapists (WFOT), and the American Occupational Therapy Association (AOTA). It is taught theoretically in the schools but is difficult to implement in practice in fieldwork, where students develop clinical skills (Gentry, Snyder, Barstow & Hamson-Utley, 2018). The use of the typology will help students to gain practical skills supporting a more holistic view of evaluation and treatment in relation to participation of the individuals/groups they will work with.
3. Many occupational therapy frameworks such as the Person-Environment-Occupation (PEO) and Occupational Performance (PEOP), the Model of Human Occupation (MOHO), the Occupational Therapy Intervention and Process Model (OTIPM), The Ecology of Human Performance (Dunn, Brown, McGuigan, 1994) and the Capabilities Approach address the environment as a significant factor. There is a need for scholarship supporting these theories. Use of the typology may

lead to more comprehensive scholarship that relates to these theories/models. There is a need for an evaluation tool that is not specific to just one environment or context, so that the impact of almost any environment on participation can be assessed and measured. The typology will help to create such a tool.

For Occupational Therapy Practitioners:

1. There is little structure in current OT practice for assessing or consistent terminology for evaluating the environment (Heinemann et al., 2016). Use of the typology is helpful in evaluation to determine obstacles that are preventing individuals and groups from participating as they would like. It may enhance a specialty area for occupational therapist employment in environmental assessment.
2. By expanding the scope of practice to consider intervening at the level of the environment and occupation rather than only at the level of the individual, therapists have more options for effective therapy (Strong et al., 1999). Use of the typology is helpful in creating more effective interventions to improve participation for individuals and groups.
3. Use of the typology will make documentation easier by providing a structure for addressing contextual factors and may lead to easier reimbursement from third party payers.

For Occupational Therapy/OTA Students:

1. As per the International Classification of Function and the AOTA OT Practice Framework, environmental/contextual factors are a major factor in whether and how people participate in activities and roles (WHO, 2001). The typology will help

to address these factors.

2. Consideration of contextual/environmental factors is impeded by the complexity of such factors (Whiteneck & Dijkers, 2009). Learning the typology will make it easier to classify and describe contextual/environmental factors in a manner that is comprehensible to all.
3. Occupational justice has increasingly become a part of global occupational therapy education (Kuper & Weber 2011). The typology is consistent with the occupational justice framework that is being taught (to varying degrees) in OT programs.

For Occupational Therapy Directors and Managers:

1. By expanding the scope of practice to consider intervening at the level of the environment and occupation rather than only at the level of the individual, therapists have more options for effective therapy (Strong et al., 1999). Use of the typology is helpful in creating more effective interventions to improve participation for individuals and groups. OT supervisors expect effective treatment with well measured outcomes from OTPs. Use of the typology will improve the effectiveness of evaluation and interventions provided by OTPs.
2. Contextual/environmental factors can be a crucial piece in the clinical reasoning of OTPs in regards to how to increase participation for those they are working with. However, the issues are often complicated and there is a lack of uniform terminology to describe the factors and how they affect participation (Whiteneck et al., 2004). This makes documentation of skilled service in intervention difficult. Use of the typology will allow for easy documentation of a skilled service provided

by OTPs, which is helpful in auditing and reimbursement for service.

3. Interventions at the environmental level usually require funding for structural or programmatic changes. Funding for these types of larger events is often a barrier (Lew, 2010). By using the typology OTPs can provide more clarity and understanding of the need for this type of environmental and contextual changes that funding sources such as insurance companies, grants and governmental organizations need to justify funding for these changes are being sought.

For Occupational Therapy and Related Organizations:

1. Healthcare provision is rapidly changing. Occupational therapy must adapt and adjust to the changes occurring in healthcare, wellness and the understanding of disability in order to survive in this context (Holmes & Scaffa, 2009). Taking a larger role in consultation and environmental modification can help OT to be more present in primary care (Conway & Halota, 2008). The typology will be helpful in increasing the role of OTPs in these emerging areas.
2. Increasing occupational therapy's role in design of adapted equipment and technology (Mihailidis & Polgar, 2016) is very likely to improve the usability of equipment for occupational therapy clients. The typology will provide terminology for occupational therapists to participate more effectively in consultation and discussion with AT designers and providers.
3. National and international organizations have embraced the International Classification of Function as a model for practice. There continue to be difficulties in incorporating the principles related to environmental and contextual factors in the

ICF into practice in part due to the lack of supports available to include these principles (Gentry et al., 2018). The typology provides a support to OTPs, giving them the opportunity to make the principles related to the environment and context a greater part of OT practice.

Secondary Audiences:

For persons who participate in occupational therapy:

1. By using the new typology, occupational therapists can more thoroughly and uniformly consider the environment and context within which clients perform and thereby intervene at the level of the environment more effectively. This will lead to improvements in how much and how well people can participate in the roles and activities that are important to them (Strong et al., 1999). By acting on the environment individuals may gain a feeling of self-efficacy and self-determination (Ziviani & Poulsen, 2017) which has been linked to greater success and willingness to attempt participation in activities (Bandura, 2010). OTs can add to the public perception of what they do (Walsh, 2018).

For practitioners in other fields:

1. Many disciplines look at function and participation from their own perspectives . By using the same typology of terms, interdisciplinary communication can be improved (Whiteneck et al., 2004). Additionally, once becoming familiar with the typology may be helpful for professionals from other disciplines to become more aware of how OTs can intervene on the level of the environment to improve participation. This may lead to improved collaboration and consultation with or

referral to an occupational therapist to examine environmental factors affecting participation. OTPs will be trained to provide the services needed to evaluate and/or intervene at the environmental level.

For third party payers:

1. This typology allows occupational therapists to use a uniform terminology for environmental factors in evaluation and intervention. Environmental change can affect more people and cost less in the long term. It would benefit third party payers to pay for interventions that have broader effect and do not have unknown long-term costs associated with them.

For civil engineers, city planners, product designers, rehabilitation engineers, and architects:

1. The Americans with Disabilities Act (ADA, 1990) and other legislation support the rights of persons with disabilities to have access to most spaces. It is also a moral imperative to make sure that spaces and activities do not exclude members of our society based on individual traits (Burkhart & Gordon, 2017) . Use of the typology in consultation with an occupational therapist will vastly reduce the obstacles created, often inadvertently in participating in activities. OTs may have an increased presence in planning (Young, Wagenfeld & Rucker, 2019).

Sources/Messengers

Key Occupational Therapy Figures- Important figures in occupational therapy who are aware of or who have expressed interest in this project, such as Anne Fisher, Mary Law, Karen Jacobs, Glen Gillen, Lou Ann Griswold, Wendy Coster or Joan Toglia may be

helpful in the dissemination process. These types of leaders in the profession have influence with academics, practitioners, students, researchers and within the structure of national and international organizations. These figures might be influential in getting the endorsement of the national and international occupational therapy organizations.

For National and International Occupational Therapy Organizations- Organizations such as the AOTA have standard procedures for development of resources and policy papers. We will use these procedures to get the typology endorsed by these organizations. Endorsement by ACOTE is very influential in US OT education.

Endorsement by the national organizations such as the AOTA, Associacao Brasileira dos Terapeutas Ocupacionais (Brazil) or the Occupational Therapy Association of South Africa can lead to greater acceptance and usage of the typology in the countries represented by these organizations, influencing OT education, scholarship and practice.

International organizations such as the WFOT may be influential with the various national organizations as well as practitioners who follow international practice. These organizations can also lobby regulatory agencies and third-party payers to include the typology in their policies that will reinforce the use of the typology in OT practice and are the most likely to have the resources to reach the secondary audiences in the general public as well as in fields such as engineering and architecture.

For Occupational Therapy Educators: Occupational therapy educators can be influential in guiding the thinking of new generations of occupational therapists who spread ideas to fieldwork and new employment sites. Educators also produce the bulk of scholarly work, publications and policy papers that influence practice for administrators and people in the

field.

Occupational Therapy Directors, Managers and Supervisors- OT directors, managers and supervisors influence practitioners in their departments via policies, procedures and documentation that can be inclusive of the terms in the typology. By building the typology into general practice within different settings, it can become part of the way that practitioners reason clinically. These leaders on the clinical level can make clinicians in other fields aware of the typology.

Dissemination Activities

Publication

Publishing the work involved in this project will be important to the dissemination of the information in the project. Published articles are one way to try to reach the “decision leaders” in the field, who can be influential in leading others to adopt novel ideas such as use of the typology (Rogers, 2010). Multiple journal articles will be necessary to address the different aspects of the typology.

- Several articles will be written and submitted within 6 months of the completion of this project to general OT journals with the widest spread and potential influence within the OT academic community such as the American Journal of Occupational Therapy (AJOT) or the national organizations of other countries (Canadian, British, Australian, etc.). The Occupational Therapy Journal of Rehabilitation (OTJR) Occupation, Participation and Health similarly offers the opportunity to reach a wide audience. These articles will present the scoping review that was completed. An article on the theoretical framework of the typology will be submitted to the “Journal

of Occupational Science”.

- A practical summary for publication in a periodical with a broader audience of practitioners such as *OT Practice* or on-line publications such as “*Advance for Occupational Therapy*” is important to disseminate the idea to a greater number of readers, including more practitioners. These articles will be written and submitted within 1 year of the completion of the project.
- Specific areas will be addressed such as pediatric or school-based use of the tool- which would lead to publication in “*Physical and Occupational Therapy in Pediatrics*”. An article regarding the use of the tool in workplaces, transitional and vocational rehabilitation will be submitted for a journal such as “*Work*”. Publication in a geriatrically-oriented publication such as “*Physical and Occupational Therapy in Geriatrics*” would allow for indications of how the typology may be used with the older population. These articles will be completed within eighteen months from the completion of the project
- Open journals present the opportunity to publish the data collected in the building of the typology. Information from the focus group with persons with disabilities and the “Delphi method” group with experts in the field will support the project with additional audiences. These submission for two publications in “open journals” will be done within two years of the completion of the project.

Presentations

- Conferences are also an important aspect of the dissemination plan for this project. There are many conferences that would be relevant to this project, but due to likely

time constraints, only the two most important ones are being included. The plan is to present at the AOTA conference in San Diego, 2021 (proposal due June 2020) and the WFOT conference in Paris, 2022 (proposal due in 2021). The two proposed presentations will detail the philosophy behind the typology, introduce the terminology and detail practical use of the typology.

Person-to person contact

- For some areas, such as integrating the typology into OT curriculum at local programs, in person communications and meetings with persons of influence in the OT community are likely to yield more direct results than publications or conferences. This would be particularly relevant for Occupational Therapy and OTA programs. This means direct outreach from the author of this program and associates to chair people and professors at occupational therapy programs locally and nationally.
- The author of this program intends to outreach to the AOTA to become part of the committee for updating the OT Practice Framework. The framework is updated every 5 years and recently completed an update cycle. The intent is to include the typology of environmental factors as parallel to the performance skills.

Dissemination Budget

The dissemination of the typology has costs associated with it. Publication in many journals or other outlets may be free, but if we publish in one of the “open” journals, there are fees. Dissemination costs also will include presentations at national and international conferences. These have material costs, tuition fees, travel fees, and

food and lodging fees associated with them. Other efforts involved in dissemination will be designed to reach “opinion leaders”, those in the community who have influence on others and whose adoption of the “innovation” will make it more likely that others will adopt it as well (Rogers, 2010). These include meetings and participation in practice committees. Participation in these types of activities generate travel related expenses. Predicted costs are budgeted in table 6.1.

Table 6.1: Program Items and Estimated Costs: Dissemination

Program Areas	Specific Costs	Itemized Areas	Estimated Cost
<i>Dissemination costs</i>			
	<u>Publication in relevant peer reviewed journals</u>		
		Labor- time spent writing articles	Donated
		Fee for access to library sources	Columbia University \$750/year x 1 years= \$750
		Costs related to publishing in “Open” Journal	\$300 primary author \$100 each additional author (x2) = \$500 2 articles=\$1000
Total Cost- Dissemination- articles			\$1750
	<u>Conferences</u>		
		Labor- time spent for proposal for presentation and creation of presentation, days lost from work at conference	Donated
		Cost of conferences	AOTA- \$650 WFOT=\$1000

		Cost of related travel, food and lodging	AOTA- San Diego- \$750 WFOT- Paris- \$1000
Total Cost- Dissemination- conferences			\$3400
	Other outreach		
		Creation of media and printed materials for presentation and promotion	\$200
		Meetings with “opinion leaders” may require travel or platform for communication	\$1800 (assume trip to UCLA and Chicago)
		Participation in decision making panels within related OT organizations- may require time, travel	Lodging Donated AMTRAK- \$200
Total Cost- Dissemination- other outreach			\$2200
Total Cost- Dissemination			\$7350
Total Costs evaluation, further development, dissemination			\$8550

Conclusion

Our efforts here are to create a typology that will provide the terminology to describe what factors in the environment or context within which activities take place effect participation in those activities. It is intended for widespread use, so, in this type of project disseminating the information is as important as creating it. The project targets the broad occupational therapy community and possibly beyond. Thus, the activities involved in diffusing this information are very varied. This diffusion plan include meetings with influential people within OT to introduce and create use for the typology in academic and clinical settings. It also includes multiple types of presentations at

conferences, publications of various types in various mediums, and an attempt to officially integrate the typology into official OT statements and positions, such as the AOTA's Practice Framework. The authors of the project will also write several articles that relate to different aspects of the project and target different audiences. In the greater plan, as a result of dissemination efforts, an evaluation will be created from the typology.

All of these dissemination activities will take efforts from the authors, from allies in the OT community, academics and eventually from OT governing bodies. These activities will need financial support, which will come from a combination of grants, university and employer funding and private/personal financing.

CHAPTER SEVEN: Conclusion

This project focused on the creation and dissemination of a typology of environmental and contextual factors that influence people's engagement in meaningful activities and occupations. This project used a scoping review to examine literature from a variety of fields that work with people with disabilities (e.g., therapies, public health, engineering/design, etc.) and to identify the terms used to describe factors in the environment that impede or support participation for individuals with disabilities. These terms were then organized into a typology describing environmental and contextual factors that impact occupational engagement and participation. The project also includes a plan for dissemination of this typology for widespread usage in the occupational therapy community. The typology is a practical tool that will enhance the consideration of contextual factors in the study and application of occupational therapy. The project's results will contribute to the following areas of occupational therapy: increasing consideration of contextual factors for occupational therapy practitioners (Hammell, 2015; Mousavi, Forwell, Dharamsi & Dean, 2015b; Pereira, 2017; Bowen & Brown, 1998); improving alignment with the World Health Organization's 2001 International Classification of Function (Prodinger et al., 2015); and increasing the inclusion of contextual and environmental factors in occupational therapy scholarship and research so that our understanding of its interaction with other factors and the best manners of addressing these factors are better understood (Hammel, Magasi, Heinemann, Gray, & Hahn 2015; Magasi et al., 2015).

This concluding chapter reviews the innovative approach taken in creating the

typology and how the typology will contribute to the theory and practice of occupational therapy, ultimately improving the participation of those persons we work with. I discuss the need for this kind of tool and how I integrated theory and evidence from various fields of studies to create the typology. I share a plan for dissemination so that usage of the typology becomes more widespread. Finally, I present how the use of the typology will impact the future of occupational therapy scholarship and practice, leading to improved outcomes and increased participation for those who participate in occupational therapy.

Addressing a Need

For any individual, participation in life's daily roles occurs at the nexus of personal capabilities, interests, opportunities, affordances and barriers presented by the environment. Occupational therapy recognizes this idea in many of our theories, in our efforts to synchronize with the World Health Organization's International Classification of Function (Mallinson & Hammel, 2010), as well as in the United States, in our practice framework (AOTA, 2014). Despite these attempts, consideration of the role of the environment is not well integrated into clinical practice (Brown & Bowen, 1998; Dharamsi & Dean, 2015; Hammell, 2015; Mousavi, Forwell, Dharamsi & Dean, 2015b; Pereira, 2017). There is literature indicating that an important factor leading to the disparity of consideration of environmental versus personal factors is the absence of language to adequately identify and describe environmental and contextual factors that affect participation (Whiteneck & Dijkers, 2009). In response to this need I created the typology for this terminology.

Theoretical Basis for Project

For the development of the typology, the primary framework utilized was the *Person-Environment-Occupation* (PEO) model (Baptiste, 2017). The *Capability Approach* (Mitra, 2006) and the *Biopsychosocial Model of Disability* (WHO, 2001) also had influence in the development of the typology. Since this project is strongly dependent on dissemination, the other principal theory considered in creating this project was the *Diffusion of Innovations* theory (DOI) (Rogers, 2010). DOI also was used to explain why previous efforts to increase attention to contextual factors have not fully achieved this goal. PEO brought the perspective that diminished participation for individuals is always related to the interplay between the person's skills, the environment and the occupation that they are participating in. This forms the foundation for this project. The conceptualization of participation and the responsibility of society to accommodate different needs are ideas within the project that are rooted in the ICF (WHO, 2003) which is the World Health Organization document that comes out of the biopsychosocial model. The inclusion of factors that are more ecological, relating to the opportunities and affordances of environments, come from the Capabilities Approach (Mitra, 2006). Finally, the plans for dissemination are based on Diffusion of Innovations Theory (Rogers, 2010). These plans include processes to refine the program, so that it is more likely to become widely disseminated, as well as methods to disseminate the typology, and target audiences for dissemination.

Project Development and Description

The creation of the typology was completed using a scoping review of the

literature from fields that work with people with disabilities (e.g., therapies, public health, engineering/design, etc.). The scoping review team (i.e., this author and his academic mentor) sought publications that describe how contextual factors affect function. We selected 45 published resources for final inclusion in the scoping review. The scoping review team then combed the resources for terms that were used to describe factors in the environment that impede or support participation for individuals with disabilities. We extracted these terms and divided them into “General” and “Specific” factors. General terms described a number of environmental aspects while specific terms referred to one aspect. Through iterative processes, terms were analyzed and grouped into a typology, using the ICF’s environmental factors (WHO, 2001) as an organizing framework. The typology is divided into four-ICF based areas: I. Natural Environment and Human Made Change and Products and Technology, which are two separate ICF categories but are merged for the purposes of the typology because both address physical conditions; II. Attitudes – addressing social conditions; III. Services, Systems and Policies – describing government, regulations, and rules; and IV. Support/Relationships – describing the support systems available. There are twelve different categories of terms and fifty-four individual terms in total under these categories.

Further Development and Dissemination

Dissemination is a core part of this project. Using Roger’s Diffusion of Innovations theory (Rogers, 2010), I determined that refinement of the typology, so that it best fits the needs of the occupational therapy community, will help successfully disseminate the typology. The refinement process will include several stages. Feedback

from the leaders within stake-holding communities will ensure that the development of the typology considers all of the concerns of the various communities that would be affected by the typology (see Chapter 4 for more details). Results from a survey regarding the usability and utility of the typology (see Chapter 4) from potential users of the typology will lead to refinements in wording. This will allow the typology to better match the criteria Rogers identifies as helping to facilitate more effective dissemination of novel ideas. Consistent with Roger's theory, the feedback from these stakeholders and survey-takers will seek to enhance those attributes of the "innovation" that decrease uncertainty about the typology and thus enhance the likelihood of adoption for individuals. Among these attributes is "relative advantage", which considers what benefits using this typology has relative to current choices; compatibility with current methods; and reduction of complexity (Sahin, 2006). Refining these areas will improve the "diffusion" of the idea. The last part of the dissemination process involves using the Delphi method with experts in the field and focus groups with people who have disabilities to enhance the validity of the typology, that is, to determine that the terms within the typology represent the concepts that they claim to be representing.

Implications for Occupational Therapy

The typology will have implications for occupational therapy at many levels. Chief among them are clinical practice, OT education, and OT scholarship and research. The typology will have an important influence on clinical practice. Occupational therapy focuses on improving the participation of individuals in meaningful, relevant daily activities (i.e., occupations). Since these occupations occur within contexts, increasing

the attention that contextual and environmental factors have in participation — which we expect to happen from use of the typology — will lead to better outcomes in occupational therapy. These better outcomes will come as a result of more fully understanding and thereby addressing the many factors that enhance or diminish participation for individuals in occupation. Resulting environmental modifications will also present as more opportunities for more robust participation for more people. Using the typology will also further open up opportunities for OTs to engage in environmental consultation to make more inclusive environments more readily available and potentially may lead to the development of this type of work as a greater part of OT practice.

Including the typology in occupational therapy education will help train future practitioners with a more comprehensive understanding of the factors contributing to participation. This will improve their integration of current theory into their early practice and can reduce the reliance on procedural reasoning based on diagnosis and body level impairment. Inclusion of the typology in the OT education will help to solidify the understanding of our identities as occupational therapists. By furthering the understanding that occupation occurs from the complex interaction of the activity itself with the person's skill level and the context it occurs in, occupational therapists can be more holistic in the services we provide. This will help students to differentiate the services we provide from other disciplines. As these therapists become future practitioners they will better understand their role in the system.

In the bigger picture, in the scholarship and research that underlies occupational therapy practice, the existence and use of the typology allows for a uniform approach to

environmental and contextual factors. The defined terms are available and can be operationalized more easily, allowing for easier research on the efficacy of intervening at the contextual/environmental level (Whiteneck & Djickers, 2009). This will allow us to further validate our theories and practice. The typology is also intended to lead to scholarship in the development of standardized testing for the effect of environmental factors. Such a test could quantify the impact of contextual factors on participation and the effect of contextually oriented interventions on improving participation. Having such a test would provide data that could help third party payers justify the costs involved in environmental modification. Occupational therapists could be consulting for individual and community projects, making inclusive design and access widely available to all.

In conclusion, this typology contributes to efforts to advance occupational therapy practice, education, scholarship, and research by providing a systematic language for increasing consideration of how the environment interacts with people and the activities that they are undertaking in order to facilitate or diminish participation. At its core, occupational therapy is about facilitating participation in occupations that make up the roles of people's daily lives. Occupations occur within real contexts. Often, it is the context or the activity parameters, rather than the individual, that limit the participation of individuals in their chosen roles and occupations. It is vital that we as occupational therapy professionals continue to build an understanding of how the environment impacts participation. Using this typology is a critical step to ensuring OTPs provide more meaningful, effective consideration of environmental and contextual factors, thereby promoting greater participation and improved quality of life for people and communities

that work with us.

APPENDIX A: Executive Summary**UNCOVERING THE OBSTACLES: A TYPOLOGY FOR CONTEXTUAL
FACTORS AFFECTING PARTICIPATION****INTRODUCTION**

For any individual, participation in life's daily roles occurs at the nexus of personal capabilities, interests, opportunities, affordances and barriers presented by the environment. Occupational therapy recognizes this idea in many of our theories and in our efforts to synchronize with the World Health Organization's International Classification of Function (Mallinson & Hammel, 2010) as well as in our practice framework (AOTA, 2014). Despite these attempts, consideration of the role of the environment is not well integrated into clinical practice (Hammel, Jones, Smith, Sanford, Bodine & Johnson, 2008; Mousavi, Forwell, Dharamsi & Dean, 2015b; Periera, 2017, Brown & Bowen, 1998). There is literature indicating that an important factor leading to the disparity of consideration of environmental versus personal factors is the absence of language to adequately identify and describe environmental/contextual factors that affect participation (Whiteneck & Dijkers, 2009).

The goal of this project was to respond to the need for terminology that could easily and effectively identify and describe contextual factors by creating a typology of terminology. The language in the typology was derived from doing a scoping review of literature across multiple disciplines that address how the environment affects participation of individuals and. From the literature we identified, selected, categorized and defined terms that would be useful and usable in describing contextual factors that

support or diminish participation in roles and activities for individuals and groups.

Theoretical Frames of Reference

For the development of the typology, the primary framework utilized was the *Person-Environment-Occupation* (PEO) model (Strong et al., 1999). The *Capability Approach* and the *Biopsychosocial Model of Disability* also had influence in the development of the typology. Since this project is strongly dependent on dissemination, the other principle theory considered in creating this project was the *Diffusion of Innovations* theory (DOI) (Rogers, 2010).

In the PEO model, the individual (Personal), contextual (Environmental) and the life activity (Occupational) factors transact with each other. The transactions between these factors occur situationally (Baptiste, 2017). The better the “match” between the person, the environment and the occupation, the more likely that successful participation will occur (Strong et al., 1999). It is clear that both the difficulties that limit participating and the solutions to these limitations are related to the all of the factors, and that inadequate consideration of any of the factors will likely diminish the outcome of intervention. It is this philosophy that was the primary influence in developing the typology.

The biopsychosocial model, which forms the basis of the International Classification of Function (WHO, 2001), defines disability by participation level restrictions that stem from society not accommodating the needs of the individual. Environmental factors are facilitators or barriers to participation (Schneidert, Hurst, Miller, & Üstün, 2003). In the Capabilities Approach an individual’s capability is

understood via practical opportunities rather than the presence or absence of physical, mental or emotional abilities. Functioning is the actual achievement of the individual (Mitra, 2006). From the ICF, we principally used the idea of participation. The capabilities approach helped us to consider ecological obstacles as well as immediate ones.

With effective dissemination in mind, the *Diffusion of Innovations* theory was selected to help plan for how to disseminate the typology. This theory postulates that individual and social factors have an influence on the “adoption” of novel ideas, methods or objects and that these influences follow a path that can be predicted with reasonable accuracy for different groups (Rogers, 2010). Factors include aspects of the “innovation” such as personal factors (cost and perceived effectiveness), compatibility with current methods, and complexity of using the new typology; factors relative to the person such as their personal comfort with change, their social characteristics, the level of “need”; and social factors. Different stages of “adopters” are more or less influenced by each of the factors (Dearing & Cox, 2018). Diffusion of Innovations influenced the way that the typology was assembled and guided the dissemination plan.

Development of the Typology

The goals of this project were to create a typology of environmental and contextual factors affecting participation and to disseminate the typology into widespread usage. The creation of the typology was completed using a scoping review of the literature. The scoping review team (i.e., the author and his academic mentor) searched the literature from fields that work with people with disabilities (e.g., therapies, public

health, engineering/design, etc.) for publications that describe how contextual factors affect function. We selected 45 published resources for final inclusion in the scoping review. The scoping review team then combed the resources for terms that were used to describe factors in the environment that impede or support participation for individuals with disabilities. We extracted these terms and divided them into “General” and “Specific” factors. General terms described a number of environmental aspects while specific terms referred to one aspect. Through iterative processes, terms were analyzed and grouped into a typology, using the ICF’s environmental factors (WHO, 2001) as an organizing framework. The typology is divided into four-ICF based areas: I. Natural Environment and Human Made Change and Products and Technology, which are two separate ICF categories and merged for the purposes of the typology because both address physical conditions; II. attitudes- addressing social conditions; III. services, systems and policies- describing government, regulatory and rules; and IV. Support/Relationships- describing the support systems available. There are twelve different categories of terms and fifty-four terms in total under these categories. There are 5 categories under Area I that include physical features of environments and objects. There are 3 categories under Area II that include social and communication features. There are 3 categories under Area II including features of the legal and regulatory environment. Area IV has one category under it, social supports.

Assessment and Outcome Measures

Through the processes described above, we created a typology for terminology describing contextual factors that affect participation. The next step of this project is

refinement of the typology. This will be done through three main processes: stakeholder evaluation, Delphi Method with experts, and focus group with individuals with disabilities. The refinement processes focus on making the typology more usable and improve the usefulness of the typology. The more usable and useful it is, the greater the likelihood that it will disseminate widely (Rogers, 2010).

The stakeholder evaluation will survey OT educators, researchers, students and practitioners to gather information related to the utility and usability of the terminology. Using a survey questionnaire, stakeholders will be asked to review and share feedback on the typology related to ease of use, how well it meets their needs, and how well it fits in their service provision environment. Since we are using this evaluation to gain information intended to improve the typology itself, we are asking for responses that are descriptive. The type of evaluation that will be used will be a “Likert scaled” questionnaire. Statements will be made that relate to the anticipated questions of various stakeholder groups. The Likert scale will provide six levels of agreement 1) Strongly Agree 2) Agree 3) Neither agree nor disagree 4) Disagree 5) Strongly Disagree or 6) Not applicable. Using descriptive statistics (counting and averaging the frequency of responses) we can analyze the answers to the questions provided in this manner we can adjust and adapt the terminology for more utility and usability in practice.

We are also including a few questions to see how well the typology is serving the goal of changing the clinical reasoning of practitioners. These are based on the concept that having reviewed the typology and the reasoning behind it, there will be some level of change in the individuals participating in the evaluation. This will use a multiple-choice

format with an option to select as many choices as desired and an option to add in one's own under "other", information can be gathered to quantify the amount (percentage) of people within the group whose outcome matches the desired effect of the program. The results of this part of the evaluation will help us to determine whether the early version of the typology aligns with our goals.

The second stage of refinement is to engage specific stakeholders that were not possible to reach during the initial development due to time and financial restraints. There are two methods that we intend to use to further refine the typology. The first is the Delphi method, a method used to arrive at group opinions and decisions by surveying a panel of experts (Okoli & Pawlowski, 2004). The Delphi method will be used to ensure that the terms selected truly match the meanings they have been assigned. The second method are focus groups for people with disabilities. Our focus groups will be conducted with a small group of people who identify as having disabilities. The purpose of a focus group is to allow for numerous, varied perspectives to be heard at the same time. In this case, it is important that the terms represent environmental features that truly affect participation for the community they are designed for.

Dissemination and Funding

Dissemination is a core part of this project. Using Roger's Diffusion of Innovations theory (Rogers, 2010), we have determined that refinement of the typology so that it best fits the needs of the occupational therapy community will help us successfully disseminate the typology.

Funding is needed for refinement of the typology as well as for the dissemination

of the finalized typology. Costs include continued access to survey tools, space, refreshments and compensation for participation in the groups. In total the costs of further development including the evaluation process, the Delphi group and the focus group are estimated at \$1200.

For the most efficient and effective dissemination of this program, we hope to influence “decision leaders” (Rogers, 2010) in the OT community. We will do this via presentations at OT conferences, articles in OT and related journals and periodicals and direct outreach to influential individuals and groups. Dissemination is the largest part of the budget as it is a priority for this project. Costs associated with presentations at conferences include admission and travel costs. Publishing costs may include fees for open journal publishing and there are costs for our other outreach related activities including meetings and work on committees. Total costs for this are estimated at \$8550. We will be seeking funding for this project from outside sources, including local, state, and federal grants, foundations and gifts.

Conclusion

The goal of this project is to increase the consideration that is given to contextual factors by all of those within the occupational therapy community. The manner we selected to meet this goal was by creating a typology that provides terminology for contextual factors that affect participation. This plan is consistent with current theory in and outside of the occupational therapy community regarding how context transacts with the person and the occupation to determine how participation occurs. We used a scoping review methodology to find literature relevant to the environment and participation and

then methodically identified, defined and categorized terminology from the literature. We aligned the terminology with the World Health Organization's ICF model to complete a typology. After refinement of the typology with stake-holding communities, our efforts will turn to widespread dissemination. Our intention is for the typology to gain widespread use within the OT community. To achieve this, our dissemination plan includes presentations, publications and outreach activities to share the finalized typology. We have identified potential funding sources for these activities. By providing the terminology and increasing the attention provided to contextual factors, we foresee benefits to both OTPs and to the individuals, groups and communities they work with.

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APPENDIX B: Fact Sheet



Uncovering the Obstacles: Creating a Typology of Contextual Factors that Affect Participation

Leon Kirschner, OTL, MPH, ATP, C/NDT

Introduction to the Problem:

- Inadequate consideration of environmental and contextual factors in occupational therapy practice (Hammell & Iwama, 2012)
- Focus on the person in practice and scholarship that likely diminishes consideration by occupational therapy practitioners of the effect of environmental factors (Hammell & Iwama, 2012)
- Lack of terms for environmental and contextual factors that influence (i.e., support or diminish) participation (Whiteneck & Dijkers, 2009).



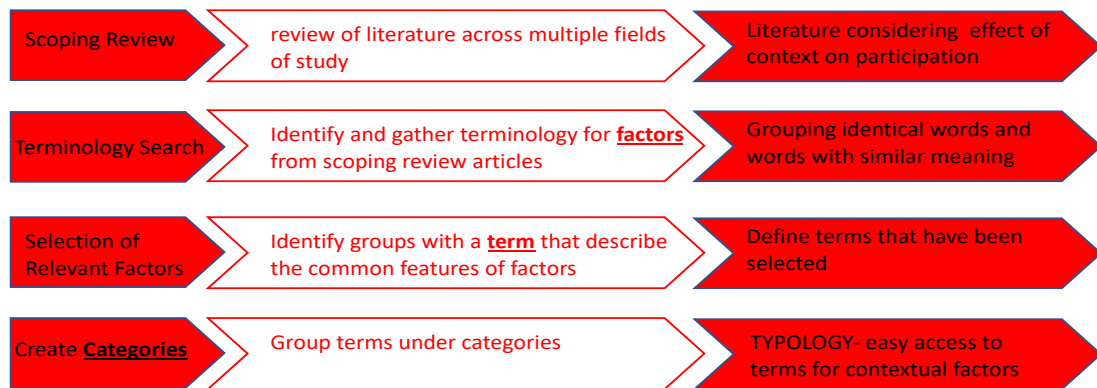
Solution to the Problem:

- Create a typology of environmental /contextual factor terms for occupational therapy practitioners (OTPs) akin to performance skills
- Use stakeholder feedback to refine typology
- Disseminate the typology widely among OTPs
- Plan to incorporate the typology into the next American Occupational Therapy Association's (AOTA) OT Practice Framework; create evaluations using the terminology that can quantify the effect of context on participation

Theoretical Base for Typology:

- Person-Environment-Occupation Model considers the transaction between the person, the environment and the occupation performed. The better the "match", the more successful participation is in the occupation. This formed the foundation of the typology (Baptiste, 2017).
- The Biopsychosocial Model (WHO, 2001) defines disability as participation level restriction stemming from society not accommodating differences. The typology was constructed to align with this model.
- The Capabilities Approach sees functioning as the actual achievement of the individual. This approach was used as a basis for considering ecological factors that act on the choice to participate rather than on the action itself (Hammell, & Iwama, 2012).

Method to Create Typology



Typology Aligned with ICF

Category	Sub-Categories (amount of terms in each)
Physical Obstacles	Physical spaces (4); sensory qualities (9); specific task parameters (9); Physical Climate (4); Terrain (4)
Attitude	Social factors (4); attitudes (5); communications (3)
Societal and Organizational	Financial situation (1); systems and policies(4); safety concerns (3)
Support and Relationships	Social support (3)

Example: Boy of small stature (age related) cannot get to cookies

- Participation Domain: **Self-Feeding**
- Environmental Area of Limiting Factor: **Physical factors**
- Category: **Physical Spaces**- where problem exists
- Term: **Vertical Distance**- the cookies are placed too high



Dissemination

The Diffusion of Innovations Theory guides inclusion of “decision leaders” in the refinement and dissemination of the typology to ensure widespread use (Rogers, 2010).

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APPENDIX C: Groupings of General Terms

General terminology link to “extracting the words” spreadsheet line numbers

- A. social network,1; social support,1; social support,4; social systems and policies, 7; social attitudes, 10; social relationships, 10; **Social, 16**; Social, 19; General Social Support, 43; supports and relationships, 136; protection and support, 82; Social Qualities: Quality of adults, 85; Quality of peers, 85; Quality of structures/organization, 85; social context, 124
- B. Income,1; income, 28; Income, 64; Finances,4; Money, 79; **financial situation, 104**
- C. public service,1; systems and public policies, 10; Lack of services, systems and policies specific to deafblindness, 76; systems and policies, 94; policies of government, 130; system/policy level, 55; policy barriers, 100; Policy, 133; **services/systems and policies, 136**; government policies, 139
- D. physical environment,1; **physical space, 10**; Physical, 16; Physical, 19; Physical, 133; physical performance, 112; Space, 73; space,124
- E. Technology,1; **use and availability of technology, 5**; assistive technology, 118; products/technologies, 10; Resources,1; natural resources/AT, 10; **Access to equipment, 73**
- F. political orientation,1
- G. Accessibility,1; accessibility of building/structural concerns,7; Pedestrian Accessibility, 52; recreation accessibility, 52;**signage accessibility, 52**; facilities accessibility, 52; Access, 16; "poor access", 67;
- H. Accommodation, decisions about accommodation made by individual with disability, 79
- I. Equality, 1
- J. **Attitudes, 4**; attitudes/values/culture,7; Societal Attitudes, 43; negative societal attitudes, 76; Attitudes,76; Attitudes, 85; Attitudes, 91; Attitudes, 94; societal attitudes, 112; Attitudes, 118; Attitudes, 139; Attitude, 64; Attitude, 124; Attitudes, 136
- K. Society,4
- L. living arrangements,4
- M. **natural environment, 7**; natural environment, 130; natural environments, 136; Natural environment, 139
- N. built environment, 7; **built/physical environment,55**; built/physical environment,55; built environment, 58; Design, 130; physical/structural, 130
- O. access to public transport, 7; Transport, 10; Transportation, 10; Transportation, 13; Transport, 16; lack of transportation, 2; public transport, 52; transportation access, 55; Transportation, 70; Transportation, 79; Transport, 118 ;
- P. **Access to equipment, 73**; use of equipment/devices for vertical distance between floor structures,7
- Q. family relationships, 10; family involvement, 118
- R. Economy, 10

- S. Climate, 10; Climate, 16; Climate,43; climate/weather, 58; **climate/weather conditions**, 70; weather conditions, 67; climatic conditions, 124
- T. social relationships, 10;
- U. health services/social security, 10; Economic Services, 43; Social Security Services, 43 government service, 82; supports and service, 82; Services, 94; **services/assistance, 133**
- V. residential modality, 13
- W. socioeconomic status, 13; socioeconomic disadvantage, 2; low SES, 91; Economic, 70, socioeconomic disadvantage, 22
- X. Terrain, 16; Terrain, 52; **Terrain, 124**
- Y. Parking, 16; parking,52
- Z. Preparation, 16
- AA. non-human environment, 25
- BB. Aging, 31
- CC. Social disorder 31
- DD. Room to move within places, 34
- EE. cognitive/learning contexts, 55
- FF. community environments,55; design (community/other), 139
- GG. Information and technology, 58, Information, 130; **Information, 139**
- HH. Communications, 64; Communications, 112
- II. Conflict, 64
- JJ. emotional conditions, 64
- KK. **Objects,73**; Access to equipment, 73
- LL. Forms,73
- MM. Groups, 73
- NN. **sensory qualities**, 85
- OO. parental self-efficacy beliefs, 109
- PP. spoken messages, 112
- QQ. **safety concerns**, 124

In the preliminary cycle, red indicated initial selection for general category (16), while green indicated possible use (4). These were later modified. Some general categories later became specific terminology as they were reevaluated.

APPENDIX D: Specific Terms

- A. Routines, 4; institutional routine, 73
- B. opportunities for autonomy, 4; involvement in decision making, 118; permission to perform activities/other person decides, 13
- C. integration into community, 4
- D. supervision/assistance, 4; Access to assistance, 73; personal assistance/help, 82; Assistance, 96; QAdults: opportunity creator, 85
- E. parking for wheelchairs, 7; lack of parking lots, 91
- F. family support, 7; emotional support, amount of support, 13; emotional support, 34; emotional supports, 96; Emotional Support, 118; QPeers: support, 85; QP: friendship, 85; Nurturing, 96;
- G. Overprotectiveness, 7; close proximity of adults, 40;
- H. size/layout, 7; physical size of residence, 13; size and space for approach and use, 52
- I. Crowds, 7; Crowds, 58; Crowds, 16; Crowds, 19; Crowds, 70; Crowded, 85; Crowded, 91
- J. limited services, 7; needed services, 40; services of interest, 40; availability of OT services, 40; childcare service availability, 82; legal services, 82
- K. slopes and smooth floors, 10; floor coverings, 67; stable/firm slip resistant floor surface, 127; inaccessible walking surfaces, 67; irregular surfaces, 136; Hills, 103; terrain/distance, 7; uneven terrain, 124
- L. maintenance of roads and sidewalks, 82; inappropriate ground cover, 91; lack of sidewalks, 103;
- M. Widths, 10; large/wide, 52; narrow passageways, 67; narrow paths/etc., 136; wide enough passages, 127
- N. reduced circulation space, 10; several different spaces, 73; insufficient space to maneuver, 91; insufficient space to maneuver, 91; elevated spaces, 91
- O. "high" sidewalks, 10; "high" thresholds 67; "high" curbs, 103
- P. presence of vehicles, 10, traffic, 10; heavy traffic, 31; dangerous crosswalks, 103
- Q. familiar environment, 10, Unfamiliar, 85, Familiarity, 25

- R.** Income, 13
- S.** attitudes (neg), 13; discriminatory or neglecting attitudes, 76; QPeers: attitude, 85;
- T.** lack of knowledge of others, 13; insufficient knowledge, 91; QA: knowledge and skills, 85; caregiver and peer understanding of disability, 79; understanding of others, 34; lack of understanding by those in charge, 73; caregiver and peer understanding of disability, 79
- U.** Cost, 13; Cost, 22; Cost, 82; Affordable, 82; insufficient funds, 91
- V.** Time, 13; extra time, 34; time, 40; Time, 64; insufficient time, 73; Time, 124; length of time, 127; number of times/repetitions, 127
- W.** Money, 13, Money, 40
- X.** Stigma, 13; Stigma, 58; Stigma, 100; Stigma, 124; not feeling allowed, 118
- Y.** unusable equipment, 13; lack of equipment support, 67; inaccessible equipment, 91; access to technology, 76; technology misplaced, stored out of sight or abandoned, 118; Access to equipment, 73
- Z.** Live closer, 22; distance from desired location, 31; Distance, 28; long distances, 103; too far/proximity, 91; Far, 136; Distance to desired location, 109;
- AA.** Lighting, 70; Lighting, 25; Lighting, 58; inadequate lighting, 67; poor lighting, 103; Lighting, 136; Light, 43; Light, 64; Light, 76; Light, 127; light levels, 127; low levels of illumination, 76
- BB.** color/contrast, 25; "balance" colors, 127
- CC.** presence of landmarks, 25
- DD.** Organization, 25
- EE.** size of elements, 25; manageable grips and handles, 52;
- FF.** potential for change (in environment), 25;
- GG.** social understanding, 25; social expectations/concerns, 25; social pressure, 124; social pressure, 124, Expectations, 124
- HH.** Location, 28

- II.** Height, 28, vertical travel, 127; climb/descend stairs, 31; Stairs, 40
- JJ.** Cleanliness, 28; lacking hygiene, 121
- KK.** Staffing, 28; exposure to activities/high expectations, 28; helper or assistant, 34; physical help, 34; difficulty getting help, 67; lack of personnel, 67
- LL.** Poor Street conditions/quality of streets and sidewalk, 31; poor street conditions, 103; uneven sidewalks, 31;
- MM.** excessive noise, 31; Noise, 58; Noise, 64; background noise, 67; Noisy, 70; noise, 127; Sound, 43; Sound, 112
- NN.** standing in place, 31
- OO.** heavy objects (need to lift), 31; low physical effort, 52; using less than 5 lbs. of force, 127
- PP.** Security, 31; neighborhood physical and social disorder, 31; presence of vermin, 31
- QQ.** Information, 34; Information, 40; perceptible information, 52; information availability, 58; information availability, 70; Information, 82; Misinformation, 124
- RR.** air quality, 43; air quality, 58; air quality, 70; air quality, 127; Dust, 64;
- SS.** talk to text software, 52
- TT.** flexibility of use, 52
- UU.** simple intuitive use, 52; easy to understand design, 52; Usability, 58; usability of objects, 70;
- VV.** recognizable design features, 91
- WW.** (device) tolerance for error, 52;
- XX.** built in features to minimize hazards caused by accidents or unintended actions, 52
- YY.** minimal effort/minimize fatigue, 52
- ZZ.** Maintenance, 52, poorly maintained, 91;
- AAA.** signage and signals, 52; tactilely, visually, auditorily accessible signage, 52; visible/audible or discernable tactile signage, 127; illogical signs or markers, 136; signs out of visual range, 136
- BBB.** reading level of written material, 58; reading level, 70

- CCC. Safety, 58; biological/chemical agents, 64; degree of exposure to existing hazards (bacteria/viruses), 127; dangers/safety, 64; Radiation, 64; Toxins, 127; chemicals and solvents, 127; radiation emitted, 127; vibration levels, 127
- DDD. Precipitation, 58; inclement weather, 124; Precipitation, 70; snow/ice, 103; Rain, 124; winter (snow/ice), 124
- EEE. Marginalization, 58
- FFF. Oppression, 58
- GGG. Discrimination, 58; Discrimination, 64; Discrimination, 130; Discrimination, 133
Prejudice, 124, Discrimination, 141,
- HHH. sexual harassment, 64
- III. Violence, 64; Crime, 67
- JJJ. Ergonomics, 64
- KKK. boring/defiant work, 64
- LLL. Pressure, 64
- MMM. Humidity, 64, Humidity, 127
- NNN. small print, 67
- OOO. Exits, 67
- PPP. temperature (hot or cold), 67; Temperature, 127; heat and air conditioning, 82; Cold, 124; Heat, 124
- QQQ. physical obstacles to mobility, 67; Obstacles, 76; Clutter, 121; objects in pathway, 127; Clutter, 127
- RRR. cognitive/sensory CUES, 70
- SSS. Transparency (object use), 70, Transparency, 58
- TTT. accommodations with optimal timing and placement, 79
- UUU. QStructureOrganization: availability, 85; QSO:accessible, 85; QSO: suitable, 85

- VVV. inaccessible routes, 91
- WWW. insufficient policies/laws/standards, 91; rules/regulations and conventions, 96; Lack of responsibility for making accessibility, 91; Protection, 96; Policies, 133
- XXX. physical supports, 96
- YYY. lack of benches, 103; area for relaxation, 121
- ZZZ. density (openness/closedness), 127; division into specific areas, 121
- AAAA. Teasing, 124
- BBBB. Privacy, 121
- CCCC. Uncertainty, 124

APPENDIX E. Numerical Count of Terms from each article

Table 3b.

In-text citation	Number of General Terms	Number of Specific Terms
Akyurek & Bumin (2018)	11	-
Anaby et al. (2013)	5	4
Arvidsson et al. (2008)	7	7
Athayde et al. (2017)	12	7
Badia et al. (2011)	3	14
Batten et al. (2019)	8	11
Blakeley-Smith et al. (2009)	4	1
Blauwet et al. (2017)	2	2
Carignan et al. (2008)	1	8
Chien et al. (2017)	0	7
Clarke et al. (2011)		11
Colver et al. (2012)	4	6
Coster et al. (2013)		
Escorpizo et al. (2011)	6	3
Foley et al. (2014)	-	4
Forsyth et al. (2007)	-	1
Gray et al. (2012)	6	16
Hammel et al. (2008)	5	5
Hammel et al. (2015)		15
Hammel (2015)	6	-
Heerkens et al. (2017)	5	17
Heinemann et al. (2016)		16

Heinemann et al. (2015)	2	12
Hemmingson & Borell (2002)	5	5
Jaiswal et al. (2019)	4	8
Kramer et al. (2012)	3	2
Lai et al. (2016)	3	10
Maciver et al. (2019)		19
Magasi et al. (2015)	-	-
Moore & Lynch (2015)	-	20
Noreau & Boschen (2010)	3	6
Pope & Brandt (1997)	-	-
Purc-Stephenson et al. (2017)	1	1
Rantakokko et al. (2015)	-	11
Reinhardt et al. (2011)	-	-
Robinson & Thompson (1999)	2	-
Rosenberg et al. (2013)	4	2
Snogren & Sunnerhagen (2009)	-	-
Verdonschot et al. (2009)	4	5
Waldman-Levi & Erez (2015)	-	
Wee & Paterson (2009)	5	8
Whedon (2000)	-	14
Whiteneck & Dijkers (2009)	7	2
Whiteneck et al. (2004)	7	2
Wong et al. (2017)	4	
	139	282

APPENDIX F: Categorizing- Preliminary Attempts

1. Social

- a. integration into community, 4
- b. family support, 7; emotional support, amount of support,13; emotional support, 34; emotional supports, 96; Emotional Support, 118; QPeers:support, 85; QP: friendship, 85; Nurturing, 96;
- c. **Stigma**, 13; Stigma, 58; **Stigma**, 100; Stigma, 124; not feeling allowed, 118
- d. social understanding, 25; social expectations/concerns, 25; social pressure, 124;social pressure, 124, Expectations, 124
- e. opportunities for autonomy, 4; involvement in decision making, 118; permission to perform activities/other person decides, 13
- f. Routines, 4; institutional routine, 73
- g. **Teasing**, 124
- h. **Privacy**, 121
- i. **Uncertainty**, 124

2. Financial Situation

- a. **Money**, 13, **Money**, 40
- b. **Cost**, 13; **Cost**, 22; **Cost**, 82; **Affordable**, 82; **insufficient funds**, 91
- c. **Income**,13

3. Systems and Policies

- a. **insufficient policies/laws/standards, 91; rules/regulations and conventions, 96; Lack of responsibility for making accessibility, 91; Protection, 96; Policies, 133**

4. Physical Space

- a. parking for wheelchairs, 7; lack of parking lots, 91
- b. size/layout, 7; physical size of residence, 13; **size and space for approach and use, 52**, reduced circulation space, 10; several different spaces, 73; insufficient space to maneuver, 91; insufficient space to maneuver, 91; elevated spaces, 91
- c. Height, 28, **vertical travel, 127**; climb/descend stairs, 31; Stairs, 40, "high" sidewalks, 10; "high" thresholds 67; "high" curbs, 103
- d. **Widths, 10**; large/wide, 52; narrow passageways, 67; narrow paths/etc., 136; wide enough passages, 127
- e. Live closer, 22; distance from desired location, 31; **Distance, 28**; long distances, 103; too far/proximity, 91; Far, 136; **Distance to desired location, 109**;
- f. **physical supports, 96**
- g. **density (openness/closedness), 127**; division into specific areas, 121

5. Attitudes

- a. Overprotectiveness, 7; close proximity of adults, 40;
- b. **attitudes (neg)**, 13; discriminatory or neglecting attitudes, 76; QPeers: attitude, 85;
- c. **lack of knowledge of others**, 13; insufficient knowledge, 91; QA: knowledge and skills, 85; caregiver and peer understanding of disability, 79; understanding of others, 34; lack of understanding by those in charge, 73; caregiver and peer understanding of disability, 79

- d. **Marginalization, 58**
 - e. Oppression, 58
 - f. **Discrimination, 58**; Discrimination, 64; **Discrimination, 130**; Discrimination, 133
Prejudice, 124, Discrimination, 141,
6. Natural Environment
- a. Location, 28
 - b. **potential for change (in environment), 25**;
 - c. accommodations with optimal timing and placement, 79
7. Built/Physical Environment
- a. QStructureOrganization: availability, 85; QSO: accessible, 85; QSO: suitable, 85
 - b. inaccessible routes, 91
 - c. Exits, 67
 - d. physical obstacles to mobility, 67; Obstacles, 76; Clutter, 121; objects in pathway,
127; **Clutter, 127**
 - e. size/layout, 7; physical size of residence, 13; size and space for approach and use, 52
 - f. **Crowds, 7; Crowds, 58; Crowds, 16; Crowds, 19; Crowds, 70**; Crowded, 85; Crowded,
91
 - g. presence of vehicles, 10, traffic, 10; heavy traffic, 31; dangerous crosswalks, 103
 - h. **Cleanliness, 28**; lacking hygiene, 121
 - i. Organization, 25
 - j. density (openness/closedness), 127; division into specific areas, 121
 - k. Ergonomics, 64
 - l. **Maintenance, 52**, poorly maintained, 91;
8. Climate/Weather Conditions
- a. Precipitation, 58; inclement weather, 124; **Precipitation, 70**; snow/ice, 103; Rain, 124;
winter (snow/ice), 124
 - b. temperature (hot or cold), 67; **Temperature, 127**; heat and air conditioning, 82; Cold, 124;
Heat, 124
 - c. **Humidity, 64, Humidity, 127**
 - d. **air quality, 43**; air quality, 58; air quality, 70; air quality, 127; Dust, 64
 - e. Pressure, 64
9. Services/Assistance
- a. limited services, 7; needed services, 40; services of interest, 40; availability of OT
services, 40; childcare service availability, 82; legal services, 82; daycare or lack of
daycare, 124
 - b. supervision/assistance, 4; Access to assistance, 73; personal assistance/help, 82;
Assistance, 96; QAdults: opportunity creator, 85
 - c. Staffing, 28; exposure to activities/high expectations, 28; helper or assistant, 34; physical
help, 34; difficulty getting help, 67; lack of personnel, 67
10. Terrain-
- a. maintenance of roads and sidewalks, 82; inappropriate ground cover, 91; lack of
sidewalks, 103;
 - b. slopes and smooth floors, 10; floor coverings, 67; **stable/firm slip resistant floor surface,**
127; inaccessible walking surfaces, 67; **irregular surfaces, 136**; Hills, 103;

- terrain/distance, 7; uneven terrain, 124
 - c. Poor Street conditions/quality of streets and sidewalk, 31; poor street conditions, 103; uneven sidewalks, 31;
11. Objects features/Use and availability of technology (these two need to be separated)
- a. unusable equipment, 13; lack of **equipment support, 67**; inaccessible equipment, 91; access to technology, 76; technology misplaced, stored out of sight or abandoned, 118
 - b. **heavy objects (need to lift), 31**; low physical effort, 52; using less than 5 lbs. of force, 127
 - c. flexibility of use, 52
 - d. **recognizable design features, 91**
 - e. **talk to text software, 52**
 - f. **simple intuitive use, 52; easy to understand design, 52**; Usability, 58; usability of objects, 70;
 - g. Transparency (object use), 70, Transparency, 58
 - h. built in features to minimize hazards caused by accidents or unintended actions, 52
 - i. Ergonomics, 64
12. Sensory Qualities
- a. **Lighting, 70; Lighting, 25; Lighting, 58**; inadequate lighting, 67; poor lighting, 103; Lighting, 136; Light, 43; Light, 64; Light, 76; Light, 127; light levels, 127; low levels of illumination, 76
 - b. excessive noise, 31; **Noise, 58**; Noise, 64; background noise, 67; Noisy, 70; noise, 127; Sound, 43; Sound, 112
 - c. color/contrast, 25; "balance" colors, 127
 - d. signage and signals, 52; tactilely, visually, auditorily accessible signage, 52; visible/audible or discernable tactile signage, 127; illogical signs or markers, 136; signs out of visual range, 136
 - e. cognitive/sensory CUES, 70
 - f. small print, 67
 - g. presence of landmarks, 25
13. Safety Concerns
- a. **sexual harassment, 64**
 - b. **Violence, 64; Crime, 67**
 - c. **Security, 31; neighborhood physical and social disorder, 31; presence of vermin, 31**
 - d. **Safety, 58; biological/chemical agents, 64; degree of exposure to existing hazards (bacteria/viruses), 127; dangers/safety, 64; Radiation, 64; Toxins, 127; chemicals and solvents, 127; radiation emitted, 127; vibration levels, 127**
14. Communications
- a. **reading level of written material, 58; reading level, 70**
 - b. **Information, 34; Information, 40**; perceptible information, 52; information availability, 58; information availability, 70; **Information, 82; Misinformation, 124**
15. Task specific (only one not from general term. list)
- a. **Time, 13**; extra time, 34; time, 40; **Time, 64**; insufficient time, 73; **Time, 124**; length of time, 127; number of times/**repetitions 127**
 - b. **boring/defiant work, 64**

- c. flexibility of use, 52
- d. simple intuitive use, 52; easy to understand design, 52; Usability, 58; usability of objects, 70;
- e. recognizable design features, 91
- f. standing in place, 31
- g. potential for change (in environment), 25;

APPENDIX G: Areas and Categories Defined

I. ICF category: Natural Environment and Human Made Change; Products and Technology

Category: Physical Obstacles-

Definition-

Natural Environment and Human made change-animate and inanimate elements of the natural or physical environment, and components of that environment that have been modified by people, as well as characteristics of human populations within that environment.

Products and Technology- natural or human-made products or systems of products, equipment and technology in an individual's immediate environment that are gathered, created, produced or manufactured.(ICF, 2002)

Categories below-

- A. **Physical Space**- Ease of access to spaces based on spatial features/organization (REIS, 2014)
- B. **Sensory Qualities**- Sensory conditions allowing for performance of activities, adjustable as needed (REIS, 2014)
- C. **Specific Task Parameters-Context Specific**: How task organized or set-up, this category was created for the purposes of this typology and was not a category found in the literature
- D. **Physical Climate**- the weather conditions prevailing in an area in general or over a long period (Escorpizo, Graf & Marti, 2011)
- E. **Natural and Built Environment/Terrain**- physical features of the environment affecting participation (Widehammar, Lidström, & Hermansson, 2019)

II. ICF category: Attitudes; Category-Social obstacles

Definition-

Attitudes- the observable consequences of customs, practices, ideologies, values, norms, factual beliefs and religious beliefs. These attitudes influence individual behavior

and social life at all levels, from interpersonal relationships and community associations to political, economic and legal structures

- A. **Social Factors-** interpersonal and group atmosphere, interactions, context and expectations (Wee & Patterson 2009)
- B. **Attitudes-** perception of others toward abilities/disabilities of individual or group (Anaby et al., 2013)
- C. **Communications-** interacting with others by receiving and providing information in linguistic and nonlinguistic manners (Snögren & Sunnerhagen, 2009)

III. ICF Category: Services, Systems Policies

Definition-

Services, Systems and Policies- **Services** that provide benefits, structured programs and operations, in various sectors of society, designed to meet the needs of individuals; **Systems** that are administrative control and organizational mechanisms, and are established by governments at the local, regional, national, and international levels, or by other recognized authority; **Policies** constituted by rules, regulations, conventions and standards established by governments at the local, regional, national, and international levels, or by other recognized authorities.

- A. **Financial situation-** availability of monetary resources to pay for goods and services (Rantakokko, Iwarsson, Portegijs, Viljanen & Rantanen, 2015).
- B. **Systems/Policies-** Government or other institutional laws, rules, policies, regulations, norms, procedures, codes and conventions that influence participation in activities (Athayde, Mancuzo & Corrêa, 2017)
- C. **Safety Concerns-** concerns for health and wellbeing that influence decisions regarding participation (Wee & Patterson, 2009)

IV. ICF Category: Support/relationships

Definition-

Support/Relationships people or animals that provide practical physical or emotional

support, nurturing, protection, assistance and relationships to other persons, in their home, place of work, school or at play or in other aspects of their daily activities

- A. **Social Supports-** individual and groups (families, caretakers, staff, authorities, etc.) that facilitate participation by providing the necessary physical, mental/motivational, time and/or financial supports among others (Athayde, Mancuzo & Corrêa, 2017)

APPENDIX H: Full Typology with Numbered/Linked References

Red numbers indicate selected term

I ICF category: Natural Environment and Human Made Change; Products and Technology Category: Physical Obstacles			
Category	Definition	Examples	Source of terminology
A Physical Space (6, 7, 43, 24 41)			
1. Vertical Distance	The amount of separation between two horizontal surfaces/planes	Stairs, low ceilings, height of cabinets, shelves, door lips, etc.	10, 42, 11, 13, 22, 44, 4
2. (Horizontal) Distance	The amount of space between things, how physically far one must travel to get to desired outcome	Long or repetitive distances that affect performance, classes that are in distant classrooms within a school	8, 11, 10, 34, 44, 109, 36
3. Width	The lateral measurement or extent of something	Narrow hallways, doorways, lacking space to turn wheelchair or walker	4, 17, 22, 44, 42
4. Orientation (word selected by expert to be inclusive of other terminology)	The relative position of something or someone (especially oneself) to something else; also space to maneuver/readjust positioning	Activities requiring certain positions that may not be attainable to all people such as mammography equipment that requires a woman with mobility impairment to stand	3, 5, 17, 4, 30, 11
B. Sensory Qualities (of Environment) (28)			
1. Cognitive/sensory cues	Lack of alternative usable cues for directions, communication, etc. when one sensory system can't be used-	Lack of audio component for walk/do not walk affects street crossing for people with low vision, lack of captioning during emergency instructions	23
2. Lighting	The arrangement or effect of lights	Darkness or brightness of light affect performance	23, 9, 19, 44, 22, 34, 21, 25, 14, 42, 25
3. Visual Size	The size of an object or aspects of the	Threading a needle, small print on	10

	object relative to seeing it	medication, small print in a book or sign,	
4. Noise Level	The amplitude of noise present in the environment	Extraneous noise making it difficult to pay attention to teacher in classroom, noise from train making it difficult to hear conductor	11, 19, 21, 22, 23, 42, 14, 37
5. Contrast	Visual differences between an object and the background	Difficulty differentiating hands of a teacher signing from teacher clothing, differentiating edge of step	9, 42
6. Smell	Odors or scents in environment impact on participation in specific activities	Aversion to odors in cafeteria reduce participation in lunch	Not found in scoping review, ideas founded in information from Baker, Lane, Angley & Young, 2008
7. Taste	Flavor of items in mouth	Taste of certain foods make it difficult for someone to participate in meals, aversion to toothpaste	Not found in scoping review, ideas founded in information from Baker, Lane, Angley & Young, 2008
8. Texture	feel or consistency of surface, object or substance	Grassy texture prevents person who is averse to this texture from participating (ex. Grass or sand)	Not found in scoping review, ideas founded in information from Baker, Lane, Angley & Young, 2008
9. Movement	Activities requiring movement of surface on stable body, movement of body with moving surface or movement	Movement of school bus causes nausea movement of vehicle makes maintaining body position difficult (riding bus)	Not found in scoping review, ideas founded in information from Baker, Lane, Angley & Young, 2008

C. Specific Task Parameters-Context Specific: How task organized or set-up			
1. Speed/Timing	Rate something moves or operates, a particular point or period of time when something happens	Getting on/off escalator, catching something thrown	Not found in scoping review clinical experience supported by Keyon & Blackinton, 2011

2. Number of steps (actions) in sequence	Number of different events make up a sequence	Following recipe, making art project, task with too many steps	Not found in literature, clinical experience supported by Maynard & Hackel (1997)
3. Access to equipment	Equipment is unusable with adequate equipment support, is accessible equipment for use, not stored out of sight, misplaced or abandoned and usable with the skills of the individual technology	No proper mounting system for AAC on w/c or other environments, AAC is left behind or disregarded, power wheelchair is not plugged in regularly	5, 22, 24, 30, 25, 39
4. Usability of objects	Aspects of objects and object use that promote or diminish physical interaction with one or more objects; include universal design characteristics	Writing utensil, opening packaging, buttons/snaps, turning on light	5, 17, 19, 24
5. Object holding	Object that can be easily held or maintained in positions needed for effective use	Sustaining grasp long enough to drink a juice from a glass, holding a zipper to zip	30, 9, 17; wording comes from manageable grips, size of objects inaccessible equipment and design features
6. Weight of objects	Resistive force to lifting something caused by the force of gravity on an object.	Weight of objects makes Carrying groceries, lifting drink to pour, getting dishes from cabinet difficult	11, 17, 42
7. Scheduling	Arrangement or plan of an event to take place at a particular time	Limited time for participation in desired activity (sign interpreted church service available once a week)	Not in scoping review, based on King et al. 2006
8. Time	Amount of time that activity takes is unavailable to the person or group	Don't have time to Get to child's school as parent when work hourly or live far	5, 13, 21, 41, 12, 24, 42
9. Repetitiveness	Task that requires doing the same task for a prolonged time or repeating over and over leads to decreased quality or results in not completing task	Activity requires using the same technique or motions over and over, work in chicken slaughterhouse conveyor belt.	9, 11, 17, 21, 42

D. Physical Climate (4, 6, 14)			
1. Weather (inclement weather)	The state of the atmosphere in terms of temperature, atmospheric pressure, wind and moisture	Rain, hail, snow making it difficult to participate in activities	41, 19, 23, 34
2. Temperature	Degree or intensity of heat present	Warmth or cold interfering with doing activities	22, 42, 27, 41
3. Humidity	Amount of moisture in air	Humidity in air making it difficult for those with respiratory conditions to participate	21, 42
4. Air Quality	The air bound presence of a substance which has harmful or poisonous effects	Peeling paint, construction, etc. making breathing more difficult when attempting to participate in activities	14, 19, 23, 42, 21
E. Natural and Built Environment/Terrain (3,43, 44,18,19)			
1. Floor surface	Traction provided by support surface	Irregular surface with tree roots makes it difficult to maneuver wheelchair or walker, Marble floor makes it difficult for individuals to move across	4, 22, 42, 44, 3, 41
2. Clutter	A collection of things filling space	Unorganized office desk; "busy" classroom,	40,42, 22, 9
3. Traffic/crowds	Variable movement in environment of other living beings and vehicles	Having to move through a crowd on a street or hallway make it difficult to move/change directions quickly	3, 6.7, 19, 23, 28, 30, 4, 11, 34
4. Obstructions (obstacles)	A thing that impedes or prevents passage/progress; obstacle/blockage	Things in the way of walking path one has to move around/over/under	25, 42

II. ICF Category: Attitudes Social Obstacles			
Category	Definition	Examples	Source of terminology
A. Social factors (6, 7, 41)			
1. Amount of Support (Emotional/Family/peers/caregivers)	Supportive of trying, being involved, participating; emotional support/amount of support, from family Quality of Peers and friendship support,; Nurturing	Family brings child to playground or involves in sports to participate, encourage elder to be involved in clubs or go with to events at library, etc.	3, 5, 12, 28, 31, 39
2. social expectations/concerns,	Characteristic of how person is treated by their social surroundings- assumptions made about capacity, care-giving and participation	School aged child uses diapers although having success with adapted toileting; young adult spoken for when device taking a long time or stuttering, older adult discouraged from having romantic relationships by family	9, 41
3. Presence of social network	Existence of people who will assist and support when needed for emotional or physical/logistical needs	Grandparents watch siblings when mother take child to adapted sports team,	idea from Law, 2002, 1, 19, 3, 28
4. Routines	The typical manner in which activities are done, the timing and order of when they are done, where they are done, how they are done	Early dinner at nursing facility may not fit resident's time to eat or hunger, morning meeting after long bus ride to school may not be best for attention, lunch in busy cafeteria difficult for students who have difficulty with noise or social situation, everyone sitting in circle for group or on floor may be difficult for person but seen as expectation, sitting on alternative makes "different"	2, 24
B. Attitudes (2, 25, 28, 30, 31, 39, 44)			
1. Threats by others	(direct) An intention to inflict pain, injury damage or other hostile action on someone in retribution for something done or not	Fear of bullying restricts use of playground, threats of violence by police limit the interactions between police and communities of color,	11, 19, 21, 22

	done		
2. Stigmatization	Others set some mark of disgrace or infamy upon	Limiting participation due to being perceived negatively by others (expressed displeasure when user of w/c boards crowded bus)	5, 19, 33, 41, 39
3. Stereotyping	A standardized mental picture that is held in common by members of a group and that represents an oversimplified opinion, prejudiced attitude or uncritical judgement	Sales clerk treats adult with cerebral palsy who speaks with difficulty differently than they would treat others (rushes them, ignores them)	41
4. Marginalization	Treatment of the needs of a group or individual as insignificant or trivial- not worthy of engaging or addressing	Complaints that it the paratransit (access-a-ride in NYC) shows up very early or late and is not reliable are not addressed for years by system, 30 years after ADA, 24% of subway stations have elevators,	19
5. Discrimination	Unjust or prejudicial treatment of different categories of people	Clubs, organizations, jobs that exclude certain individuals on the basis of belonging to a group	19, 21, 43, 41 also in Widehammar et al. (2019)
C. Communications (21, 37)			
1. Information	Information is purveyed in a manner in which it is usable to individuals	Written sign is incompressible by child who has learning disability; speaker at conference or no audio cueing at crosswalk for people with lower vision	11, 12, 17, 19, 23, 27, 41
2. Reading level/literacy	Written instructions are comprehensible	Court affidavit written in legal language, medical terminology used with patients who might not know words, manuals for machinery	17, 19, 23
3. Language	Using a system of communication compatible with the function and common use of the person communicated with	Classroom, museum, store not usable by person because the language they use is not usable there, AAC device that only produces English words	17

III. ICF Category : Services, Systems and Policies			
A. Financial Situation (34)			
1. Economic	The financial means necessary to participate in activities. Expensive adaptive or individualized equipment required to participate	Adaptive device is unaffordable or not covered by insurance	5. 8.13, 27.30,
B. Systems and Policies (4, 44)			
2. Laws, Policies and Regulations	Rules, regulations and administrative codes, standards and conventions used by empowered agencies (work, community or government) that affect participation of individuals and groups	Denying reasonable accommodations to qualified individuals with disabilities so they can perform the essential functions of the job for which they have applied or been hired to perform	30; 31; 43
3. Availability of Transportation	Multiple factors involved: Transport to and from events and places that is accessible, usable, affordable and convenient	Difficulty with time and effort spent on transportation limits vocational setting possibilities for young adult with disabilities	1, 3; 4, 5, 6; 17, 18; 23; 26,39
4. Accessible Signage	Purveying information in a manner that can be understood by all parties involved in the interaction allowing for participation in	Written sign is incompressible by child who has learning disability or low vision; no audio cueing at crosswalk for people with lower vision	17; 42; 44;
5. Variety of available activities	Availability of various activities that are accessible to individual for leisure, self-care, work, community life, education, etc.	Activities provided for socialization for residents at group home limited, lack of adapted activities in community leads to choice that is not meaningful to individual	2, 24, 21, term comes from King et al. 2006
C. Safety Concerns (41)			
1. Exposure to hazards	Presence of bacterial, biological, chemical, electrical, radiation, toxin, vibratory viral, or otherwise known dangers within the environment	High risk decreases continued involvement in activities, workers in dry cleaners or nail salon, miners, etc.	19;, 21; 42
2. Security	Environment provides perception of imminent	Changing participation due to fear of crime against oneself	11, 21,22

	danger against person or property	(such as not going to park)	
3. Harassment	Unsafe/disempowered by individuals or environment based on characteristics of individual or group- such as gender/gender identity results in reduced participation or choices	Woman doesn't participate in expected social gathering for workplace due to feeling "hit on" and expectations for relationships with males from workplace	21
IV. ICF Category: Support/Relationships			
A. Social Support (2, 14)			
1. Staffing	Access to help when needed but not so much authority that choices and actions are limited	Lack of 1:1 paraprofessional when needed in classwork, aid for home independence; too many adults during independent play	10, 12, 22, 3, 13
2. Opportunities for Autonomy	Involvement in decision making, permission to perform activity that one decides on rather than having it decided for you, integration into community	Long term care facility dresses clients passively due for "efficiency", child with cerebral palsy not allowed by HHA to free play with other children, special education counselor chooses classes rather than the student selecting classes	2, 39; 5, 25; 28
3. Supports for the family and/or caregivers	Ease of financial, temporal, emotional and physical burdens related to caregiving allows the family to be available more frequently and effectively	Stipend to help pay for adapted sports league, respite for families who take care of family members in the home,	Links concepts of other factors but comes from King et al, 2006

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