A CONCEPTUAL HARMONIZATION BETWEEN THE SSA DISABILITY DETERMINATION PROCESS AND ICF AND DOT FRAMEWORKS: A GUIDE TO ASSESSING THE MENTAL RESIDUAL FUNCTIONAL CAPACITY OF INDIVIDUALS WITH AUTISM SPECTRUM DISORDERS

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The aim of the current project is to create a useful product that cross-walks the Social Security Administration's (SSA) Mental Residual Functional Capacity Assessment (MRFCA) with the International Classification of Functioning (ICF) and the Dictionary of Occupational Titles (DOT) applied to a population of individuals with Autism Spectrum Disorders (ASD). SSA's MRFCA is cross-walked with the ICF in order to allow for a more in depth and functional breakdown of the purposefully more generic categories of the MRFCA. Worker Functions derived from the DOT are then added to the SSA/ICF crosswalk in order to better operationalize the functional manifestations associated with disability states as they occur in a natural (work) environment. Finally, a decision tree is developed from the crosswalk to increase ease of use of the product, titled the MRFCA Decision Tree. ASD was chosen as an exemplar to test this process. Inter-rater reliability on the MRFCA Decision Tree is assessed. The outcomes are the following: (a) A MRFCA Decision Tree that will allow a disability examiner to derive a more reliable disability decision when assessing individuals with ASD, (b) A breakdown of the current DDP process including problem areas and improvement suggestions based on the implementation of the decision tree, and (c) A narrative review of how coordinating the DOT with the ICF can provide a deeper understanding of how functional manifestations of a disability relate to job demands. Plans for future research aimed at improving the decision tree are discussed.

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PREFACE

1.0   INTRODUCTION

The Social Security Administration (SSA) uses the Mental Residual Functional Capacity Assessment (MRFCA) to assess mental functioning of individuals who are applying for disability benefits. The MRFCA is composed of only 20 abilities under four sub-headings. The Disability Determination Services (DDS) is required to use this same assessment tool to determine the mental capacity of individuals with an array of varying disabilities that present with a history of different symptoms, behaviors, and limitations. To inform this decision, the DDS utilizes the information the claimant provides in their case report, including medical records. Without extensive knowledge on the presenting disability, the medical records may be difficult to understand and navigate in order to identify what information is relevant to assessing Residual Functional Capacity (RFC). Furthermore, without a thorough understanding of the presenting condition, it may be challenging to accurately and reliably determine the claimant's capacity for performing the work related "abilities" [United States Government Accountability Office (GAO), 2004]. The necessity of the MRFCA to include a limited number of generic "abilities" in order to assess individuals with a broad array of disabilities in relevant work related tasks is understood. Also understood is the fact that a disability examiner may discuss mental limitations beyond the 20 "abilities" in section I of the MRFCA. However, there is a need for and value in implementing a strategy that will allow for a more objective and reliable evaluation of the claimant's mental functioning capacity. This is necessary due to the inability of an

examiner to have a comprehensive understanding of every disability's presentations that they encounter. It is also believed possible that expanding upon the MRFCA implementation stage of the sequential evaluation process will demonstrate greater efficiency as fewer cases may progress to the hearing stage (as the probability of the decision being overturned may decrease due to a more reliable decision being made at the initial level). This in turn may help to decrease the extreme backlog issue (Nottingham, 2014; Bertoni, 2009; GAO, 2007; GAO, 2004).

The purposed strategy for increasing the reliability of disability determinations consists of the following: (a) The incorporation of concepts and terminology from the International Classification of Functioning (ICF) and the Dictionary of Occupational Titles (DOT) into the MRFCA process via a decision tree; MRFCA Decision Tree, (b) A pilot study assessing the inter-rater reliability of the MRFCA Decision Tree, and (c) A review of the Social Security Administration's operations and the Disability Determination Process (DDP) in order to support and inform the implementation of the MRFCA Decision Tree. The disability of Autism Spectrum Disorders (ASD) is used as an exemplar to test this process.

1.1   THE DISABILITY DETERMINATION PROCESS

Providing benefits to those who have a disability and therefore are unable to work is a responsibility of the Social Security Administration (SSA) set forth in Title II and Title XVI of the Social Security Act (SSR 82-53). Title II addresses benefits paid to those who have worked in "covered" employment and who have paid sufficient taxes to Social Security to be considered insured. Title XVI refers to Supplemental Security Income, which is a cash benefit paid to those who are disabled or aged and make below the substantial gainful activity (SGA) level set forth

by the federal government. In order to determine if an individual with a disability is eligible to receive these benefits, they must undergo a sequential evaluation process where a disability examiner or adjudicator assesses gainful activity level and degree of impairment in terms of ability to perform work (CFR 416.920; Vocational Expert Handbook). Individuals can be assessed for disability through many different processes including in a claim as a child, in an initial claim as an adult, in an age 18 redetermination, or in a continuing disability review (CDR) (Vocational Expert Handbook). Due to the focus of this project on assessing individuals' level of impairment in terms of ability to perform work, the process for assessing children is not discussed.

Adult disability assessment processes are the current topic of interest. An age 18 redetermination refers to an assessment of disability for benefits of an individual who was awarded benefits as a child but is now an adult. With the sequential evaluation process differing for children and adults, once a child with a disability turns 18 he/she must be assessed according to adult criteria. Title XVI requires that age 18 redeterminations follow the same protocol as assessments for individuals who make an initial claim as an adult (Vocational Expert Handbook). In these determination processes, it is the claimant's responsibility to prove a mental or physical impairment that prevents the engagement in any SGA and is expected to result in death, or has lasted or is expected to last continuously for no less than 12 months (Title II, XVI). The claimant provides evidence such as medical history records, reports of daily activity, evidence of attempts to work, work evaluations, or recorded observations in order to prove his/her limitation level (SSR 96-8p). An adjudicator then assesses the evidence the claimant brings forth while progressing through the steps of the disability determination process (DDP) (Table 1: Sequential Evaluation Process) (20 CFR 416.920).

If an individual is awarded benefits for a nonpermanent disability through a redetermination or initial claims assessment, reevaluation is required every three years in a CDR according to Section 221i of the Social Security Act amendments. If the disability is not considered "nonpermanent," SSA may administer CDRs at their own discretion. The goal of a CDR is to ensure that those receiving benefits for extended periods of time are actually remaining at the same level of impairment. CDRs differ slightly from redetermination or initial claims cases in that it is the responsibility of the disability determination service (DDS) to prove the claimant has experienced a significant improvement in terms of ability to perform work based on the information the claimant provides in the case report (Nottingham, 2014). A disability examiner must assess the claimant's impairment according to the stringent Medical Improvement Review Standard (MIRS) in order to prove the occurrence of "a decrease in medical severity of the impairment that was present at the time of the last favorable decision" before terminating benefits (Section 225). If the claimant is not satisfied with the outcome of the CDR (or initial or redetermination claim,) an option to request a hearing for the case to be heard by a disability hearings officer (DHO) or an administrative law judge is available (ALJ) (HALLEX I-2-2-1; Nottingham, 2014).

Within this project, the area of greatest interest in the disability determination process (DDP), whether in an initial claim, redetermination, or possibly a CDR, is the implementation of the SSA 4734 F4-SUP Mental Residual Functional Capacity Assessment (MRFCA). The MRFCA is an administrative tool used to assess the extent to which an individual's medical impairments cause mental limitations that inhibit capacity to perform work-related tasks. The MRFCA is composed of three sections. Sections I and II are guides that assist the examiner in competing section III, the Functional Capacity Assessment. Residual functional capacity (RFC)

refers to an individual's maximum ability to engage in designated work activities on a continuous basis throughout a typical work-week. The RFC assessment (measured in this case with the MRFCA) includes a discussion of the claimants abilities based on those criteria. Part I of the assessment is titled "Summary Conclusions" and is composed of 20 work related "abilities" under the four sub-headings of "Understanding and Memory," "Sustained Concentration and Persistence," "Social Interaction," and "Adaptation." The adjudicator assesses each ability on a scale of "Not significantly Limited" to "Markedly Limited" with the exception of the "No Evidence of Limitation" and "Not Ratable on Available Evidence" categories. If any "abilities" are given the rating of "Not Ratable," the examiner must specify what further documentation is needed. This is section II of the MRFCA. After the "Summary Conclusions" section is completed, the ability ratings are discussed in narrative form in section III, (the Functional Capacity Assessment) including an explanation of information that clarifies function or limitation in the specific ability areas (SSA 4734 F4-SUP MRFCA). The MRFCA is completed by adjudicators at steps 2, 3, 4, or 5 of the sequential review process (Table 1) based on evidence presented in the claimant's case report (SSR96-8p; 20 CFR 404.1520 and 416.920).

Table 1: The Sequential Evaluation Process

1.	Is the claimant engaging in substantial gainful activity?
2.	Does the claimant have a severe impairment?
3.	Does the claimant have an impairment that meets or medically equals a listed impairment?
4.	Can the claimant do past relevant work?
5.	Can the claimant do other work?
	Hearing Level

1.2   SOCIAL SECURITY EXPENDITURES

The MRFCA is vital in terms of determining a conclusion in the DDP for those with mental disorders, including those with ASD. The National Bureau of Economic Research found that mental impairments are one of four impairments that make up approximately 70% of all disability awards (Autor & Duggan, 2006). Furthermore, mental impairments showed to be the most consistent health-related variable resulting in disability allowances (Hu, Lahiri, Vaughan, & Wixon, 2001). This means, that due to the majority of claimants who receive disability benefits having mental impairments, the majority of claimants are assessed with the MRFCA.

Research shows that from 1985-2005, the number of working age adults (25-65) who were receiving Disability Insurance (DI) nearly doubled (2.2%-4.1%) (Autor & Duggan, 2006). This has huge repercussions on the Federal budget. For instance, in FY2002 working age adults with disabilities consumed $87.3 billion in Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI) and $82.1 billion in Medicare and Medicaid programs. Once other federal expenditures such as housing, food assistance, income assistance, and rehabilitation services were included, the total federal spending on assistance for people with disabilities summed $226 Billion, 11.3% of the federal budget (Stapleton, O'Day, Livermore, & Imparato, 2006). In recent years these numbers have increased drastically. The Center on Budget and Policy Priorities (2014) found the sum of Social Security benefits including Medicare and Medicaid to be 46% of the federal budget. The budget for these expenditures is expected to continue growing as SSA is accepting applications much faster than terminating them. For example, in FY2013, 33.52% of benefit applications were accepted while only 8.17% of existing benefits were terminated. This is predicted to be a result of people living longer and impairments with lower mortality rates being accepted for benefits (Social Security Administration, 2013).

Due to the number of applications for disability benefits continuing to increase, and due to mental impairments being one of the most frequent disability statuses applying, the increase in use of the MRFCA in disability evaluations can be expected.

1.3   EMPLOYMENT OF PEOPLE WITH DISABILITIES

One predicted reason for the large number of individuals with disabilities receiving Social Security benefits is the assumption held by society that jobs in the U.S. are requiring increasingly skilled workers; and that many individuals with disabilities, especially mental disabilities, are not capable of possessing these sills (Handel, 2000). During a study examining Quality Employment Surveys and the Panel of Income Dynamics, researchers found that many believe there is a discrepancy between the skills workers possess and the skills employers demand due to new developing technologies. However, when examining job education and training requirements with a tool derived from the DOT, the researchers found that reports of skill mismatch are exaggerated, with little increase in job skill requirements in recent years (Handel, 2000). These results support the notion that individuals with mental disabilities who believe they are unable to perform work due to lack of specific skills, may still be qualified for various positions. In order to assess if an individual is able to perform work, their functioning level must be compared with work demands (Heron, 2005; Ahmad, 2012). Although the current MRFCA measures an individual's functioning in terms of broad work-related abilities, the newly developed MRFCA Decision Tree allows for a more direct comparison of how impairments in MRFCA abilities (and related functions) relate to specific job characteristics. This may provide a more accurate and reliable assessment of whether or not the claimant possesses the capacity to perform work.

The work environment can seem daunting not only for those with disabilities who are unemployed, but also for those with disabilities who hold employment. For example, in a study assessing environmental barriers for individuals with disabilities currently employed, a majority of individuals endorsed an incongruent work environment as a barrier to their functioning (Whiteneck, Harrison-Felix, Mellick, Brooks, Charlifue, & Gerhart, 2004). The mismatch between the individuals' abilities and the environments they were working in was assessed as detrimental to their work performance. This easily can result in employment termination, causing the individuals to require the assistance of disability benefits. Although it is not the responsibility of the Social Security Administration to provide job matching services, during Step 4. "Past Work Test" and Step 5. "Any Work Test" of the sequential evaluation process (Table 1), the disability examiner is required to assess if the claimant is able to perform past or any work (20 CFR 416.920). By using a system that compares a claimants functioning to relevant job characteristics, the decisions at steps 4 and 5 may be able to be made more accurately and reliably, decreasing the probability of the individual being considered disabled due to "failing" at a job that was incongruent to their functional capabilities.

Although the assessment of all mental disabilities may benefit from the improvement of the disability determination process, as evident by a majority of those receiving SSA benefits possessing mental disabilities, ASD was the focus of the current project due to its unique presentations and its particularly high unemployment rate (Hu et al., 2001). In the results of a 12-year longitudinal study of 343 individuals, the employment rate of individuals with ASD ages 10-52 working more than 10 hours-per-week was found to be 12.6%-24.1% (Taylor & Seltzer, 2013). These results are consistent with the results of the National Longitudinal Transition Study-2 that reported ASD as having the highest rate of unemployment among disability groups

(assessed by the study) with only 53.4% of adults ages 21-25 ever having held paid employment (Roux, Shattuck, Cooper, Anderson, Wagner, & Narendorf, 2013). However, although the overall employment rate for this population is low, the presentations of the disorder vary in terms of ability to perform work. For instance, individuals with ASD who have less impairment in communication abilities have been found to have higher rates of employment (Roux et al., 2013). Individuals with ASD who partake in employment training and placement programs also have shown to experience drastically higher rates of employment compared to those who do not (87.5% vs. 6.25%) (Wehman, Schall, McDonough, Kregel, Brooke, Molinelli, Ham, Graham, Riehle, Collins, & Thiss, 2014). These results demonstrate the variability with this population, and reiterate the importance of thorough, work- related assessments of the individuals' functioning capacity. A more detailed background on the unique characteristics of ASD and rationale for its inclusion as an exemplar in this study is provided below in section 1.4.

1.4   AUTISM SPECTRUM DISORDERS

Autism Spectrum Disorder (ASD) is a developmental social disability that emerges in infancy or childhood and remains throughout the lifetime. Many individuals with ASD have average or above average intelligence, yet are not able to translate their potential into real-life adaptive skills (Saulnier & Klin, 2007). They experience impairment in social interaction and communication which manifests as difficulty in use of nonverbal behavior, lack of development of peer relationships, failure to seek shared enjoyment, and lack of social or emotional reciprocity (APA, 2014). Individuals with ASD have difficulty with Theory of Mind (ToM), or understanding that others have thoughts and feelings different from one's own. This results in

difficulty understanding the intentions of others or how one's behavior affects others (Myles & Simpson, 2002). Persons with this disorder may also experience difficulties initiating or sustaining conversations, preoccupations with certain topics, stereotyped or repetitive language, or abnormal prosody (APA, 2014; Shriberg, Payl, McSweeny, Klin, Cohen, & Volkmar, 2001). These symptoms can all greatly impact the individual's ability to successfully partake in an interview, interact with co-workers, engage with customers, or cooperate with supervisors (Klin, 2000; Buon, Dupoux, Jacob, Chaste, Leboyer, & Zalla, 2012).

In the past years, the prevalence of ASD has been increasing (Centers for Disease Control and Prevention, 2012). In 2008, the Autism and Developmental Disabilities Monitoring Network (ADDM) estimated the prevalence of ASD at 11.3 per 1,000 (one in 88) children aged 8 years. There are approximately 673,000 children in the United States alone living with ASD (Kogan, Blumberg, Schieve, Boyle, Perrin, Ghandour et al., 2007). While intensive therapy may decrease severity, there is no cure; it is a lifelong disability that affects many areas of daily functioning. Individuals have also shown to be less likely to improve in the domain of reciprocal social interaction during adulthood than in childhood, meaning they are less likely to improve in social skill ability during the time when they are most likely attempting to find employment (Seltzer, Krauss, Shattuck, Swe, & Lord, 2003).

The growing prevalence of children with ASD becomes of increasing importance as these children move into adulthood and attempt to enter the workforce. Data collected from the national and state vocational rehabilitation (VR) program for the years 2006 to 2010 found that an increasing number of individuals with ASD sought VR services but only about half received the desired services. Of those who received services, only about 50% gained integrated employment post services (Migliore, Butterworth, & Zalewska, 2012). These results depicting

low level of employment are consistent with research conducted by Shattuck, Narendorf, Cooper, Sterzing, Wagner, & Taylor (2012). This ten year prospective study of youth in special education services examined the prevalence and correlates of postsecondary education and employment for youth with ASD. The researchers found that among the 500 individuals with ASD, only 34.7% attended college and more than 50% of those who had been out of school for two years were unemployed.

The increasing prevalence of individuals with ASD coupled with the large unemployment rate among this population has large implications for public policy. The Social Security Administration (SSA) has an existing listing for *Autistic disorder and other pervasive developmental disorders* in adults (12.10). The SSA listings are based theoretically upon a medical approach that requires evidence from documentation that demonstrates qualitative deficits in reciprocal social interaction, verbal and nonverbal communication, and imaginative activity, and markedly restricted activities and interests. These presentations result in marked restriction of activities of daily living, maintaining social functioning, maintaining concentration, keeping persistence or pace, or repeated episodes of decompensation. This medical conceptualization does not take into consideration how the functional limitations interact with other elements within the person's (work) environment, such as the requirements of the work tasks, activities within occupations, and the roles and expectations of others within that environment (supervisors, co-workers, customers). Consideration for the fact that the person's response may differ dramatically when elements of the environment change is also not provided (Bernell, 2003).

Because individuals with ASD vary drastically in terms of abilities that may affect employability, predicting the functional and vocational impact of the limitations experienced by

this population may be very difficult. The goal of using this population as an exemplar with the MRFCA Decision Tree is to better distinguish the work-related capacity of this population. By increasing the ability to more accurately assess this population with extreme and diverse work-related challenges, a more accurate disability decision may be made, and a model for expanding upon and applying the decision tree to other needed populations may be generated.

1.5   THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING

According to the introduction of the ICF published by the World Health Organization (WHO) (2001), the goal of the ICF is to standardize the language and framework of health and health related states including disability. It does not classify people, but rather provides a scientific basis for understanding and studying a situation of each person within multiple health related domains. Its domains incorporate aspects of functioning from both the individual and societal perspective. It was developed to act as a clinical tool (vocational, rehabilitation, and outcome assessment), and a social policy tool (social security planning, compensation systems, and policy design). For these reasons, we believe incorporating this tool may improve the DDP by coordinating both the clinical and policy branches of the program.

1.6   THE DICTIONARY OF OCCUPATIONAL TITLES

The Dictionary of Occupational Titles provides definitions of jobs in the economy based on job analyses. Job analyses involve the systematic study of workers' relationships to the following job

aspects: 1. Data, people, and things (Worker Functions), 2. Methodologies and techniques used, 3. Machines, tools, and equipment used, 4. The products or services that result, and 5. Worker attributes that contribute to successful job performance (U.S. Department of Labor, 1991). For this study, the scores of the MRFCA "abilities" identifying the individual's functional strengths and limitations will act as the Worker Attributes and will be compared to the DOT's Worker Functions. For this study, the Worker Functions of the DOT were chosen to assist in determining ability to perform work at steps 4 and 5 of the DDP due to the high reliability of the tool for measuring necessary worker functions for over 12,000 occupations (Cain, 1983). The job matching process, or in this case determining if an individual is able to perform past or any work, requires detailed information about both the person with the disability and jobs in the economy (Heron, 2005). The ability scores given in MRFCA Decision Tree provide detailed information about the individual's functional capacity level, while the Worker Functions detail work characteristics that the individual may show the most success with. If this system is followed, individuals with disabilities may be less likely to "fail" at jobs and reenter the DDP system, as they will be better assessed in terms of jobs that match their functional capacities. Administrative law judges (ALJs) may also be better able to compare results of the MRFCA Decision Tree to the jobs the individual previously held in order to determine if the claimant is really unable to perform past/any work, or if they were just poorly matched to their previous jobs creating the illusion of "inability to perform work".

1.7 MRFCA DECISION TREE BACKGROUND

The current project encompasses two years of research focusing on the development of a conceptual harmonization between SSA's Mental Residual Functional Capacity Assessment (MRFCA) and both the International Classification of Functioning and Dictionary of Occupational Titles concepts and terminology, for the purpose of streamlining the disability determination process and emphasizing return to work. The functional assessment component of the DDP, the MRFCA, is expanded in order to allow for a more thorough understanding of the functional requirements of each MRFCA "ability". The focus is then shifted to incorporating an environmental (work) data component to the DDP's sequential evaluation process in order to identify how a deficit in functioning relates to work activities. This is accomplished by comparing functional capacity indicators derived from the ICF to the MRFCA items and to DOT concepts and terminology, specifically the Worker Functions of Data, People, Things. The procedures used in cross-walking the three systems are consistent with the validated "ICF Linking Rules" set forth by Cieza, Geyh, Chatterji, Kostanjsek, Usten, & Stucki (2005). These "Linking Rules" provide basic instructions for linking standard assessments with the ICF, which is involved in the protocol of this project. The rationale for this crosswalk is that by comparing a claimant's functional capacity with job demands a disability examiner may be able to more accurately conclude if the claimant is able to perform their past work, or any work in the economy, Steps 4 and 5 of the sequential evaluation process respectively (20 CFR 416.920). In order to operationalize this procedure, an "MRFCA Decision Tree" is created that expands upon SSA's MRFCA by incorporating descriptive ICF categories into the assessment criteria. Based on the outcome of MRFCA for each individual, the DOT Worker Functions of Data, People, Things that best match the individual's functional capacity are generated (Figure 1: MRFCA

Decision Tree Structure) The goal of the decision tree is to allow a disability examiner to more accurately and reliably determine if the individual is capable of performing work in the economy. For ease of development and testing purposes, the MRFCA Decision Tree was narrowed to focus on functional limitations experienced by those with Autism Spectrum Disorders. We assess enhancing the accuracy and reliability of the MRFCA completion by these methods, especially for those with ASD, as important due to the large unemployment rate with this population, the extreme fiscal burden Social Security benefits place on the federal budget, and the demonstrated effectiveness of person-environment matching on predicting employment.

Restriction in this ICF Activity
(allows for a more thorough understanding of
What an impairment in the MRFCA Abilities "looks like")

Impairment in this MRFCA ability(s)

**May show best outcome in job with
the following Data People Thing Score**
(X,X,X)
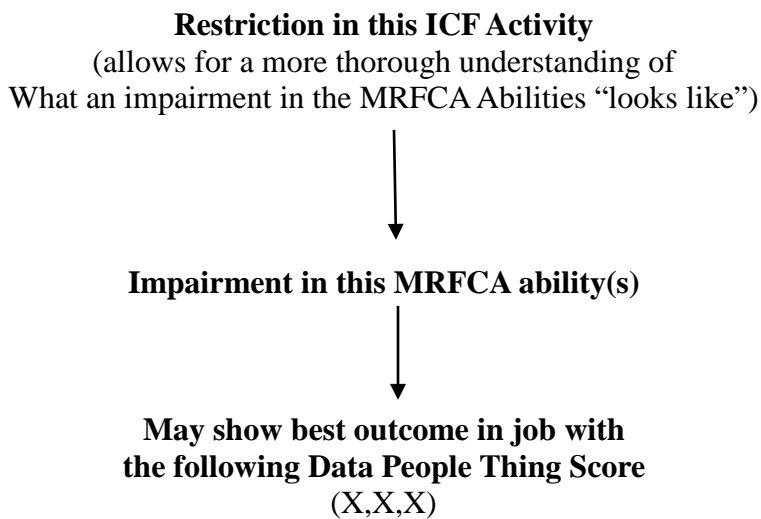
Figure 1: MRFCA Decision Tree Structure

2.0   METHODOLOGY

The methodology includes the creation of a decision tree used for the assessment of functional vocational capacity of persons with ASD. A functional component derived from the ICF, and an environmental (work) component derived from the DOT was cross-walked with SSA's MRFCA in the form of an electronic decision tree. The procedures used are consistent with the validated strategies for linking assessment measures to the ICF set forth by Cieza et al. (2005). A pilot study was then conducted in order to assess usability and reliability of the product. The procedures (described below) were employed in order to complete these tasks.

2.1   PHASE 1

2.1.1   Literature resources

An electronic literature search was conducted using databases and resources from the University Library System (ULS) and the Health Sciences Library at the University of Pittsburgh. The Thames Valley Health Libraries Network was referenced for assistance in structuring the review. A list of databases, search engines, and additional resources was created by cross-referencing the resources recommended by the Thames Valley Literature Review Standards Group (Level 1. Core Resources, Level 2. Recommended Resources, and Level 3. Additional Resources) with the

resources available through the University of Pittsburgh. Databases and search engines used consisted of the following but were not limited to: ERIC, MEDLINE, Scopus, Psychinfo, Cochran, HEPI, OVID, Ebscohost, and Google Scholar. Common journals identified were the Journal of Autism and Developmental Disorders, Research in Autism Spectrum Disorders, and Research in Developmental Disabilities. Sources cited within articles were also located and referenced when appropriate. The following are additional resources other than databases and search engines used for the review: The Dictionary of Occupational Titles, O*NET, The International Classification of Functioning, American Psychological Association website, Social Security Administration website, and electronic theses/dissertations.

2.1.2   Search terms

A pilot search was conducted to identify recurrent terms related to the topic using the Thames Valley Search Planning Form. The list of terms was submitted to the research team for feedback. The electronic searchers were conducted using the individual or combinations of the key terms that included but were not limited to the following: Autism Spectrum Disorders (ASD), high functioning autism, low functioning autism, symptoms, diagnosis, functioning capacity, work, employment, impact, impairments, education, deficits, activities of daily living, disability expenditures, and disability determination process. All articles that were found to be relevant were assessed according to inclusion/exclusion criteria.

2.1.3 Inclusion/exclusion criteria

Selected references were limited to articles in peer reviewed journals and electronic theses/dissertations published between 2000 and 2014 along with information from the previously mentioned resources. The target population (within the ASD literature) was an adult population, however due to the limited amount of research focusing on adults with ASD, longitudinal studies that assed children with ASD into adulthood or studies that assessed both adolescents and adults with ASD as the same population were also included. All research was given a numerical value (1-5) that corresponded to the level of evidence the study suggests according to the Center for Evidence Based Medicine evidence hierarchy (2009). If the level of evidence suggested by the study did not meet the qualifications for a rating of 1-4 it was not included.

2.1.4 Structure

A number count of every article reviewed and every article used to inform the crosswalk from each of the previously listed resources was kept. The research was compiled using evidence based practice article matrices. The information entered in the matrices consisted of: hypothesis/purpose of study, design, participant information, intervention, dependent variable, results, relation of results to current research focus, and evidence level. The information from the matrices was then used to write the narrative and inform the taxonomies of the preliminary decision tree.

2.1.5 Taxonomies

Each MRFCA "ability" that was considered "compound" (combining multiple "abilities" in one) was first broken down into discreet "abilities". Information from SSA's Listings of Impairments and the evidence based practice article matrices on the topic of functioning capacity of individuals with ASD was then used to create preliminary taxonomies with the following domains: Social Interaction, Communication, Memory, Planning/Organizing, and Restricted Repetitive Behaviors. Information from these domains was grouped with corresponding (MRFCA) "abilities." These categories served as a guide to determine ICF Functions and Activities and Participation categories that were relevant to each MRFCA "ability". The final taxonomy was created with the three interconnected domains of MRFCA Abilities, ICF Body Functions (Possible Limitations), and ICF Activities and Participation (Possible Restrictions), and was named the SSA/ICF Crosswalk (Figure 2: SSA/ICF Crosswalk Example).

MRFCA Ability ⟶ ICF Body Functions ⟶ ICF Activities and Participation

To determine impairment in this ability ⟶ look for limitations in these Functions ⟶ and look for restrictions in these Activities and Participation areas

B6. The ability to maintain attention and concentration for extended periods

b130 Energy and Drive Functions:
General mental functions of physiological and psychological mechanisms that cause the individual to move towards satisfying specific needs and general goals in a persistent manner
b1300 Energy level
b1301 Motivation
b1304 Impulse control

B6a. Maintain attention for extended periods

B6b. Maintain concentration for extended periods

d155 Acquiring skills

d160-d179 Applying Knowledge
d160 Focusing attention
d163 Thinking
d175 Solving problems
d177 Making Decisions

d210 Undertaking a Single Task

b160 Thought Functions:
specific mental functions related to the ideational component of the mind
b1600 Pace of thought
b1601 Form of thought
b1602 Content of thought
b1603 Control of thought

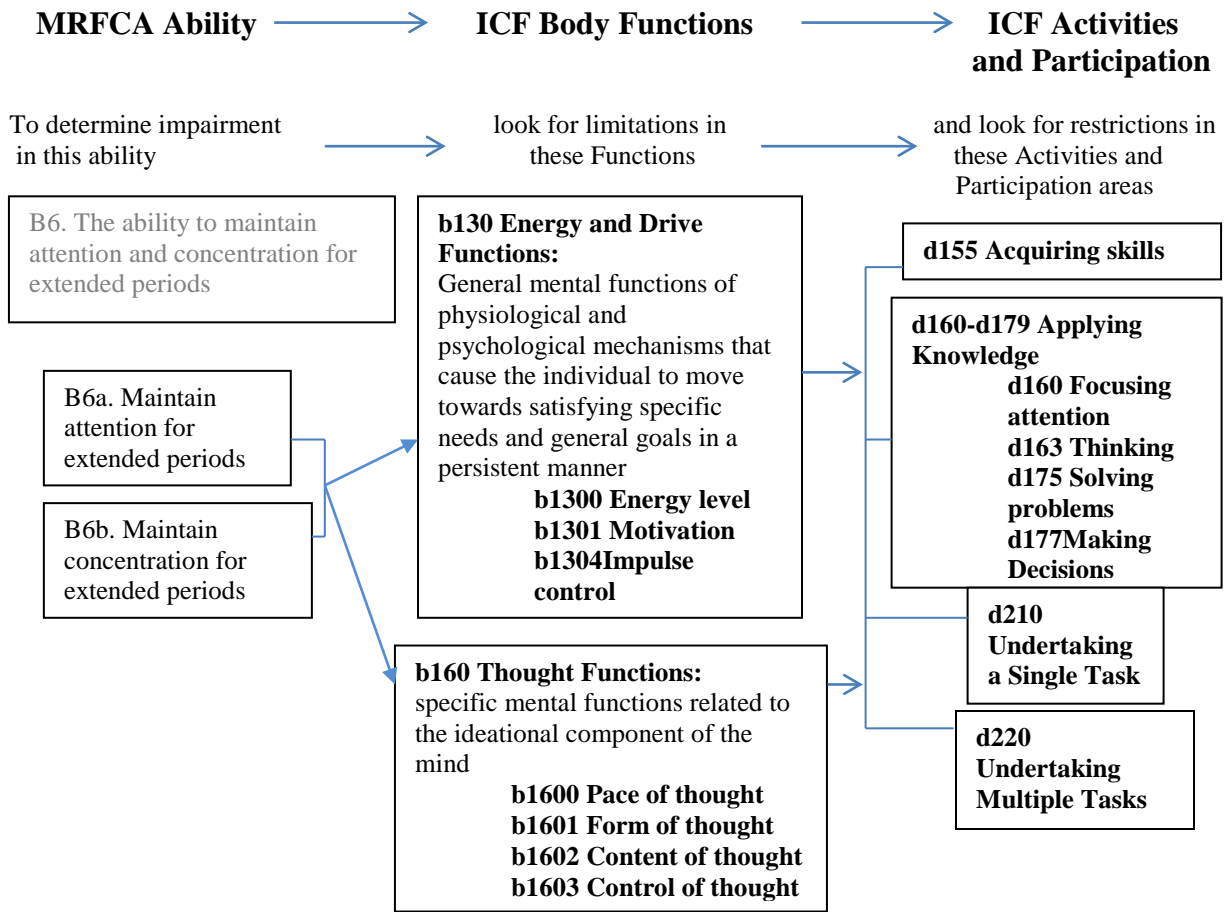**d220 Undertaking Multiple Tasks**

Figure 2: SSA/ ICF Crosswalk Example

2.1.6 Expert review

Two levels of expert review were conducted on the crosswalk in order to: (a) assure relevancy of taxonomy content to ASD symptomology and employment, and (b) assess the degree to which the crosswalk provided a better understanding of the functional capacity needed to complete the MRFCA "abilities" compared to the MRFCA alone. The first level review was completed by three members of the research team; a vocational expert, a rehabilitation counselor/ PhD with an expertise in ASD, and a clinical neuropsychologist/ rehabilitation counselor. The reviewers were asked to comment on each "ability" taxa of the crosswalk in terms of the relevancy of included ICF Functions and Activities and Participation categories to the MRFCA ability, employment, and ASD. They were then asked to provide commentary on whether any other ICF categories should be included or eliminated. Finally they were asked to rate the degree to which the crosswalk provided a better understanding of the functional capacity needed to complete the MRFCA abilities on a scale of 1-5. Feedback from the first level review was analyzed and the crosswalk was revised accordingly. Any inconsistencies in feedback between the members were discussed in a research team meeting to achieve consensus regarding recommended revisions.

The second level review involved three additional professionals; a vocational expert and two rehabilitation counselors/PhDs, who reviewed the crosswalk using the same criteria. Due to a result of the first level review, the scale measuring the overall effectiveness of the crosswalk was changed from a 1-5 scale to a "Yes, Somewhat, No" scale to simplify the rating process (it was felt that the expanded scale did not add specificity to the ratings). Feedback was once again complied and applied to the crosswalk with the discretion of the research team when an inconsistency appeared. An overview of each methodology phase is provided in Figure 2: Methodology.

2.2 PHASE 2

2.2.1 MRFCA decision tree

Phase 2 of the study involved adding an environmental (work) data component to the SSA/ICF Crosswalk and the transformation of the crosswalk into the MRFCA Decision Tree. The work-data component was added by defining each "Data, People, Things" Worker Function from the DOT. Based on the definitions, the Worker Functions were matched to the corresponding ICF Function and Activity and Participation Categories. The Worker Functions were then matched to the MRFCA abilities based on shared ICF Function and Activity and Participation categories. Due to the majority of MRFCA abilities in each section relating to the same Worker Functions, the Worker Functions were collapsed across MRFCA sections. The ICF Function categories were then dropped from the crosswalk as it was felt that they were best served to allow for "matching" between MRFCA, ICF, and DOT domains, but when in use in the crosswalk they were redundant of the Activity and Participation categories and were more difficult to identify in a claimants case report than the Activity and Participation categories. The crosswalk was then transformed into a decision tree using the Qualtrics program provided through the University of Pittsburgh. This program was chosen due to its clear and easy-to-use interface and ability to collect data that could be sent back to the researchers for analysis. The end result is a web-based decision tree that assesses a claimant's restrictions in ICF Activity and Participation categories and then relates those restrictions to limitations in corresponding MRFCA abilities. Based on the assessment ratings of each MRFCA ability, work characteristics (Data, People, Thing scores) that an individual may show the best outcomes with based on their specific limitations are provided (Table 1).

2.2.2 Participants

The participants consisted of two former Social Security Disability Examiners who were recruited by faculty members of the research team. They were contacted via email and asked to participate in the study. Once the participants consented to the study, they were sent the link to the web-based MRFCA Decision Tree and the simulated SSA cases via email. No information was collected on the participants and no compensation was provided.

2.2.3 Simulated application packets

Each participant was asked to complete the MRFCA Decision Tree on three simulated Social Security applications for disability benefits. The researchers created three simulated applications (cases) based on a sample application packet provided by Policy Research Inc. Each simulated application packet included an SSDI Application (SSA-16-BK), a Disability Report (SSA-3368-BK), and a Medical Summary Report reflecting an individual with ASD. Ideally, a Supplemental Security Income (SSI) application would have been included in the packet due to its greater applicability to as ASD population than an SSDI application; however hard copy SSI forms are not made available and the researchers did not have access to the electronic forms used by SSA. The simulated applications (cases) were sent to the participants via email. The participants were instructed to review each of the three cases before, and during the progression through the MRFCA Decision Tree.

2.2.4 Protocol

The participants of the study were informed via email of the nature and background of the study. They were emailed a link for MRFCA Decision Tree via the Qualtrics program. They were also emailed the simulated cases from the researchers. The participants were instructed to review the simulated applications before and during completion of the MRFCA Decision Tree. After completion of the decision tree they were asked to take a usability questionnaire (in decision tree form). The questionnaire contained 8 items reflecting ease of use of the product on a 1-5 Likert Scale (Appendix A). General feedback in the form of open responses was also collected. The participants were given one week to complete these tasks. Once completed, the results of the MRFCA and Usability Decision Trees were sent back to the researchers via the Qualtrics program.

2.2.5 Analysis

The participants' ratings of each simulated case or "individual with ASD" are compared to determine the consistency of ratings between each participant. The two participants of this study scored three separate cases using the MRFCA Decision Tree, creating a 2x3 inter-rater reliability study. An Intra-class correlation coefficient was derived in order to determine consistency between the scores of the participants. A percent agreement between participant scores for each case was also calculated. The statistics were run using SPSS software, and the statistician at the University of Pittsburgh, School of Health and Rehabilitation Sciences was consulted during the analysis phase. Descriptive statistics were also analyzed including the average usability ratings of the decision tree. The results are displayed in narrative and graph form.

3.0   RESULTS

Results of Phase 1 and Phase 2 are provided below. The results of Phase 1 include the expert

reviewer's ratings on the usability and understandability of the SSA/ICF Crosswalk. The results

of Phase 2 include a statistical analysis reflecting the reliability of the MRFCA Decision Tree

when used to assess the same individuals across multiple raters. An intraclass correlation

coefficient and a percent agreement were calculated for each of the three cases on all items in the

MRFCA Decision tree (ICF and MRFCA items) and on only the MRFCA ability items. A

comparison of Worker Functions outputs derived for each case was also evaluated. Finally a

usability rating from each participant on the MRFCA Decision Tree was calculated.

3.1   EXPERT REVIEW PANEL

From the First Level Review, the content of the SSA/ICF Crosswalk showed to be relevant to

ASD symptomology and to employment and the ICF categories also showed to be relevant to the

corresponding MRFCA abilities. This is evident by the reviewers' commentary and each

reviewer rating the overall crosswalk a "5" on the 1-5 scale (Table 2: First and Second Level

Review Feedback). There were no inconsistencies between reviewers' feedback, and all

suggestions were applied to the crosswalk and then reviewed by the research team.

From the Second Level Review, the act of navigating the SSA/ICF crosswalk showed to provide a more thorough understanding of the functional capacity required to perform the MRFCA work related "abilities." This is evident by two of the reviewers rating a "Yes" and one rating a "Somewhat" in response to the question "Did this crosswalk as a whole provide an improved understanding of the functional capacity needed to complete the MRFCA "abilities" compared to using the MRFCA alone?" (Table 2). All commentary from the reviewers was once again compiled and applied to the crosswalk at the discretion of the research team.

Table 2: First and Second Level Review Feedback

Expert Reviewer	**Did this crosswalk provide an improved understanding of the functional capacity required to complete the MRFCA abilities?** 1st Review: Scale: 1= No Improvement, 5= Extreme Improvement 2nd Review: Scale: Yes Somewhat No
Vocational Expert	5
PhD, CRC	5
PhD, CRC, ASD expert	5
Vocational Expert	Somewhat
PhD, CRC	Yes
PhD, CRC	Yes

3.2   STATISTICAL ANALYSIS

An intraclass correlation coefficient (ICC) was calculated in order to determine the consistency of ratings between the participants for each case. A two-way mixed model was used to assess if a case's score remained the same regardless of the rater/participant. The Average Measure produced was referenced as the ICC over the Single Measure due to an Average Measure

regarded as a more accurate estimate of the true score, decreasing the error variance. Each ICC was calculated at a 95% confidence interval with the variables of rater (2) and Items (58). The 58 items included the Worker Functions output provided at the end of the MRFCA Decision Tree. The Worker Functions output was not included in the items used to generate the percent agreement, therefore the number of items used in determining percent agreement was 52.

For Case 1, the intraclass correlation coefficient model (3, 2) was .888. The percent agreement between the participants/raters on the 52 items was 61.4%. For case 2, the intraclass correlation coefficient model (3, 2) was .936. The percent agreement between participants was 50%. The intraclass correlation coefficient was unable to be computed for case 3. This was due to a pattern of inverse answering between participants when a discrepancy existed. In other words, the pattern between participants' answers "switched" such as participant 1 rating an ability as markedly limited and participant 2 rating the ability as not limited, but then on the next ability question the participants "switched" answers, with participant 1 rating the ability as not limited and participant 2 rating it as markedly limited. However a percent agreement was calculated for case 3 reflecting a 76.92% agreement between participants.

An intraclass correlation coefficient model (3, 2) and a percent agreement were also computed for each case using just the MRFCA ability items. The ICC for case 1 using just the MRFCA items was .716, for case 2, .951, and again the ICC could not be calculated for case 3 due to the inverse pattern of responses during discrepancies. The percent agreement for case 1 using just the MRFCA ability items was 35%, for case 2, 10%, and for case 3, 60%. The tables below present the intraclass correlation coefficients and percent agreement for each case.

A "Usability Rating" was also derived from the Usability Questionnaire for each participant by calculating their average 1-5 rating across the 8 questions. The average usability

rating for participant 1 was 3.78, and for participant 2, 3.63 (Table 8: Usability Ratings). Lastly a comparison of Worker Functions outputs derived from each case between participants was evaluated. It was found that for each case the participants arrived at the same Data, People Things (Worker Functions) scores with 100% agreement.

Table 3: Intraclass Correlation Coefficient Case 1

	Intraclass Correlation[b]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Average Measures	.888	.407	1.000	8.936	1	57	.004

Table 4: Intraclass Correlation Coefficient Case 2

	Intraclass Correlation[b]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Average Measures	.936	.660	1.000	15.577	1	57	.000

Table 5: Percent Agreement per Case

Case	Percent Agreement: All Items	Case	Percent Agreement: MRFCA Items Only
1	61.4%	1	35%
2	50%	2	10%
3	76.92%	3	60%

Table 6: Intraclass Correlation Coefficient Case 1, MRFCA Items Only

	Intraclass Correlation[b]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Average Measures	.716	-.683	1.000	3.519	1	19	.076

Table 7: Intraclass Correlation Coefficient Case 2, MRFCA Items Only

	Intraclass Correlation[b]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Average Measures	.951[c]	.709	1.000	20.366	1	19	.000

Table 8: Average Usability Ratings

Participant	Average Usability Rating (1-5)
1	3.78
2	3.63

4.0   DISCUSSION

The outcomes of the current project are the following: 1. An MRFCA Decision Tree that crosswalks SSA, ICF and DOT theoretical and conceptual frameworks in order to more accurately and reliably produce a disability determination by employing Social Security's MRFCA. This includes data collected on the MRFCA Decision Tree that informs its reliability, usability, and therefore applicability to SSA's Disability Determination Process, 2. A review of ways in which functional data from the ICF and environmental (work) data from the DOT can provide a deeper understanding of the functional manifestations of a disability, and how the manifestations relate to job demands, and 3. An examination of problem areas in the current DDP that will further inform the applicability of the MRFCA Decision Tree.

4.1   DATA ANALYSIS

4.1.1   Intraclass correlation coefficient

The intraclass correlation coefficient (ICC) reflects the consistency of ratings or answers between participants for each case. The reason this analysis measure was chosen is because one aim of the project is to determine if the MRFCA decision tree can enhance the reliability of disability decisions between disability examiners. Therefore, the ICC was determined for each

case on all the items of the MRFCA Decision Tree (the ICF and MRFCA items) and on the MRFCA items (abilities) alone. The analysis on solely the MRFCA abilities was conducted due to the ability answers/ratings holding the most value to SSA as they are derived directly from the MRFCA.

An ICC > 0.75 indicates "excellent" reliability, between 0.40 and 0.75 "fair to good" and <0.40 "poor" reliability (Fleiss, 2011). When assessing ICC on all items in the MRFCA Decision Tree, cases 1 and 2 both reflected excelled reliability (>.75) of scores between raters. This supports the notion that the MRFCA Decision tree may be effective at increasing the inter-rater reliability of scores on the MRFCA when referencing the same claimant. This is of particular importance in terms of decreasing discrepancies between initial and hearing level verdicts, as two different examiners are required to assess the same claimant at different time points. With the MRFCA Decision Tree, they may be more likely to derive the same decision.

The MRFCA Decision Tree reliability was good and excellent on cases 1 and 2 respectively when only the MRFCA items were assessed. This is important because the rationale behind incorporating ICF items to the MRFCA Decision Tree was to create a better understanding of what constituted a limitation in each MRFCA ability. These high ICC scores show that participants not only agreed on what constituted a restriction in each MRFCA Activity and Participation category, but also on how those restrictions related to limitations in the MRFCA abilities. This once again provides the preliminary support for the incorporation of the MRFCA Decision tree into the DDP process in order to increase reliability of disability decisions.

4.1.2   Percent agreement

The percent agreement computed for each case describes the number of items the two participants answered identically. This was computed due to the inability to compute the ICC for case 3. It is important to note that the percent agreement does not take into consideration the level of discrepancy between participants' answers. For example, if participant 1 rated Ability A1 "No Limitation" but participant 2 rated Ability A1 "Markedly Limited", this would be coded the same as participant 1 rating Ability A1 "Moderately Limited" and participant 2 rating Ability A1 "Markedly Limited", despite the clear level of discrepancy difference. For this reason, the ICC tends to be higher than the percent agreements as the ICC model used considers consistency not exact agreement.

The percent agreement was considered efficient for cases 1, 2, and 3 (61.54 %, 50%, and 76.92% respectively) when all items were analyzed. The ICC could not be computed for case 3 due to the inverse patterns of responding on discrepancies by participants. In other words, the participants had exact agreement on many answers, but when a discrepancy existed it was either a large discrepancy or a dysregulation in the pattern of responding between participants. However a high percent agreement for case 3 when analyzing all items and when analyzing just the MRFCA items (76.92% and 60% respectively) is reflective of the high degree of exact agreement on answers between the participants. The percent agreement was lower than expected for case 1 and 2 when only the MRFCA items were analyzed (35% and 10% respectively). However it was found that when a discrepancy existed between participants' ratings of the MRFCA abilities it tended to be a very small discrepancy (moderately limited vs markedly limited, no limitation vs not ratable on available evidence). Due to the percent agreement not incorporating the size of the discrepancy between participants' answers, the percent agreement

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for cases 1 and 2 (MRFCA items only) was low. The ICC for cases 1 and 2 better reflect the consistency of participants' ratings on the MRFCA items (.716 and .951 respectively) as it incorporates discrepancy size into the calculation. It was also found that the MRFCA items were rated similarly enough between participants on each case to result in the same Worker Functions score.

4.1.3 Usability and satisfaction

The average usability rating for participant 1 was 3.38, and for participant 2 was 3.63. This is interpreted as the MRFCA Decision Tree being at least moderately easy to use. Some of the problems reported where technical in nature, which was expected with use of novel program software.

The Worker Functions of Data, People, Things that were outputted for each case based on the limitation level of each "individual" in the cases were also compared. For each case, both participants arrived at the same Worker Functions output. This means that both participants assessed the same individual (case) as able to perform the same type of work. This is highly significant in terms of increasing the reliability of disability decisions at stages 4 and 5 (Past Work and Any Work test respectively) of the DDP. By consistently identifying work characteristics that an individual may be most likely to succeed with, the chance of an individual failing at work and reentering the DDP may decrease. This would relieve a large financial burden placed on SSA.

4.2 FUNCTIONAL MANIFESTATIONS OF DISABILITY AND RELATED JOB DEMANDS

Possessing a thorough understanding of the functional manifestations of disability and associated work implications is necessary in order to determine if an individual is eligible for disability benefits. However, it is not possible for a disability examiner or ALJ to possess extensive background knowledge on every disability state they are required to assess. It also is not possible for an examiner to hold extensive knowledge on the characteristics and associated demands of all jobs readily available in the economy. Lacking extensive knowledge in these domains may create a challenge in determining the relationship between the functional limitations of a disability and how those limitations affect the ability to perform work related tasks. Furthermore, as the examiner is unable to identify the job demands associated with every available job, he/she may experience difficulty determining how limitations in specific work-related tasks relate to overall ability to perform work. This difficulty can result in individuals being assessed as "disabled" when in actuality they are capable of performing some work, or vice versa. This is a concern for the federal government due the large fiscal and time demands disability programs place on government resources (Stapleton et al., 2006).

In order to enhance the process by which a disability examiner assesses work-related functional limitations of disability, the MRFCA Decision Tree was created. The first goal of the decision tree was to provide a better understanding of what a limitation in a work-related task "looks like" when assessing a claimant for disability benefits. This was done by expanding upon the work-related abilities of the MRFCA using ICF categorization. The ICF categories elaborate on the functions underlying each MRFCA ability to allow an examiner to more easily identify a limitation based on the information provided in the claimant's case report. For example, if an

examiner is attempting to identify if the claimant experiences a limitation in Ability B6. "Maintaining attention and concentration for extended periods", and the claimant does not have a diagnosis of an attentional deficit disorder (Attention Deficit Hyperactivity Disorder, ADHD) in their medical or psychological records, the examiner may be inclined to presume the claimant does not have a limitation in this ability. However, by referencing the decision tree the examiner would be able to recognize that activities such Watching, Listening, Solving Problems, and Regulating Behaviors within Interactions (activities derived from the ICF) share the same underlying functions as "The ability to maintain attention and concentration for extended periods". Therefore, if an examiner can identify in the claimant's case report (in work history reports, reports of daily activities, clinical assessments, etc.) that the claimant experiences restrictions in Watching, Listening, Solving Problems, or Regulating Behaviors within Interactions, the examiner can more validly determine that the claimant does experience a limitation in the MRFCA ability. If every examiner follows this decision tree method, a more reliable disability decision across examiners could be achieved.

Based upon the expert review completed in Phase 1 of the methodology, expanding upon the MRFCA "abilities" by way of ICF categories may provide a more thorough understanding of the functional requirements involved in each work-related ability. A more thorough understanding of what a limitation in an MRFCA ability "looks like" in daily life is also achieved by highlighting the activity and participation restrictions associated with a limitation in each ability. This may allow the disability examiner to better assess the functional limitations an individual presents with in order to determine if those limitations inhibit his/her ability to work.

Generating an accurate assessment of an individual's disability severity is vital, but also vital is the ability to accurately determine how one's impairment relates to ability to perform

work. The MRFCA assesses an individual's disability according to their capacity to perform work-related abilities. However, as the MRFCA holds a small number of general abilities, not all work-related tasks/ functions are encompassed by the tool. Furthermore, an examiner is not only required to determine if the claimant experiences limitations in the 20 work-related abilities of the MRFCA, but also is required to use the results of the Residual Functional Capacity (RFC) evaluation (section III of the MRFCA, the RFC) to determine if the claimant is capable of Past Work or Any Work that exists in substantial numbers in the economy (20 CFR 416.920). The inclusion of the DOT component in the MRFCA Decision Tree assists in this process.

Although it is not the role of SSA to provide job matching services, it is in their interest to thoroughly and accurately identify if an individual is able to perform work that exists in the economy. The DOT component of the decision tree aids in this process by identifying job characteristics (Worker Functions) that an individual may be most likely to succeed with (most likely able to perform) given their specific areas of limitation as assessed by the MRFCA. The examiner is given a Data, People, Things code that reflects functions the individual is expected to be able to perform. Data, People, Things (Worker Functions) codes are included in every DOT job code, and therefore an examiner is able to reference the DOT in order to locate jobs that contain the same Worker Functions code that is given to the claimant. The matching jobs are then a reference point for an examiner to decide if the claimant is able to perform Past Work or Any Work.

The DOT was chosen as a tool to incorporate occupational information into the DDP due to its purpose compatibility with Step 4 and 5 of the DDP (Past Work and Any Work test) (Table 1). The DOT is used by educational institutions, government agencies, and other companies to identify jobs and provide a tool for the employment services to match workers with jobs (Smith,

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1991). Once again, although SSA is not concerned with "matching workers with jobs", it is concerned with determining if an individual is capable of performing work. In order to reach that conclusion an examiner must be able to reference actual work/jobs that an individual is believed to be able to perform. The DOT Worker Functions included in the MRFCA Decision Tree reliably allows for this comparison of worker abilities to actual job demands (worker functions) (Cain, 1983).

Identifying Worker Functions that an individual may most likely be able to perform given their RFC should be of interest to SSA not only for the purpose of determining an accurate and reliable decision at steps 4 and 5 of the DDP, but also to decrease the probability of claimants "failing" at a job and then reentering the DDP system. For instance, most models of personnel selection involve analyzing job demands, defining abilities required to meet those demands, and then hiring individuals that possess those abilities. Ensuring that an individual's abilities are compatible with the demands of the environment/job has shown to increase the likelihood of the individual remaining successfully employed at that job (Greguras & Diefendorff, 2009). In fact, even if the individual does not "fit in" with the organizational culture associated with a job but they assess themselves as having the ability to meet the job demands, they are more likely to experience an affective commitment to the job and demonstrate higher levels of job performance (Greguras Diefendorff, 2009; Ahamad, 2012). The same principles hold true for individuals with disabilities.

The relationship between worker abilities and job demands becomes increasingly significant when the worker experiences a disability. For example, when assessing environment barriers for people with disabilities, Whiteneck et. al. (2004) found that even for individuals with disabilities who currently held employment, the work environment was still a barrier to their

functioning. Environmental demands in the work place influence the discrepancy between an individual's capability (potential to do) and their actual functioning (what they do do) (Mitra, 2006). In other words, an individual with a disability may have the capacity to perform work/ fulfill work demands, however if they are presented with demands that do not meet their abilities they may experience a decrease in functioning, or the perceived incapacity to perform work. This perceived inability to perform work due to failed past work experiences can result in the individuals relying on federal disability benefits. Therefore, the DDS should be concerned with the degree of compatibility between the claimant's abilities and the job demands of work that the claimant is assessed as able to perform in order to prevent the claimant from "failing" and reentering the DDP system.

Incorporating more detailed information about an individual's functional capacity and related job demands into the DDP serves to not only allow a disability examiner to better determine a claimant's ability to perform work, but also could serve as a guide for claimants to identify what information may be important to incorporate in their case report. For instance, if a claimant is attempting to demonstrate that they have a significant impairment in maintaining attention and concentration, they could reference the decision tree to identify the ICF Activity and Participation categories related to MRFCA ability B6: "The ability to maintain concentration and persistence for extended periods". The claimant would recognize that the ICF categories of Watching, Listening, and Solving Problems are all related to the function of "attention". Therefore, by including school or work reports that signify impairments in any of these ICF Activity or Participation categories, the claimant may be able to more easily prove a limitation in "maintaining attention". This could in turn ease the assessment process for the disability

examiner, as he/she will be better provided with information that proves/disproves a limitation in specific areas of functioning.

4.3   PROBLEM AREAS IN THE DDP

The literature review provided a thorough understanding of the disability determination process (DDP) including insight into current problem areas. One frequently identified issue was the backlog of disability claims. Research done by the United States Government Accountability Office (GAO) in 2007 revealed that from 1997 to 2006 the number of backlogged disability claims doubled, reaching 576,000, with 72% being at the hearing level. Along with backlogged cases, the hearing level was also experiencing increased wait times. The GAO predicts this problem is a result of multiple factors including an increase in disability claims and a decrease in DDS staff including claims examiners and administrative law judges (ALJ). In fact, the number of initial claims increased by more than 20% from 1999 to 2009 (Bertoni, 2009). Furthermore, SSA predicts the number of disability services applications will continue to increase as the baby boom generation reaches retirement and the disability-prone years. In order to address the problem of backlogged cases due to increased applications and a decrease in staff support, the DDS has tried to re-disperse workloads to offices with a lighter demand as well as postpone the assessment of lower priority cases, such as CDRs. The deferment of CDRs however created a separate problem of those who no longer qualify still receiving benefits (O'Carroll, 2014).

Although SSA cannot be expected to control the number of applications for disability benefits, by increasing the reliability of the disability determinations made in the preceding levels, the number of backlogged cases at the hearing level (which have accounted for 72% of

the backlogged cases) may be able to be controlled (GAO, 2007). This direction of action would be consistent with the GAO's recommendation for SSA to more closely monitor the reconsideration stage (GAO, 2007; Bertoni, 2009).

SSA also experiences difficulty completing the large quantity of CDRs and age 18 redeterminations, which results in those ineligible for services still receiving benefits. This creates a financial concern for the administration and also results in taxpayer dollars being allotted to individuals who do not qualify (O' Carroll, 2014; Bertoni, 2009). On the other hand, some individuals who experience significant impairments that greatly impact their capacity to perform work related tasks still are being refused benefits. For example, researchers Dwyer, Hu, Vaughan, and Wixon (2003) conducted a study using publicly available survey data to create and indicator of disability consistent with that of SSA's. They then formulated eligibility predictions of non-beneficiaries in the general public of individuals ages 16-64 while controlling for sample selection and restriction influences. The researchers found that 2.9% of the sample population was eligible for services but were not receiving them. One possible explanation for this dilemma is that the disability assessment process used by SSA is not progressing consistent with the medical technology and economic and social changes that continue to affect the relationship between disability and ability to perform work (GAO, 2004). By improving the way disability is assessed, a valid disability determination can be achieved. A valid determination will then result in benefits being allotted to those who truly need them.

Based upon review, we anticipate that the application of the decision tree will be of use with a population of ASD during disability assessment processes including initial, hearing level, CDR, and age 18 redetermination stages because it allows for a more thorough understanding of the functional capacity required to perform work-related tasks. ASD was chosen as an exemplar

not only due its unique presentations that make predicting its vocational impact challenging, but also due to the fact that it is a life-long condition (Seltzer et al., 2003). Although ASD is a disorder that persists throughout the lifetime, individuals have been shown to experience improvements in symptomology; therefore individuals likely will be required to participate in age 18 redeterminations and CDRs (every 3-7 years). If the individuals are unsatisfied with the verdict during these assessments, they may take their case to a hearing level. As discussed earlier, a criticism of the DDP is the large number of backlogs at the hearing level as well as discrepancies between initial and hearing level verdicts (GAO, 2004; 2007). By increasing the validity of the original CDR/age 18 redetermination verdict, the increasingly large population of individuals with ASD who may be reassessed every 3-7 years may be less likely to progress to the hearing level, therefore preventing excessive time from being spent on an individual claim (Center for Disease Control and Prevention, 2012; O'Carroll, 2014). This method may also decrease the revocations of decisions made during an initial claim, by a DHO or ALJ during a hearing level due to a more reliable and valid decision being made at the earlier stages (2, 3, 4, and 5) (Table 1) . It is also possible that as discrepancies between the initial and hearing level decisions abate, fewer cases will be brought to the hearing level (as the probability of verdict changes will decrease,) causing a decrease in backlogs to follow over time.

4.4   LIMITATIONS

Although the results of the study support the reliability and usability, the study is not without limitations. The main limitation of this study is the small sample size, with only two ex-disability examiners acting as participants. A larger sample size would allow for more data to be collected

on the reliability and usability of the tool, producing more convincing and sound results. Another limitation is the fact that the participants were ex-disability examiners, not examiners currently employed by SSA. Participants who are well-versed in the current DDP procedures may have further informed the applicability and reliability of the tool. However, due to stipulations placed on the project from SSA, requesting participation from current DDS employees was not possible. The final limitation recognized in this study is the use of simulated SSA disability application packets. Originally the researches anticipated using de-identified disability applications provided by SSA which would have enhanced the external validity of the results. However, SSA was unable to provide the researchers with that information. In replace they provided a sample application for SSA disability benefits that was used as a guide to form the "Simulated Application Packets". It is suggested that future research be conducted in order to control for these limitations.

4.5   FUTURE RESEARCH

Future research regarding the MRFCA Decision Tree could elaborate on the reliability, usability and applicability of the product to the DDP. A potential research plan could include implementing the decision tree into DDP field offices and comparing the reliability of decisions made across examiners, as well as time spent in the sequential evaluation process among claimants, to offices using the standard MRFCA. This data would further inform the reliability and usability of the tool and could provide input on adaptations to be made in order to increase its efficiency and applicability to the DDP. Once the tree's applicability to the DDP is confirmed, researchers could work to generalize the decision tree to mental impairments other than ASD.

Due to ASD being a disability with varying presentations and symptoms, a majority of the ICF Functions and Activity and Participation categories were used in order to "match" the symptom variations of ASD. Furthermore, all the ICF categories that directly related to the MRFCA abilities were included due to them also reflecting ASD symptomology. However, some ICF categories that were not directly related to an MRFCA ability and did not reflect ASD symptomology were excluded from the tree. For this reason, the decision tree could still be expanded upon to include ICF Activity and Participation categories that reflect all mental functions, therefore reflecting the broad array of mental disorders. Lastly, an elaboration of the ways in which this product could be adapted and provided to claimants in order to assist them in including relevant functional information in their case files should also be addressed.

4.6   CONCLUSION

The current project has produced a preliminary product that is sufficiently methodologically sound for consideration by SSA for further study to determine its potential for use as a resource in the disability determination process with the ASD population. The product uses ASD as an exemplar of complex mental disorders, but could eventually be expanded upon for assisting in the disability determination process for other complex mental disorders. This project may also serve to enhance the understanding and use of functional/vocational conceptualizations in the field of rehabilitation counseling. In addition to the key outputs above, this project will allow for the identification and engagement in an emerging area of study that has significant value and need.

APPENDIX A

Usability Questionnaire Items:

1. How easy was it to navigate the decision tree?

2. To what degree did technical problems interfere with the ability to use the decision tree?

3. How easy was it to understand the questions?

4. How east was it to determine the rating of each ability on the MRFCA Rating Scale based on the corresponding Activity restrictions?

5. How easy was it to identify evidence for or against restrictions in the ICF Activities in the case report?

6. To what degree did your ratings of the specific ICF Activities relate to your overall ratings of the corresponding MRFCA abilities?

7. To what degree did the inclusion of the specific ICF Activities make rating the limitation level of each MRFCA ability easier?

8. What feedback do you have on the usability of the decision tree?

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