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A Conceptual Foundation for Measures of Physical Function and Behavioral Health Function for Social Security Work Disability Evaluation

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Abstract

Physical and mental impairments represent the two largest health condition categories for which workers receive Social Security disability benefits. Comprehensive assessment of physical and mental impairments should include aspects beyond medical conditions such as a person's underlying capabilities as well as activity demands relevant to the context of work. The objective of this paper is to describe the initial conceptual stages of developing new measurement instruments of behavioral health and physical functioning relevant for Social Security work disability evaluation purposes. To outline a clear conceptualization of the constructs to be measured, two content models were developed using structured and informal qualitative approaches. We performed a structured literature review focusing on work disability and

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incorporating aspects of the International Classification of Functioning, Disability, and Health (ICF) as a unifying taxonomy for framework development. Expert interviews provided advice and consultation to enhance face validity of the resulting content models. The content model for work-related behavioral health function identifies five major domains (1) Behavior Control, (2) Basic Interactions, (3) Temperament and Personality, (4) Adaptability, and (5) Workplace Behaviors. The content model describing physical functioning includes three domains (1) Changing and Maintaining Body Position, (2) Whole Body Mobility, and (3) Carrying, Moving and Handling Objects. These content models informed subsequent measurement properties including item development, measurement scale construction, and provided conceptual coherence guiding future empirical inquiry. The proposed measurement approaches show promise to comprehensively and systematically assess physical and behavioral health functioning relevant to work.

Keywords

Work Disability; Behavioral Health; Physical Functioning; Concept Formation; Disability Evaluation

Introduction

Historically, many work disability evaluation processes, including the Social Security Administration's (SSA) disability determination process, focused on an individual's symptoms or impairments. However, the relationship between symptoms and work performance is not always clear, and the weak relationship between them has been increasingly recognized as one of the fundamental challenges in work disability assessment.¹⁻⁸ For example, someone who may display maladaptive behavior patterns may function well in a job that is relatively solitary and requires little interaction with others. Similarly, a person who has pain when standing or sitting for long periods may be able to function in a job that allows frequent rest breaks and periodic body position changes. These examples illustrate how work disability represents a multidimensional concept that goes beyond symptoms and impairments to include aspects of environment, functional abilities, and behaviors. Consequently, evaluating work capacity for people who demonstrate physical health or behavioral health problems proves difficult from impairment- or symptom-based perspectives alone. It has been proposed that the weak relationship between impairments or symptoms and potential work capacity has contributed to fundamental challenges to current SSA disability assessment methodologies.⁹

In 2011, approximately one million people were awarded Social Security Disability Insurance (SSDI) benefits due to a work limiting health condition.¹⁰ Among workers who received these benefits, over half were awarded benefits due to either a physical (33.8%) or mental (19.3%) impairment.^{11, 12} These two categories of disability represent a significant proportion of individuals who are having difficulty working due to conditions related to musculoskeletal systems, connective tissue impairments, mood disorders, or psychotic disorders. In particular, the proportion of individuals receiving benefits due to mental disorders has been increasing over the past few years.¹⁰⁻¹²

SSDI and Supplemental Security Income (SSI) are important federal programs making SSA the largest federal provider of financial assistance to disabled workers and their families. Given this, improvements in SSA's ability to comprehensively and efficiently characterize a person's potential ability to work are essential. We propose that a first step toward that goal is to expand current approaches of work disability assessment to include a broader conceptualization of work disability by measuring key aspects of physical and behavioral health functioning.

The primary objective of this paper is to describe the formative stages in the development of two new instruments, the Social Security Administration Behavioral Health Function (SSA-BH) instrument and the Social Security Administration Physical Function (SSA-PF) instrument. Specifically, the aims of this report are as follows:

- To provide an overview of the current SSA disability evaluation processes
- Summarize the conceptual argument for developing new measures of work-related physical and behavioral health function consistent with the WHO International Classification of Functioning, Disability, and Health (ICF)
- Present results from initial qualitative methods for content model development of two new measures to assess physical and behavioral health functioning for the purposes of SSA disability assessment
- Discuss how the content models compare to existing SSA disability criteria specified in the SSA Residual Functional Capacity (RFC) assessment and how the models will be applied in subsequent measurement development.

SSA's Disability Evaluation Process

The Social Security Act defines work disability as an inability to engage in "substantial gainful activity due to any medically determinable physical or mental impairment that can be expected to result in death or to last for a continuous period of not less than 12 months."^{11, 12} The evaluation process for determining work disability includes five-step sequential steps: Step 1—establish if an individual is participating in substantial gainful activity; Step 2—determine if an impairment is severe enough to interfere with work; Step 3—assess whether a claimant's impairment meets or exceeds that of the SSA's Listings of Impairments; Step 4—evaluate the claimant's past work with Residual Functional Capacity assessment; Step 5—determine if the claimant can perform any substantial gainful work available in the national economy based on RFC outcomes.

Steps 1 and 2 represent basic eligibility criteria for meeting the statutory definition with regard to no current workforce participation and impairment severity sufficient to have prevented the claimant from being able to work for at least 12 months. If the claimant meets both of these criteria, the disability evaluation process continues to Steps 3. If the claimant's impairment meets or equals that described in the Listings criteria, a determination of disability is made and the process terminates. If the claimant's impairment falls short of the Listings criteria, then claimant advances through Steps 4 and 5 during which previous and potential work capacity is assessed.

This five-step disability determination process has been the target of several redesign efforts over the past few decades.^{9, 13–15} These efforts have been made in order to improve efficiencies of the overall determination process and accuracy of the decisions made based on the current methods used to assess work disability.⁹ Of particular relevance to our work is improving measurement of physical and behavioral health functioning beyond what is currently being assessed using the RFC forms, which focus predominantly on signs, symptoms, laboratory findings related to an impairment and to a lesser degree aspects of function that may be affecting a person's potential ability to work.¹⁶

Conceptualizing Work Disability: Application of the ICF

Many authors have questioned the utility of SSA's impairment-based definition of disability and its applicability in today's society.^{17–20} Current concepts of disability emphasize functional, behaviorally based definitions as they relate to factors in the work environment. To be more specific, work disability can be viewed as the outcome of the interaction between an individual's underlying capabilities in the context of the workplace environment.²¹ This dynamic notion of disability has been most recently characterized in the WHO International Classification of Functioning, Disability, and Health (ICF), which includes biologic, personal, and social perspectives of disability.^{22, 23, 24, 25}

Factors associated with work disability are multifactorial and extend beyond individual symptoms and impairments indicative of the underlying and potential work-disability medical condition. In addition to the symptomatology of a health condition, important factors to consider when assessing work ability include a person's cognitive status, education, age, underlying vocational skills, previous work, and the person-environment fit of the job demands.^{26, 27} For the purposes of our work, we focused on improving person-level measures of an individual's functioning. In developing our approach, we utilized the ICF as a conceptual foundation to organize and develop a content model for two new measures of physical and behavioral health functioning.

Qualitative Stages of New Measurement Development: Content Model

Development Methods

A structured literature review, expert interviews, and stakeholder feedback were used for developing content models to provide a foundation for scale development for both physical and behavioral health function domains. A structured literature review was performed to develop a clear conceptualization of the underlying constructs of work-related physical functioning and behavioral health functioning. Expert interviews and stakeholder feedback were obtained to provide face validity to the resulting content models and provide input regarding content relevancy of the developing models.

A literature review was conducted to gain perspective from current research related to work disability in the two domains of interest: Physical Function and Behavioral Health Function. We used a broad literature review to target theoretical, conceptual, and measurement work focusing on aspects of physical functioning and disability, behavioral or mental health functioning relevant to the workplace context. Articles were identified through a structured

search process using the PubMed/Medline databases with follow up searches performed for relevant articles found in reference lists. Exclusions included non-English articles, non-adult populations, editorials, comments, letters, or abstracts not available. Table 1 outlines the Medline/PubMed search strategy performed for both Behavioral Health and Physical Function using MeSH terms singularly and in combination with the guiding search concepts of “Disability,” “Work,” “Health,” and “Measurement.” Additional feedback from content experts was obtained to validate the literature review process and resources utilized.

Through an iterative process, content experts provided consultation to establish face validity of the content model development processes and helped investigators refine the emerging content models. The experts for the Behavioral Health Function domain included three clinicians: two psychologists and one psychiatrist. The experts for the Physical Function domain included a rehabilitation medicine physician, a clinical social worker specializing in employment, and a physical therapist. A semi-structured telephone interview methodology was implemented to guide content expert interviews.²⁸ The primary rationale for utilizing the telephone method was the time constraints and dispersed geographic locations of the expert panel members. The goal of these interviews was to obtain input regarding the structure of the content model and to examine the relevancy of domains and sub domains for use in future item content development. Stakeholder feedback from SSA representatives was obtained to ensure the relevance of the content models and their applicability to the SSA disability evaluation process.

Results

Behavioral Health Function Content Model

Interpersonal conflicts and maladaptive behaviors in the workplace are important behavioral health determinants of work performance.^{29, 30} Personality traits, such as extroversion or optimism, are also integral components of health outcomes such as work ability. Thus, numerous personal factors in addition to health status are interconnected and can influence an individual’s overall ability to work.^{31–34} From the literature review, two additional models emerged beyond the ICF, as prominent models characterizing key underlying concepts related to behavioral health function relevant to work. Each model describes unique aspects of behavioral health which may be related to an individual’s ability to function in the workplace. Together, the following reference models served as the conceptual foundation for developing the resulting Behavioral Health Function content model: (1) the Five Factor Model (FFM), (2) Matheson et al.’s Functional Assessment Taxonomy (FAT), and (3) the World Health Organization’s, International Classification of Functioning, Disability and Health (ICF). Table 2 shows how each model informed our resulting content model.

The Five Factor Model (FFM) of personality dimensions served as a foundation for exploring how to begin to conceptualize aspects of work-related behavioral health specifically, interpersonal interactions.^{35–37} According to this model, interpersonal interactions involve a complex sequence in which an individual assesses his or her relationship with others and makes accurate judgments about the nature of those relationships; and then displays resultant inappropriate or appropriate behaviors.³⁵ Drawing

upon this model, our behavioral health framework encompasses the process of this interaction sequence, aiming to measure the outcome of interpersonal interactions, namely the resultant internal feelings and external behaviors within the context of a workplace environment.

The FAT is based upon the Work Disability Model and provides a taxonomy for organizing the construct of overall functioning relevant to work. One goal of the FAT was to help clinicians select appropriate functional assessments relevant to each construct. The FAT has 131 constructs and 33 factors within five broad domains.³⁸ Despite this broad content coverage, we identified gaps in the depth of content related to behavioral health domains such as interpersonal interactions and social functioning.

The ICF was used as a guiding model and a unifying taxonomy for characterizing functioning within our content model.^{39–42} Similar to the FAT, the ICF is a classification system developed for a broader purpose, not specifically intended to assess behavioral health skills in the context of work. The ICF can also serve as a reference standard for developing measures of human functioning in the realm of behavioral and mental health.⁴²

The resultant Behavioral Health Function content model presented in Figure 1 suggests there are five major domains that are important in assessing behavioral health relevant to a work environment (1) Behavioral Control, (2) Basic Interactions, (3) Temperament and Personality, (4) Adaptability, and (5) Workplace Behaviors. These five key domains were developed based upon our selected models of work disability and more theoretical literature discussing aspects of human behavior, personality, and social skills.^{35, 36, 40, 43–45} Sub domains of the primary behavioral health concept represent individual components such as emotional states, interpersonal interaction skills, and social behaviors that may act independently or interact to characterize behavioral health functioning. This integrated perspective provides a comprehensive structure upon which to build a final item pool of questions enabling assessment of a wide spectrum of behavioral health functioning skills.

Physical Function Content Model

Numerous studies identify the strong association between physical function and work ability.^{5, 6, 46–49} Our aim was to describe physical function in a way that shifts the disability conceptual paradigm from symptoms and impairments (e.g. pain or musculoskeletal abnormalities and injuries) toward explicitly capturing aspects of overall physical functioning and abilities related to persons' potential ability to work. In addition to the ICF, two existing models emerged as key guiding models for characterizing disability in terms of physical functioning: (1) the National Institute of Health's Patient-Reported Outcomes Measurement Information System (PROMIS) domain framework, and (2) Matheson et al.'s Functional Assessment Taxonomy (FAT). Table 2 summarizes how each reference model guided the development of our resulting content model.

As with behavioral health function, the ICF served as a foundational taxonomy for characterizing aspects of the interaction between person abilities, activity demands, and work environment in the development of the physical function content model. Specifically, the mobility chapter of the ICF taxonomy which describes various components of physical

functioning and health. In the ICF's description of physical mobility, the language focuses on terminology that extends beyond the use of traditional biologic terms to include aspects of the context in which physical activities are performed.^{25, 50, 51} The goal of our physical content model was to build upon the ICF to describe specific domains and sub domains of physical functioning relevant to the context of work.

Another existing model which proved to be particularly helpful was examining the ongoing work of the PROMIS initiative. The PROMIS approach to describing the domain of physical health includes aspects of a person's ability to perform tasks that require various levels of mobility, strength or endurance.³³ In this domain, the PROMIS initiative focuses on characterizing and developing patient reported health status outcome measures for the general population.³³ We expanded upon this existing work in order to develop a content model of physical functioning to include underlying physical skills and abilities needed to perform specific activities characterizing a person's ability to work.

Lastly, due to its breadth in defining a common taxonomy of factors related to overall work function, the FAT not only was used in the Behavioral Health Function domain but also proved to be useful in the context of developing a framework for the Physical Function domain. The FAT includes dimensions of physical functioning that addresses strength, stability, endurance, dexterity and coordination.^{38, 44, 54-56} These functional elements related to the physical capacity for work were deemed important to retain in our content model.

The resultant Physical Function content model is illustrated in Figure 2 and consists of three primary domains of physical health that are key components to consider when assessing physical functioning in the context of work: (1) Changing & Maintaining Body Position, (2) Whole Body Mobility, and (3) Carrying, Moving and Handling Objects. These three major domains reflect integration of existing work-related conceptual models and current physical health outcome measurement instruments.^{47, 50, 52, 57, 58} Sub-domains within the primary physical function domains include components such as fine motor dexterity, gross motor body movements, postural control and functional mobility that characterize various aspects of physical health applicable for assessing a person's overall potential ability to function in a work environment. By expanding traditional models of physical impairment, this content model provides an opportunity to build a comprehensive item pool of questions targeting overall physical functioning relevant to the context of work.

Supplemental Tables 1 and 2 compare the content coverage of the Physical Function content model and Behavioral Health Function content model as compared to the SSA RFC forms for physical and mental health. This comparison indicates that the proposed content models expand current functional assessment in both physical function and behavioral health domains.

Discussion

Initial exploration of how to conceptualize behavioral health and physical function began by focusing on SSA's need to accurately assess ability to work. Financial benefits provided by

SSA represent a significant proportion of income for people with work-limiting disabilities.^{1, 59} Accurate assessment of a person's ability to work is fundamental to identifying and appropriately allocating limited resources to persons with disabilities. The utility of the resultant frameworks allows work functioning to be conceptualized in terms of a spectrum of ability levels, extending beyond a singular biomedical perspective to include aspects of the whole person including a range of physical or behavioral skills and activities.

The content models developed are consistent with previous work highlighting the multifaceted nature of work disability.²⁵ The content model domains and sub domains are complementary to the ICF and apply the principles of multivariable, parsimony, and generalizability within the context of work disability. The whole-person approach captures the functional manifestation of multiple health conditions. In contrast to prior assessments using a symptom-impairment approach and thus focusing on the individual effects of singular conditions, the whole-person approach represented by the present models captures the functional manifestation of multiple health conditions.

The content coverage of the Physical Function content model and Behavioral Health Function content model as compared to the relevant SSA RFC forms indicate that these new content models expand the scope of functional assessment in the RFC in both the physical and behavioral health domains. Including measures of physical and behavioral health function captured in an empirically grounded and comprehensive manner may prove beneficial in complementing current evidence reviewed during SSA's disability determination evaluation.

Study Limitations

Although these content models have several strengths and show promise for future applicability, some limitations should be noted. A broad, structured literature review was performed but there is no definitive way to ensure all potential existing literature was reviewed. To address this potential limitation, expert interviews were conducted, but the sample of experts available for contributing was relatively small. Second, these content models were developed to comprehensively measure physical and behavioral health function in the context of SSA's disability determination evaluation, so generalizability of these models to other applications may be limited. Finally, the content models themselves are hypothesized structures intended to serve as the basis for new measurement scales. Additional work including item development, quantitative analysis of how the items hold up as a new instrument, and the degree to which these content models represent a unidimensional construct were performed. Results from such analytic work are beyond the scope of this paper, but can be found in complementary articles that describe later stages of measurement development.⁶⁰⁻⁶³

Conclusions

The resultant content models outline a comprehensive structure for development of an outcome measure of (1) Physical Functioning and (2) Behavioral Health relevant to the context of work. By adding to the traditional impairment based model, a more comprehensive representation of a person's ability to work is reflected. These content

models aim to focus on developing a self-reported measure of a person's traits, characteristics, and abilities related to successful functioning in a workplace environment. It is not intended to be diagnostic. This work helps build a conceptual foundation for the measurement of two key dimensions of work ability, behavioral health and physical functioning, and will serve as hypothesized structures for developing two new measurement instruments that may prove useful assessment tools to integrate into SSA's disability evaluation processes.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Abbreviations

FAT	Functional Assessment Taxonomy
FFM	Five Factor Model
ICF	WHO International Classification of Functioning, Disability, and Health
PROMIS	Patient Reported Outcome Measurement Instrument System
SSA	Social Security Administration
SSDI	Social Security Disability Insurance
SSI	Supplemental Security Income
SSA-BH	Social Security Administration Behavioral Health Function Instrument
SSA-PF	Social Security Administration Physical Function Instrument
RFC	Residual Functional Capacity

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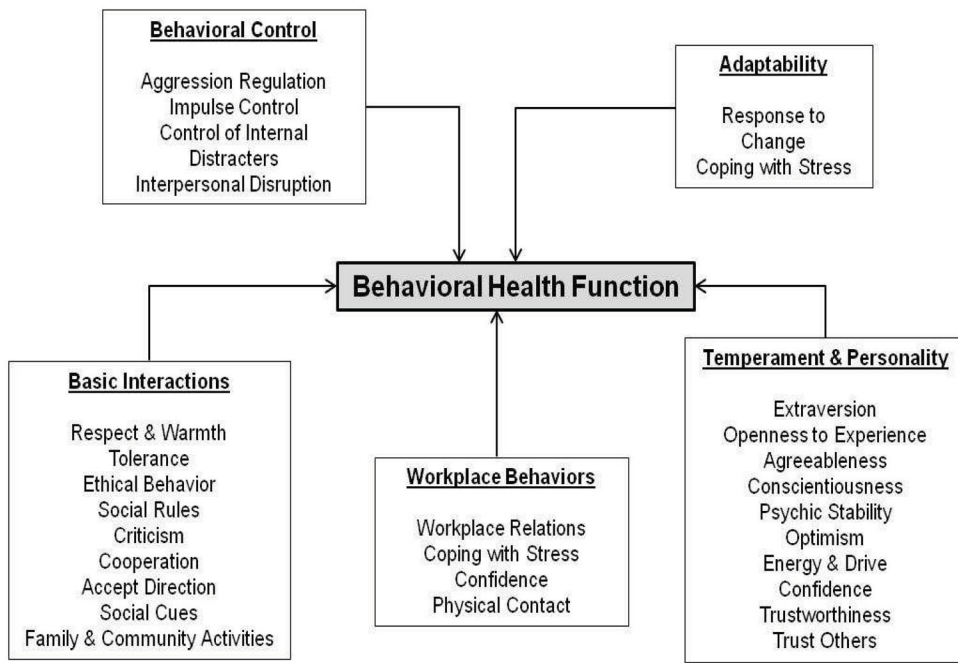


Figure 1.
Behavioral Health Function Conceptual Framework

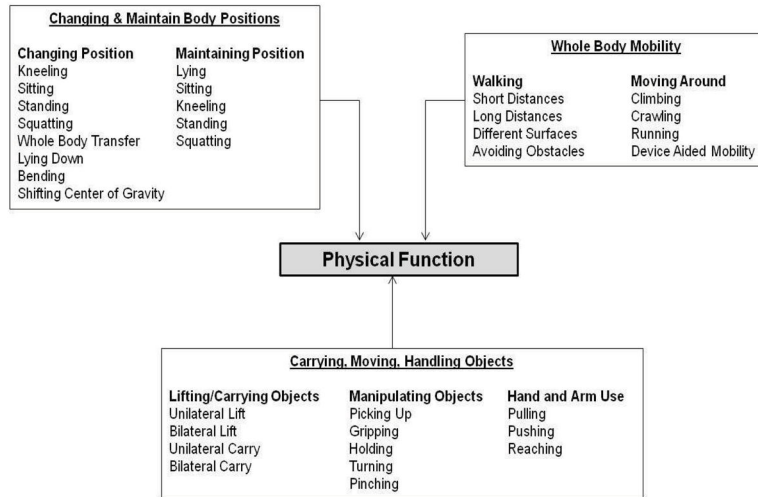


Figure 2.
Physical Function Content Model

Table 1

Search strategy for Medline/PubMed

“Disability” terms	“Work” terms	“Health” terms	“Measurement” terms
Disability Evaluation, SSI/SSDI, Disability Insurance, Mentally Disabled Persons, Physically Disabled Persons, Sick Leave/ Disability Leave, Worker’s Compensation, Mobility Limitation	Work Capacity Evaluation, Needs Assessment, Occupational Health, Sick Leave/Disability Leave, Work Place, Employment, Absenteeism, Worker’s Compensation	Mobility Limitation, Activities of Daily Living, Upper Extremity, Interpersonal Relations, Mental Health, Mental Processes, Mental Disorders, Occupational Health, Psychological Theory, Burnout, Depression, Stress, Mental Function, Physical Function	Disability Evaluation, Work Capacity Evaluation, Needs Assessment, Outcomes Measures, Health Status Measure, Disability Evaluation, Work Capacity Evaluation, Outcomes Measures

Table 2

Reference Models

Behavioral Health Function Domain			Physical Function Domain		
FAT	FFM	ICF	FAT	PROMIS	ICF
Sensory-Perceptual	Neuroticism*	Body Structures	Sensory-Perceptual	Physical Health*	Body Structures
Cognitive Intellectual	Openness*	Environmental Factors	Cognitive Intellectual	Mental Health	Environmental Factors
Physical	Extraversion*	Activities & Participation* <i>General Tasks Interactions & Relationships</i>	Physical*	Social Health	Activities & Participation* <i>Mobility</i>
Interpersonal & Emotional Behavior*	Agreeableness*	Body Functions* <i>Mental Functions</i>	Interpersonal & Emotional Behavior		Body Functions
Vocational*	Conscientiousness*		Vocational*		

* indicates origin model relevant domains used in content model development

FAT Functional Assessment Taxonomy

FFM Five Factor Model

ICF WHO International Classification of Functioning, Disability, and Health

PROMIS Patient Reported Outcomes Measurement Information System