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DEVELOPMENT AND VALIDATION OF AN INSTRUMENT TO MEASURE  
PARTICIPANT ENGAGEMENT IN STATE-FEDERAL  
VOCATIONAL REHABILITATION PROGRAMS

by

Joshua D. Southwick

A dissertation submitted in partial fulfillment  
of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Disability Disciplines

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Logan, Utah

2014

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## ABSTRACT

Development and Validation of an Instrument to Measure Participant Engagement  
in State-Federal Vocational Rehabilitation Programs

by

Joshua D. Southwick, Doctor of Philosophy

Utah State University, 2014

Major Professor: Jared C. Schultz, Ph.D.  
Department: Special Education and Rehabilitation

The Rehabilitation Act of 1973, as amended, calls for participants to become “active and full partners in the vocational rehabilitation process.” Although it is probable that the participant’s active engagement is a major factor in a successful vocational rehabilitation outcome, little is known about the actual meaning of *engagement* in the vocational rehabilitation process. This construct is often entangled with other concepts such as motivation and readiness. A clear operational definition of engagement in the vocational rehabilitation process would allow professionals to better support participants in their role. The purpose of this research was to (a) operationally define the construct of participant engagement in the vocational rehabilitation process, and (b) develop and validate an instrument to measure engagement based on this definition.

After creating measurement items to reflect three proposed subdimensions of engagement (Attendance, Expected Contribution, and Homework), the items were evaluated for content validity and clarity by an expert panel and then piloted with a small

group of vocational rehabilitation counselors. The refined items were then administered to a sample of public vocational rehabilitation counselors through an online survey platform. The data from the usable responses ( $n = 88$ ) were summarized and then tested for an optimal factor solution using exploratory factor analysis. Next, a confirmatory factor analysis was used to confirm the adequacy of the measurement model. Finally, structural equation modeling analyses were used to identify a structural model that explained the relationships among the subdimensions and overall engagement.

The results of the analyses suggest that engagement is a multidimensional construct consisting of three factors: (a) Attendance; (b) Expected Contribution; and (c) Homework. The Expected Contribution factor acts as the strongest predictor of overall engagement and also mediates the effects of Attendance and Homework on engagement. Implications of the study are provided, focusing on the need to teach participants their expected role as full partners in vocational rehabilitation. Counselors should be encouraged to facilitate high levels of engagement through competent counseling skills and appropriate counseling approaches. Finally, limitations of the research are addressed and suggestions for future research are provided.

(187 pages)

## PUBLIC ABSTRACT

Development and Validation of an Instrument to Measure Participant Engagement  
in State-Federal Vocational Rehabilitation Programs

Joshua D. Southwick

The Rehabilitation Act of 1973, as amended, calls for participants to become “active and full partners in the vocational rehabilitation process.” This study represents the first research to specifically address the actual meaning and importance of participant *engagement* in the state-federal Vocational Rehabilitation program. Defining the construct of participant engagement is an important first step in creating more effective services for persons with disabilities. It was proposed that engagement in vocational rehabilitation would include three factors: (a) *attendance* at meetings with the counselor, (b) fulfillment of an *expected contribution* during meetings, and (c) completion of *homework* tasks between meetings. Through an online survey, vocational rehabilitation counselors provided information about participants’ current levels of engagement. Results indicated that engagement can be defined and measured through the three proposed factors. The participants’ fulfillment of their expected contribution had the strongest direct effect on overall ratings of engagement, and this factor also mediated the influence of attendance and homework on engagement. The current findings suggest the need to explore how instructing and supporting participants in their role might facilitate high levels of engagement. Ensuring high levels of participant engagement may increase the effectiveness and efficiency of state-federal vocational rehabilitation programs.

## ACKNOWLEDGMENTS

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# CHAPTER I

## INTRODUCTION

### Importance of Problem

The purpose of the state-federal vocational rehabilitation (VR) program is to provide services to participants with disabilities in order to help them gain or maintain employment (Rumrill & Roessler, 1999; “Vocational Rehabilitation State Grants,” 2013). Participants in VR programs are expected to be “active and full partners in the vocational rehabilitation process” (Rehabilitation Act Amendments of 1998, 100[a][3][c]). In more recent years, the VR program has been defined as a “consumer-driven” process that necessitates the active involvement of the participant (Wehmeyer, 2003, p. 67). The focus on consumer-centered services in VR has grown based on value-laden principles such as consumer control or self-determination (Callahan, Shumpert, & Mast, 2002; Izzo & Lamb, 2003; Wehmeyer, 2003), informed choice (Callahan, 2000; Fry, 1995), empowerment (Kosciulek, 1999; Kosciulek, 2004; Serván, 2003), self-actualization, and individual worth (Curtis, 1998). Based on these principles, the participant’s role in VR includes actively participating in assessments, training, and other planned services; openly dialoging during vocational counseling and guidance; and fulfilling other necessary assignments throughout the VR process. Individual participant roles are further defined when counselors include a mandatory description of participant responsibilities in the individual plan for employment (IPE; “Content of the Individualized Plan for Employment,” 2001). Based on the requirements in federal policy and the consumer-centered priorities of VR, the objective of employment is more

likely to be achieved when participants adhere to expectations of active engagement in the VR counseling process.

Following a review of a large number of empirical studies related to the processes and outcomes of therapeutic counseling, Orlinsky, Grawe, and Parks (1994) concluded that the quality of an individual's "participation in therapy stands out as the most important determinant of outcome" (p. 361). Although counseling in VR settings differs in some ways from mental health counseling (i.e., vocationally-oriented), meaningful participation for VR participants may be just as critical in achieving desired outcomes. Although numerous factors contribute to actual outcomes in VR (Saunders, Leahy, McGlynn, & Estrada-Hernández, 2006), researchers have identified some forms of participant engagement as critical factors associated with successful outcomes (Bose, Geist, Lam, Slaby, & Arens, 1998; Kaye, 1998; Krause, 1966; Rosenbaum & Horowitz, 1983; Rucker, Rice, Lustig, & Strauser, 2003).

Participants who do not adequately engage in the VR process may eventually be counted among the many who drop out or fail to complete the VR program after being found eligible for services. One study showed that about half of unsuccessful VR closures are due to "lack of participation on the client's part" (Kaye, 1998, p. 1). Each year over the past decade, only 34% to 42% of all individuals who were found eligible for services successfully completed their rehabilitation program (i.e., overall rehabilitation rate; U.S. Government Accountability Office [GAO], 2005). Calculating a more liberal rehabilitation rate—based only on participants who have established IPEs—shows that 51% to 60% become successfully employed (i.e., Rehabilitation Services Administration [RSA] rehabilitation rate; "Agency Report Cards of Vocational

Rehabilitation Performance,” 2013; Migliore & Butterworth, 2008). Helping participants more actively engage in VR services may enable many more persons with disabilities (PWDs) to attain employment. Finding ways to better support and engage participants belonging to some groups (e.g., individuals from some culturally diverse backgrounds or with certain disabilities such as severe mental illness) is especially critical because, as a group, they often experience rehabilitation rates much lower than in general (Dutta, Gurvey, Chan, Chou, & Ditchman, 2008; LeBlanc & Smart, 2007; Noble, Honberg, Hall, & Flynn, 1997; Olney & Kennedy, 2002). Providing any participant who has difficulty engaging in the VR process with additional interventions, resources, and/or supportive collaborations may be necessary to support equitable outcomes in the VR system (Anderson & Smart, 2010; Jones, 1973; LeBlanc & Smart, 2007; Taylor-Ritzler et al., 2010).

In addition to the personal losses and disappointments experienced by participants who do not successfully complete the VR program, agencies spend considerable funds on cases without employment outcomes. For example, in federal-fiscal year (FFY) 2010, 327,599 cases were closed for individuals who had received services. Of those closed cases, 169,260 (51.7%) had achieved successful employment, leaving 158,399 (48.3%) unsuccessful closures of individuals who had received services. The average life-of-case cost for cases without employment outcomes after services that year was \$2,968, making a total of \$469,950,152 spent on cases without successful outcomes. Similar spending patterns on unsuccessful cases have been calculated for federal fiscal year 2003 (U.S. GAO, 2005). However, even when employment is not achieved, all participants may benefit from services in other ways (e.g., increased adjustment to disability, improved

quality of life, increased educational level, better prepared to re-enter the VR system at a later date; U.S. GAO, 2005). Despite such benefits, if participants do not obtain employment, resources are being spent in ways that do not produce the intended outcome.

This critical component of VR participant engagement is certainly the result of a combination of many variables. A lack of engagement could result from factors related to (a) the disability (e.g., functional limitations, stability, medication side-effects); (b) the participant (e.g., age, gender, cultural background, self-efficacy); (c) the participant's environment (e.g., economic status, social support); (d) the counselor (e.g., counselor competence, caseload size); (e) the agency (e.g., policies, procedures, organizational culture); and/or (f) the interactions among these factors (e.g., counselor-participant relationship; Lustig et al., 2002; Strauser, Lustig, & Donnell, 2004). In particular, Koch (2001) found that VR participants frequently lack a good understanding of the VR process, including the "client role" (Koch, 2001). Many participants have difficulty engaging in the VR process because they do not know how to adopt this role or do not have the ability to readily do so due to the functional limitations of a disability or other factors (e.g., avolition associated with psychiatric disabilities and their medication side effects; Taylor-Ritzler et al., 2010). Indeed, VR participants cannot be expected to independently maintain high levels of engagement in a VR program. Because engagement is a shared responsibility, the question arises: Who is responsible for the participant's engagement? VR participants must choose to participate, and at the same time, VR counselors and agencies must provide the appropriate interventions and

supports that enable continued participation. Collaborating professionals, employers, family members, mentors, and friends may also be key players in this process.

An understanding of factors that lead to participant engagement in the VR process is critical; however, for the purposes of this research, the scope of study will include a focus strictly on the VR participants' levels of engagement. This focus is advisable for several reasons. First, a better definition of the engagement variable will allow counselors to teach and guide participants through their expected role in the VR program. Second, research studies addressing the antecedents and consequences of participants' levels of engagement are not feasible until both a clear definition and a reliable measure of engagement in VR settings are established. A foundation for future research addressing how to mitigate factors of disengagement can be built by first establishing a reliable method for measuring engagement levels. Third, measures of participant engagement levels tracked over time can act as proximal indicators of the effectiveness of the counseling approaches and services. A participant's low level of participation in an area may be used as an indicator to show the participant's need for additional support. Such support may come (a) in the forms of disability-specific interventions (e.g., restorative services, therapy); (b) through changes to the service plan; and/or (c) through increased encouragement from the counselor, the agency, collaborating professionals, family, friends, or advocates. Tracking engagement in this manner allows for more responsive services that are shaped to help more participants complete the program, especially for those that are likely to drop out. Finally, although a joint effort throughout the VR process is necessary, there are some actions for which the participant is solely responsible. For example, the counselor cannot accompany a participant during most (if



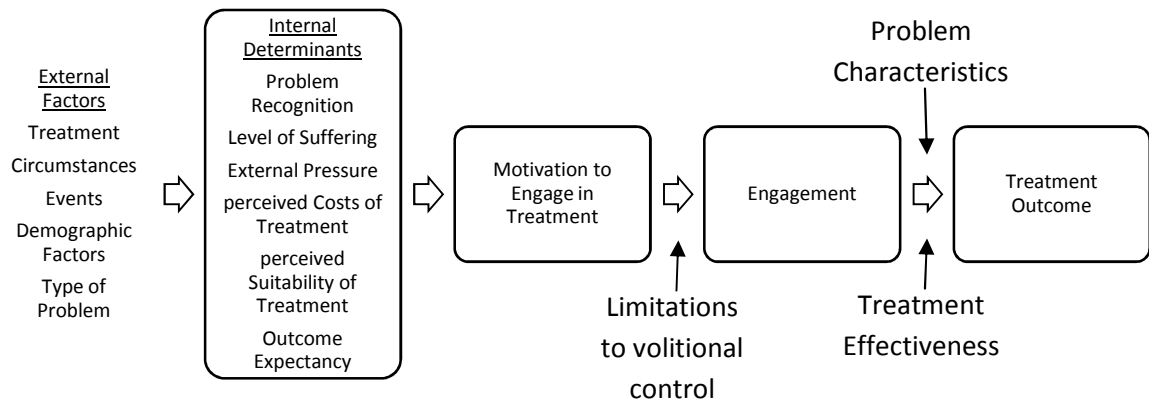
any) activities outside of regular VR meetings. The participant must also be willing to share his or her unique interests, strengths, and priorities (albeit through the interviewing skills of the counselor). Participants often must develop new skills in order to be successful in a VR program—again, this is something that the counselor should support, but it is the responsibility of the participant to exert effort in such training and development. In summary, participant engagement may result from many factors; for the purposes of this research, the focus will be on defining the engagement construct and measuring its levels among VR participants.

### **Theoretical Framework**

Engagement has rarely been identified as a meaningful construct in its own regard. Instead, it has sometimes been overly simplified in its definition. The construct of engagement should be differentiated from unidimensional concepts such as attendance as well as from constructs such as compliance. Whereas compliance may reflect a low level of engagement that includes simple behavioral conformity with the tasks of treatment, engagement can also account for stronger levels of participation that are characterized by purposeful behaviors driven by the individual's invested interest, energy, and commitment to the program or treatment goals (Castro-Blanco, Karver, & Chiechi, 2010; Lequerica & Kortte, 2010). Additionally, the definition of the construct of engagement throughout counseling settings is “often conflated with the concepts of treatment readiness, treatment motivation, the ‘working alliance,’ and treatment progression” (Tetley, Jinks, Huband, & Howells, 2011, p. 928). A better understanding of the VR process and the factors that predict outcomes can be attained if each of these

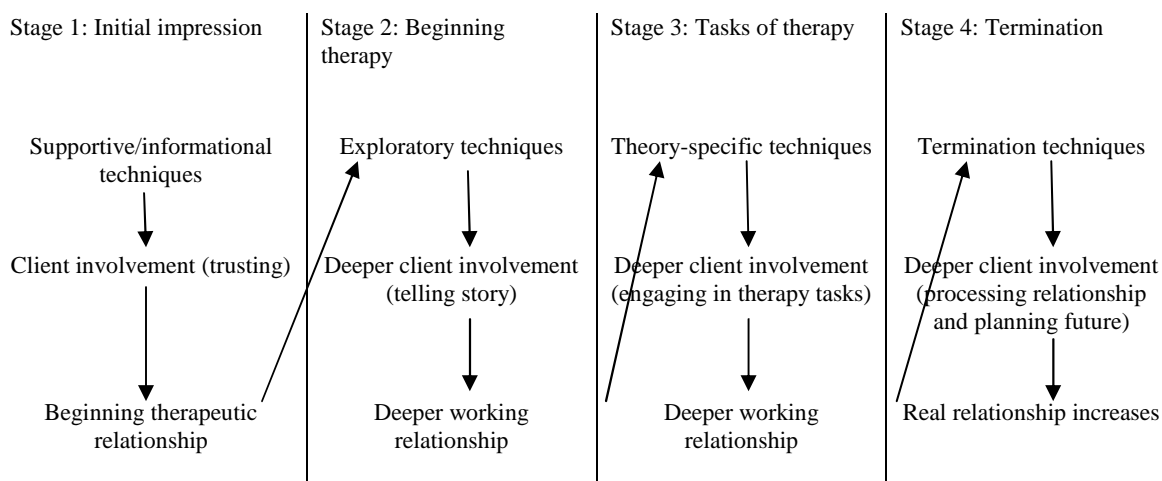
concepts—including engagement—is separately defined (Chu, Suveg, Creed, & Kendall, 2010; Drieschner, Lammers, & Van der Staak, 2004; Karver, Handelsman, Fields, & Bickman, 2005). Two recently proposed models may help distinguish these related concepts and their respective roles in the counseling process.

Drieschner et al. (2004) proposed a conceptualization of treatment motivation for therapeutic counseling that includes an engagement variable (see Figure 1). In their model, external factors provide a broad context for the client's situation. The external factors include the nature of treatment, events, and circumstances, as well as client characteristics such as demographic factors and the type of problem. Although these external factors impact motivation, they are largely mediated by six internal (i.e., cognitive and emotional) factors. The internal factors include problem recognition, level of suffering, perceived external pressure, perceived costs of treatment, perceived suitability of treatment, and outcome expectancy. Motivation, which is narrowly defined as motivation to engage in the treatment, is determined by these six internal factors. Motivation is expected to predict engagement, which is defined as the client's behavioral engagement required in the particular setting. High levels of motivation however, may not always translate into high levels of engagement due to individual limitations. Finally, engagement is expected to provide a modest prediction of outcome—depending on the effectiveness of the interventions and the nature of the problem. To date, only a few empirical studies provide evidence to support this model (Drieschner & Boomsma, 2008a; 2008b; 2008c; Drieschner & Verschuur, 2010; Karver, Handelsman, Fields, & Bickman, 2006; Sribney, 2009).



*Figure 1.* Conceptualization of treatment engagement and related concepts within a treatment process. Adapted from “Treatment Motivation: An attempt for clarification of an ambiguous concept,” by K. H. Drieschner, S. M. Lammers, and C. P. F. Van der Staak, 2004, *Clinical Psychology Review*, 23, p. 1131. Copyright 2004 by Elsevier. Adapted with permission.

In another model addressing therapy processes, Hill (2005) explicates the relationship among three variables: counselor techniques (i.e., therapist interventions), client involvement (i.e., engagement), and therapeutic relationships (i.e., the working alliance). She suggests that as counselors select appropriate interventions throughout the stages of counseling, clients are able to trust and become more deeply involved (i.e., engaged) in the necessary tasks. This interaction of the interventions and client engagement leads to the initial forming of a working relationship that deepens throughout the process (see Figure 2). Hill calls for the development of better measures for each of these concepts, noting that a poor counseling outcome “probably results from inadequate therapist techniques, a lack of client involvement, a poor therapeutic relationship, or a combination of all three” (p. 433).



*Figure 2.* The interrelationship of therapist techniques, client involvement, and the therapy relationship across four stages of therapy. From “Therapist Techniques, Client Involvement, and the Therapeutic relationship: Inextricably Intertwined in the Therapy Process,” by C. E. Hill, 2005, *Psychotherapy: Theory, Research, Practice, Training*, 42, p. 432. Copyright 2005 by the Educational Publishing Foundation. Used with permission.

These two models may be useful in studying the construct of participant engagement in VR. Although participant motivation has been recognized as an important contributor to VR outcomes (Hayward & Schmidt-Davis, 2005), no differentiated definition of participant engagement has been addressed in the research literature to date. Engagement—as a construct separate from motivation and readiness—can best be assessed through its behavioral manifestations (Tetley et al., 2011). Furthermore, although the main components of engagement are somewhat universal, behaviors relevant to the specific type of client and setting may provide stronger indicators of engagement (Drieschner et al., 2004; Tetley et al., 2011). For example, the expectations for a participant receiving substance abuse counseling will differ from the specific expectations for a participant receiving VR counseling. A clear understanding of

participant engagement in VR can contribute to better outcomes based on its broad utility within practice and research.

### **Statement of Problem**

The Rehabilitation Act of 1973, as amended, calls for participants to become “active and full partners in the vocational rehabilitation process” (Rehabilitation Act Amendments of 1998, 100[a][3][c]). After they are determined to be eligible for services, about 60% of VR participants fail to successfully complete the VR program (U.S. GAO, 2005). Although it is probable that the participant’s active engagement is a major factor in a successful VR outcome, little is known about the actual meaning of *engagement* in the VR process. In other words, the participant behaviors that reflect active engagement in the VR process have not been defined in the literature. This construct is often entangled with other concepts such as motivation and readiness (Drieschner et al., 2004; Tetley et al., 2011). A clear operational definition of participant engagement in the VR process would allow professionals to better support participants in their role. Further, such a definition would enable the measurement of engagement as it relates to other important variables in the VR counseling process (e.g., motivation, working alliance, employment outcomes, barriers to engagement in the process, etc.).

### **Purpose of the Study**

The purpose of this study is to (a) operationally define the construct of participant engagement in the VR process, and (b) develop and validate an instrument to measure engagement based on this definition.

## **Research Questions**

RQ<sub>1</sub>: What are the primary factors of VR participant engagement and how can each be measured?

RQ<sub>2</sub>: What is a strong structural regression model that explains the relationships among the primary factors and the overall construct of engagement?

## **Hypotheses**

H<sub>1</sub>: VR participant engagement is a multidimensional construct with measurable variables that will load onto three factors (i.e., sub-dimensions) that include (1) attendance, (2) expected contribution during meetings, and (3) completion of between-meeting tasks (“homework”).

Null H<sub>1</sub>: There will be no relationship between the measured variables and the three proposed factors (i.e., sub-dimensions) of engagement.

H<sub>2</sub>: The structural model specifying the three factors (i.e., sub-dimensions) of engagement as formative indicators of the second-order construct of engagement will provide a plausible model fit for the data (see Figure 3).

Null H<sub>2</sub>: There will be no relationship between the sample data and the proposed model of engagement.

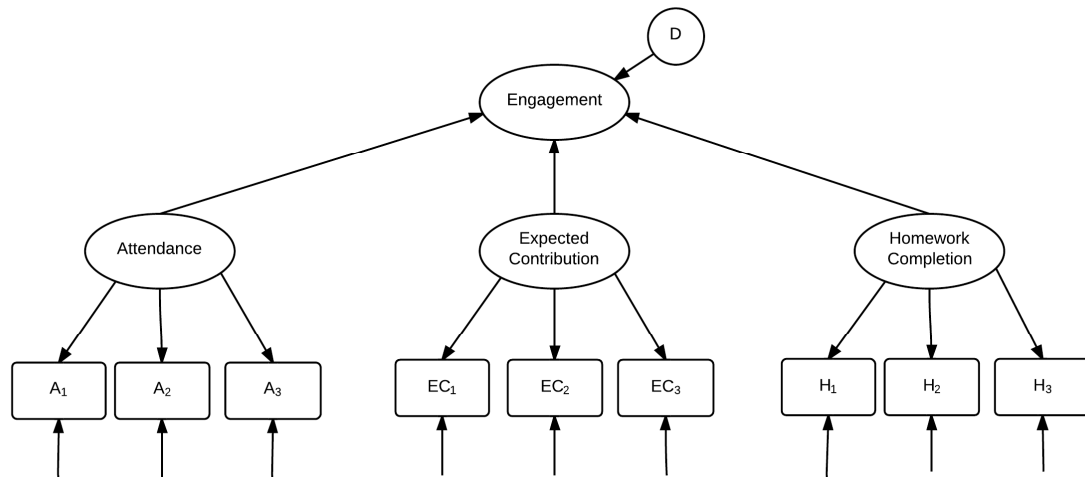


Figure 3. Proposed structural regression model of engagement. D = Disturbance (error term). A<sub>1-3</sub>, EC<sub>1-3</sub>, and H<sub>1-3</sub> represent potential measurement items.

### Definition of Key Terms

**Client Role:** the responsibilities and tasks of the VR participant (Koch, 1996).

**Drop out:** the act, whether voluntary or involuntary, of participants who discontinue or fail to complete VR services, which results in an unsuccessful case closure (i.e., status 28 or 30).

**Empowerment:** “the transfer of power and control over the values, decisions, choices, and directions of human services from external entities (such as service providers) to the consumers of the services” (Timmons, Schuster, Hamner, & Bose, 2002, p. 184); “the capacity of disenfranchised persons to understand and to become *active participants* (emphasis added) in the matters that affect their lives” (Bolton & Brookings, 1996, p. 256); often referred to as *involvement*.

**Engagement:** the extent to which VR participants actively participate in the requisite tasks of the VR program and services (Tetley et al., 2011), evidenced through behavioral

indicators; similar terms found in the literature include *treatment engagement*, *treatment involvement*, *treatment response*, *behavioral engagement*, *compliance*, *collaboration*, *active participation*, *role performance*, etc.

**Motivation:** the participant's desire specifically to engage in the treatment (Drieschner et al., 2004).

**Participant:** a person with a disability who is found eligible for state-federal vocational rehabilitation services, often referred to as a *consumer* or *client* (Rehabilitation Act Amendments of 1998).

**Readiness:** environmental factors and participant attitudes that increase the likelihood of engagement (Cunningham, Duffee, Huang, Steinke & Naccarato, 2009; Tetley et al., 2001).

**Self-determination:** refers to “the right and capacity of people to exert control over and direct their lives” (Wehmeyer, 2003, p. 68), especially as it relates to the practice of participants choosing their vocational goal, selecting program services, and selecting service providers (Rucker et al., 2003); similar terms include *self-direction*, *consumer-driven*, and *consumer control*.

**Vocational Rehabilitation (VR):** the program and services offered by state-federal agencies to people with disabilities; the goal of the program is to help individuals with disabilities gain or maintain employment (“Vocational Rehabilitation State Grants,” 2013).

**Working or Therapeutic Alliance:** the therapeutic relationship between the counselor and the participant, which consists of three parts: (1) agreement on goals; (2) agreement on tasks; and (3) development of bonds, or feelings of trust and liking (Bordin, 1979).



## Summary

Vocational rehabilitation services can assist individuals with disabilities to gain or maintain employment. Unfortunately, many participants have difficulty engaging in the VR process and end up dropping out of the program, thus contributing to a mediocre rehabilitation rate. Participants who are unable to successfully complete the VR program may experience the disappointment of failure, and an agency's significant expenditures on such cases diminish its overall efficiency. Helping VR participants become "active and full partners" in the VR process is critical to outcomes. Gaining a clear understanding of the engagement construct, as well as a way to reliably measure it, are first steps in this effort.

## **CHAPTER II**

### **REVIEW OF THE LITERATURE**

Individuals who apply for VR services are referred from a variety of sources including schools, medical providers, state or local welfare agencies, community rehabilitation programs, the Social Security Administration, self-referral, the State Department of Corrections, faith-based organizations, employers, and others (RSA, 2013). Applicants must be found eligible on the basis of a disability in order to receive services. Although some participants may continue to receive services due to a court mandate or pressure from family members, participants are generally at liberty to discontinue services at any time. In order to be successful, however, VR participants will need to do more than simply avoid dropping out. The VR program is built upon principles that seek to empower participants to be “active and full partners” (Rehabilitation Act Amendments of 1998, 100[a][3][c]) which necessitates a high level of participation throughout the process.

Although high levels of engagement are expected from VR participants, little is known about the construct of engagement as it relates specifically to VR settings. The lack of attention to this construct may be due to the way in which VR participants have interacted with VR agencies and counselors in the past. Historically, counselors were viewed as the experts who prescribed the goals and services of the program for their clients (Nosek, 1993). After the 1992 amendments to the Rehabilitation Act, counselors were required to work with participants as “full partners” and to mutually establish goals “consistent with the unique strengths, resources, priorities, concerns, abilities, and

capabilities, of the individual” (Rehabilitation Act Amendments of 1992, 102[b][1][b]). The role of the VR participant has continued to evolve toward full partnership through the continued advocacy of individual participants and of disability rights groups (Flannery, Slovic, Treasure, Ackley, & Lucas, 2002; Thayer, 1999). Because the traditional role of the VR participant was often passive, an interest in participant engagement was probably not necessary. Indeed, based on this history, the recent pressing need to advocate for consumer control within VR programs may have overshadowed the need to understand how to cultivate and support participant engagement in a broader sense than in the choice-making aspect alone.

In the absence of relevant literature addressing engagement within the field of rehabilitation counseling itself, this review will be grounded primarily in the mental health literature with limited evidence from the field of rehabilitation counseling. Mental health counseling and rehabilitation counseling differ in some regards. For example, whereas the expected outcomes in general counseling settings are quite broad, rehabilitation counseling has a more narrow focus upon psychosocial issues related to a permanent disability. Vocational rehabilitation programs sharpen the focus even further—primarily to the issue of employment. Indeed, compared to mental health counseling, participation in VR counseling is typically much more structured because of its established rules for eligibility, the types of goals to be achieved, and the timing and conditions necessary for case closure. An additional difference from mental health professionals is that VR counselors in state-federal agencies are accountable for quotas on outcomes and for appropriate fiscal expenditures (i.e., tax dollars). Because VR counselors control access to resources and paid services, the power differential is

potentially greater between the counselor and the participant in a VR setting compared to a general counseling setting. The power differential may also be greater in VR settings when the counselor does not have a disability, and the participant, by definition, has a disability (Smart & Smart, 2006). Despite these differences, rehabilitation counselors and mental health professionals share many overlapping counseling functions (U.S. Bureau of Labor Statistics, 2014). In addition, because there has been a “consumer movement” in both fields which recognizes the value of consumer participation (Coyne & Widiger, 1978; Kent & Read, 1998; Rhoades, McFarland, & Knight, 1995), the mental health literature appears to provide an appropriate foundation for the current study.

The purpose of this chapter is to review the literature about the definition and importance of the engagement construct in VR and related settings. The majority of the literature addressing engagement comes from mental health settings over the past 30 years—often as an extension of research focused on client motivation. Based on the literature, a definition of engagement will first be proposed. Second, theoretical frameworks that include a construct of participant engagement in counseling settings will be discussed. Third, a review will be provided of studies that have examined the relationship of engagement to other process and outcome variables. Fourth, a comparison will be given of existing instruments that measure engagement and their usefulness in constructing a measure specific to VR settings.

## Engagement

### Importance

The importance of engagement for individuals has been recognized in various clinical, educational, and professional settings. For example, researchers have noted the importance of engagement for adult mental health clients (i.e., involvement; Hill, 2005; Staudt, Lodato, & Hickman, 2012); child and youth mental health clients (Chu & Kendall, 2004; Karver et al., 2005; Karver et al., 2008); neurorehabilitation clients (Danzl, Etter, Andreatta, & Kitzman, 2012); medical rehabilitation patients (Lequerica & Kortte, 2010); sex offender clients (i.e., treatment engagement; Levenson & Macgowan, 2004); clients of drug abuse treatment (i.e., therapeutic engagement; Simpson, Joe, Rowan-Szal, & Greener, 1995); students (i.e., behavioral engagement; Elffers, 2013; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008); university faculty (Velcoff & Ferrari, 2006); and employees (Schaufeli, Salanova, González-Romá, & Bakker, 2002; Wefald & Downey, 2009). Whereas consistent engagement often leads to desirable outcomes across many settings, disengagement can lead to poor outcomes such as early termination of treatment programs (Sharf, 2007; Tetley et al., 2011), poor grades and/or dropping out from school (Elffers, 2013), and burnout at work (Schaufeli et al., 2002). Early recognition of poor engagement provides professionals the opportunity to intervene and thereby help potential dropouts achieve better outcomes (Chu et al., 2010; Staudt et al., 2012).

**Definition**

“Engagement is a term that seems to have intuitive meaning, but the concept escapes easy definition” (Staudt et al., 2012, p. 217). Although the basic construct of engagement is fairly universal, it is also context specific (Drieschner et al., 2004; Shirk, Caporino, & Karver, 2010; Shirk & Karver, 2006). In general, engagement is recognized as persistent absorption or effortful participation in a particular activity (Wefald & Downey, 2009; see Table 1). The way in which an individual engages varies based on the specific setting and tasks, and it is therefore defined in different ways for different domains (e.g., school versus clinic) as well as for different sub-domains (e.g., psychotherapy clinic versus neurorehabilitation clinic; see Table 2). Common elements within the definition of engagement in most counseling or treatment settings include active participation or involvement through open discussion and completion of relevant tasks. In some definitions, affective or attitudinal aspects are included as components of engagement (e.g., commitment; Cunningham, et al., 2009). Engagement is sometimes conceptualized as cooperation, adherence, or compliance (Bose et al., 1998; Morgan, 2010). Finally, the definitions of engagement reviewed in this section typically designate engagement as a continuous variable (e.g., *extent* or *degree* of engagement) rather than a dichotomous variable (e.g., fully engaged versus dropped out). In light of this distinction, it is probable that a certain level of engagement is necessary in order for individuals to *benefit* from treatment or services (Prinz & Miller, 1991).

Table 1  
*General Definitions of Engage and Engagement*

Source	Definition
Dictionary.com (2013)	Engage: “to occupy the attention or efforts of (a person or persons)”; “to occupy oneself; become involved”
Cunningham et al., 2009	Engagement: “a client’s commitment to and active participation in the treatment process” (p. 63)
Lequerica & Kortte, 2010	Engagement: “the act of beginning and carrying on of an activity with a sense of emotional involvement or commitment and the deliberate application of effort” (p. 416)

Table 2  
*Context-Specific Definitions of Engagement (by year)*

Author(s)	Type of Setting or Individual	Definitions of Engagement
Rosenbaum & Horowitz, 1983	Psychotherapy	Active engagement “deals with the extent to which the patient actively participates in therapy by elaborating realistic goals, communicating information, and indicating a willingness to change” (p. 349)
Prinz & Miller, 1991	Childhood Conduct Problems	“Engagement by parents and children can be defined in a general way as the participation necessary to obtain optimal benefits from an intervention” (p. 382)
Bose et al., 1998	Private Vocational Rehabilitation	“Compliance is viewed as the client’s active participation in the job search” (p. 22)
Kent & Read, 1998	Mental Health Services	“involvement in the planning, management and evaluation of mental health services” (p. 295)
Bohart & Tallman, 1999	Psychotherapy	“the active, creative involvement of the client” (p. vii)

(table continues)

Schaufeli et al., 2002	Employee	“engagement is defined as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (p. 74)
Chu & Kendall, 2004	Child Therapy	“child involvement [engagement], defined as both active behavioral participation (e.g., initiating discussion, engaging treatment material, showing absence of withdrawal and avoidance) and openness to therapy (e.g., level of self-disclosure, enthusiasm)” (p. 822)
Drieschner et al., 2004	Psychological Treatment	“treatment engagement (TE), which is defined as the patients’ behavioral engagement as required by the particular treatment approach” (p. 1130)
Hill, 2005	Psychotherapy	“client involvement refers to the degree of client engagement in the session, or the extent to which the client becomes immersed in the tasks required of the particular therapy” (p. 433)
Shirk & Karver, 2006	Psychotherapy for Youth	“ <i>Treatment involvement</i> [engagement] refers to the client’s active participation in the tasks of therapy. Involvement [engagement] goes well beyond mere treatment attendance and includes participation in therapeutic ‘work’” (p. 479)
Karver et al., 2008	Youth Psychotherapy	“By client involvement, we mean cooperating with, being involved in, making suggestions about, and/or completing therapeutic tasks (e.g., homework, discussing feelings, responding to therapist requests; Karver et al., 2005)” (p. 16)
Kuh et al., 2008	College Students	“Student engagement represents both the time and energy students invest in educationally purposeful activities and the effort institutions devote to using effective educational practices” (p. 542)
Cunningham et al., 2009	Youth Residential Treatment Centers	“Engagement includes attitude about treatment, bond with providers, and participation in treatment activities” (p. 63)

(table continues)



Castro-Blanco, Karver, et al., 2010	Youth Psychotherapy	Defines “ <i>involvement</i> [engagement] as client verbal self-disclosure, initiation of difficult topics, observable client participation, homework completion, and clients actively shaping therapeutic tasks” (p. 230)
Lequerica & Kortte, 2010	Medical Rehabilitation	“the concept of ‘engagement in rehabilitation’ is operationally defined here as a deliberate effort and commitment to working toward the goals of rehabilitation interventions, typically demonstrated through active, effortful participation in therapies and cooperation with treatment providers” (p. 416)
Tetley et al., 2011	Psychosocial and Psychological Treatment	“Here, it is proposed that engagement refers to the extent to which the client actively participates in the treatment on offer” (p. 927)
Kenny, 2012	Psychotherapy	“For the purposes of this study engagement was defined as an intense involvement with the tasks of therapy and presence with the self and therapist” (p. 30)
Staudt et al., 2012	Community Mental Health	“Engagement can be conceptualized as a process that begins with clients accessing services and progressing to a successful therapeutic alliance, and ideally leaving services knowing there is an open door to return if and when needed” (p. 217)

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Based on this review, the following definition of engagement in VR settings is proposed: Engagement is the extent to which VR applicants and eligible participants actively participate in the requisite tasks and services of the VR program. Active participation includes the exertion of energy in observable behaviors, and the level or extent of participant engagement may be judged through the strength, rate, and/or steadiness of the task-related behaviors. Some essential tasks are inherent to the VR process (e.g., meeting and communicating with the counselor, completing necessary paperwork, etc.), whereas other necessary tasks (e.g., services, training) are identified and

agreed upon by both the counselor and the participant in the IPE. The currently proposed definition will be used as a working definition of engagement for the purposes of this study. Ultimately, an operational (i.e., measurable) definition of engagement is sought that will provide meaningful information about the participant's experience and probable outcomes in VR.

### **Frameworks for Understanding Engagement**

#### **Hill Model**

Hill (2005) put forth a pantheoretical model of the therapy process that explains the interrelationships of three process variables across four sequential stages of therapy. The interrelated variables include (1) therapist techniques, (2) client involvement (i.e., engagement), and (3) the therapeutic relationship. Therapist techniques, or interventions, are carefully selected and presented by the therapist in order to match the needs of the client in his or her situation. These techniques elicit the client's involvement (i.e., engagement), which is "the extent to which the client becomes immersed in the tasks required of the particular therapy" (Hill, 2005, p. 433). As the client's engagement in therapy increases, the therapeutic relationship deepens through each stage of the therapy process. The stages include (1) Initial Impression Formation, (2) Beginning the Therapy, (3) The Core Work of Therapy, and (4) Termination. The four stages may be of differing lengths and intensity, depending upon the type of therapy, but generally the counselor and the client must pass through the four stages. Stage 1, which is typically of short duration, is the time for the therapist to provide information about the structure and expectations of therapy. Stage 2 involves the client disclosing his or her story, problems,

goals, and/or feelings, and the therapist conceptualizing the case and selecting relevant treatment strategies. By Stage 3, the therapist should have built a strong relationship with the client in order to (1) work with the client in completing the tasks relevant to the particular type of counseling; and (2) help the client overcome obstacles that may be preventing progress. Finally, Stage 4 is the time for “looking back, looking forward, and saying goodbye” (Hill, 2005, p. 438). Even in this concluding stage, it is important for the client to be actively engaged in discussing the changes achieved and the anticipated future outside of counseling.

Hill’s (2005) model of the counseling process can be applied to VR settings. It is likely that a VR counselor and participant will need to form a trusting relationship in order for the participant to progress through the counseling process (Lustig, Strauser, Rice, & Rucker, 2002). As the counselor gains an accurate understanding of the participant, he or she will be able to provide appropriate supports and services. In order to engage in the difficult tasks of the VR process, the participant will need to feel the support of the counselor. The participant may also need additional support from family, friends, or from other collaborating professionals in order to overcome both the disability-related barriers and other obstacles to employment. Finally, the participant can expect case closure either when employment is secured or when he or she no longer progresses in the program.

Hill’s (2005) model can be used to empirically examine the processes and outcomes of VR. Based on her model, she proposes several testable hypotheses. One proposition is that “the effects of therapist techniques on therapy outcome are dependent on client involvement and the therapeutic relationship” (Hill, 2005, p. 438). In a VR

setting, this means that participants will need to engage in the tasks of VR and be willing to partner with the counselor in order for services to be beneficial. A second proposition is that “client involvement is dependent on therapist techniques and the therapeutic relationship” (Hill, 2005, p. 438). This premise is useful in recognizing that VR counselors will need to provide appropriate guidance and services and intentionally establish a strong working alliance in order to set the stage for high levels of engagement from VR participants. Researchers have often used specific VR services to predict outcomes (Tansey, Phillips, & Zanskas, 2012; Tansey, Zanskas, & Phillips, 2012), and there is also support for the importance of the working alliance in the VR setting (Lustig et al., 2002); however, an accurate definition of the construct of VR participant engagement is still needed before these propositions can be tested.

### **Drieschner Model**

Drieschner et al. (2004) proposed a model that may help explain the outcomes of counseling, with an emphasis on the internal determinants of client motivation and the subsequent levels of engagement. Although the model focuses on the concept of treatment motivation, it also notes the importance of a narrow definition of treatment engagement separate from related constructs. Accordingly, engagement is defined as the desired behavior that results from high levels of motivation. However, the level or quality of engagement may only roughly correspond with levels of motivation because of engagement’s susceptibility to the limitations of volitional control (e.g., sufficient skill, ability, or resources). Finally, it is hypothesized that the client’s level of engagement

leads to the various outcomes of counseling, but this relationship is mediated by the characteristics of the problem and the effectiveness of the interventions.

In the Drieschner model, factors that do not directly impact motivation are labeled external determinants. These factors—such as demographic variables and the type of problem—do not carry as much weight in the counseling process because they are mediated and/or moderated by the internal determinants of treatment motivation. In other words, the internal factors directly determine motivation because these account for the way in which the client perceives and interprets all of the external factors. The internal determinants of motivation include (a) the *level of suffering*, which is the subjective experience of the individual; (b) *outcome expectancy*, which is the individual's expectations regarding the outcome of counseling or treatment; (c) *problem recognition*, which relates to the individual's level of awareness or denial of the problem; (d) the *perceived suitability of the treatment*, which includes satisfaction with the goals, methods, and therapeutic relationship of treatment; (e) the *perceived costs of the treatment*, which include the time, money, psychological effort, and behavioral changes associated with treatment; and (f) *perceived external pressure*, which is the social or legal pressure from family, friends, and/or the courts.

The VR process and participant experience can be examined through the lens provided by the Drieschner model. VR participants have diverse backgrounds and experiences, as well as unique needs based on the type and severity of the disability or disabilities (Taylor-Ritzler et al., 2010). The ways in which a VR participant perceives and interprets these external factors in combination with the VR process make up the internal determinants of treatment motivation. For example, an individual's level of

suffering may primarily relate to his or her response to and experience with the disability. Individuals with the same diagnosis may respond to the disability in different ways, resulting in a broad array of experiences (Smart, 2009). Another application of the Drieschner model relates to outcome expectancy. A VR participant's outcome expectancy may depend upon whether he or she has had the benefit of observing a successful role model with a similar disability. Next, a unique cost of treatment for a participant in VR settings may be the loss of Social Security benefits (i.e., Supplemental Security Income [SSI] and/or Social Security Disability Insurance [SSDI]) and government-sponsored health insurance (i.e., Medicare or Medicaid; Dutta et al., 2008). It is hypothesized that these internal factors determine motivation—specifically, motivation to engage in the VR process. In addition to the typical limitations of volitional control that may impede engagement, VR participants, by definition, will have additional functional limitations that may interfere with their ability to engage in the VR program. Finally, outcomes in VR will depend upon the participant's level of engagement, the effectiveness of services, and the nature (e.g., severity) of the disability and other barriers to successful employment.

The model proposed by Drieschner et al. (2004) is a useful framework for understanding counseling processes such as those found in VR. The model is especially beneficial in showing the need to clarify and differentiate constructs found within the process. Although participant motivation is certainly an important component of the VR process (Hayward & Schmidt-Davis, 2005), the accompanying level of engagement is also critical to successful outcomes. Drieschner et al. (2004) noted that the elements of and requirements for engagement will vary depending on the “category of clients and the

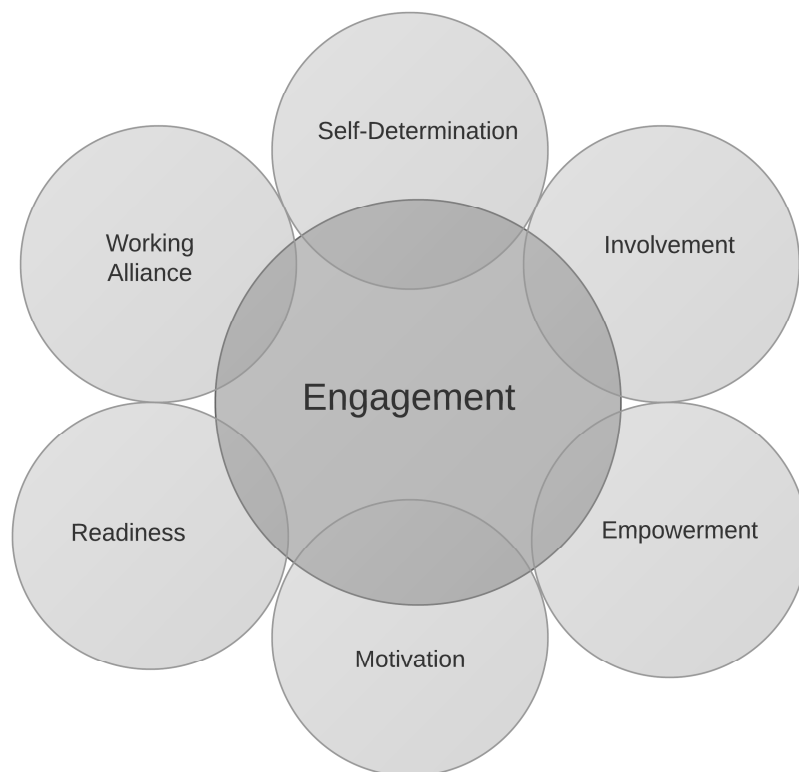
kind of treatment” (p. 1127). However, the concept of engagement has received little attention in the rehabilitation literature resulting in an unclear definition specific to VR settings. In the next section, a detailed explanation of how the construct of engagement can be differentiated from related concepts will be given.

### **Differentiating Engagement from Related Concepts**

As shown from the previous frameworks, the construct of engagement should be narrowly and separately defined, distinguishing it from related concepts in the VR process. For example, engagement can often be intertwined or confused with variables such as involvement, self-determination, empowerment, motivation, readiness, and the working alliance (see Figure 4). The term “involvement,” as it is often used in the rehabilitation literature (Childers & Rice, 1993; Thomas & Whitney-Thomas, 1996; Timmons et al., 2002), does not refer to the same construct of engagement as defined in this study. Rather, involvement typically refers to issues of consumer-control, consumer-direction, and/or empowerment. Involvement and engagement may be moderately to highly correlated, but it is conceivable that a VR participant could be involved in all of the decision making, but not following through with the level of active participation (i.e., engagement) necessary to benefit from VR services. If empowerment is defined as “the capacity of disenfranchised persons to understand and to become *active participants* (emphasis added) in the matters that affect their lives” (Bolton & Brookings, 1996, p. 256), then involvement or the capacity to be involved may precede active participant engagement. This relationship is accounted for in the Drieschner et al. (2004) model by

the specification of “limitations to volitional control” (p. 1131), a concept that is also similar to the idea of readiness in some frameworks (Bordin, 1979).

Hayward & Schmidt-Davis (2005) reported that participant motivation is an important contributor to VR outcomes. Because the construct of motivation was not clearly defined in the study, the significance of such a finding is unclear. This is especially problematic inasmuch as more than 100 definitions of the concept of motivation have been identified in the literature (Kleinginna & Kleinginna, 1981). Perhaps because of the abstract nature of motivation, assessing the construct of engagement separately in research has been found to yield stronger predictions of therapeutic outcomes (Rosenbaum & Horowitz, 1983).



*Figure 4.* The construct of engagement and several closely related constructs. This is a conceptual representation only; the degree to which constructs overlap is not supported with empirical data.



Russell, Ainley, and Frydenberg, (2005) clarify the difference between motivation and engagement: “Motivation is about *energy* and *direction*, the reasons for behaviour, why we do what we do. Engagement describes energy in action; the connection between person and activity” (p. 1). Referring again to the framework provided by Drieschner et al. (2004), motivation is only the intention to act, whereas engagement involves the actual behaviors. Many factors can influence whether a VR participant’s motivation turns into engagement (i.e., limitations of volitional control). For example, even though a participant may be highly motivated to gain employment through the assistance of the VR program, the lack of support from family or the financial disincentives of working full time (i.e., loss of Social Security payments) might get in the way of full engagement with the requirements of the program. In light of these distinctions, an understanding of participant engagement may be more useful than a focus on motivation in VR settings.

The working alliance is another variable that has often been assumed to envelop the engagement variable. The working alliance describes the therapeutic relationship between the counselor and the participant, which consists of three parts: (1) agreement on goals; (2) agreement on tasks; and (3) development of bonds, or feelings of trust and liking (Bordin, 1979). Although agreement on tasks may appear to reflect the concept of engagement, this facet of the working alliance is a cognitively-based variable rather than a behaviorally-based variable. For example, one item used to assess agreement on tasks states, “We agree on what is important for me to work on” (Horvath & Greenberg, 1989, p. 226). Thus, agreement may conceptually occur (perhaps as a result of engagement), but it does not necessarily represent engagement in its entirety. In other words, a participant and counselor dyad may agree upon the necessary tasks, but the participant

might not have the resources or the ability to actually engage in the tasks. Additionally, the participant may feel compelled to agree with the counselor due to the power differential, but be unable to engage in the planned services. The working alliance can be further distinguished from engagement if the bond component is highlighted: “alliance refers to *the client’s experience of the therapist as someone that can be counted on for help in overcoming problems or distress*” (Shirk & Karver, 2006, p. 480).

Differentiating the construct of engagement from related variables can enable researchers to better understand the impact of participant factors in the VR process. Once a clear understanding of this construct is attained, empirical tests of its contribution to counseling outcomes will be feasible based on frameworks such as those proposed by Hill (2005) and Drieschner et al. (2004).

### **Client Role**

One way in which the concept of VR participant engagement has been addressed, albeit indirectly, is through the concept of the *client role*. A participant’s role depends greatly upon *role expectations*, which are “preconceived ideas about how the counselor and the client will behave toward each other and what responsibilities each will assume” (Koch, 2001, p. 77). Initially, VR participants are unfamiliar with the role expected of them in the program (Koch, 1996), but VR counselors typically review rights (e.g., confidentiality, nondiscrimination) and responsibilities with participants early in the VR process. As part of the written IPE, counselors must include a description of the participant’s responsibilities related to the achievement of employment, to obtaining services from other providers (i.e., comparable benefits), and to the ability to pay for

planned services (“Content of the Individualized Plan for Employment,” 2001). In this manner, participants are oriented to the client role in VR, and some level of agreement must be achieved between the counselor and the participant by the time the IPE is signed. Unfortunately, low levels of engagement in the VR process often result from the fact that many participants do not know how to adopt their expected role or do not have the ability to readily do so based on the functional limitations of their disability (Taylor-Ritzler et al., 2010). In such cases, participants may struggle in the VR program because they need more support to develop into a full partner.

Koch, Williams, and Rumrill (1998) propose that a better understanding of participants’ expectations in a VR program—including expectations about their role—will lead to increased engagement throughout all stages of the process. Such an increase in engagement may subsequently lead to participants’ decisions to continue in the rehabilitation process rather than to drop out. Koch (1996) found that VR applicants express preference for a role that includes several components such as participating in planning and training; working on personal or disability-related issues; openly communicating and building rapport with the counselor; completing counselor-assigned tasks; seeking out additional services and employment opportunities; and assuming responsibility for oneself and one’s decisions. Although it is useful to understand the role expectations of individuals entering the VR program, there is currently no research that shows whether these same preferences continue or if and how they change over time.

Koch’s (1996) findings reveal that VR applicants do not typically share a similar set of expectations for the VR process. Researchers in other counseling or treatment settings have proposed behavioral and attitudinal components of engagement as part of

the client role. Table 3 provides a summary of several proposed frameworks for client role expectations. Understanding the roles and responsibilities of participants in VR settings can help inform the definition of engagement specific to this setting.

Table 3  
*Frameworks for the Client Role in Counseling-Related Settings*

Source	Construct	Components
Koch, 1996	Client role expectations	<ul style="list-style-type: none"> <li>• Follow through with advice</li> <li>• Establish rapport</li> <li>• Exchange information</li> <li>• Function in negative/undesired role</li> <li>• Meet eligibility requirements</li> <li>• Assume personal control</li> <li>• Work on personal development</li> <li>• Participate in planning</li> <li>• Seek support services</li> <li>• Participate in training</li> <li>• Seek out/participate in employment</li> </ul>
Krause, 1967	Role performance: “the specific participation required by a therapist” (p, 426)	<ul style="list-style-type: none"> <li>• Attending and fully utilizing appointments</li> <li>• Openly informing the therapist about his or her problem, situation, and feelings</li> <li>• Listening and/or responding to the therapist’s contributions</li> <li>• Completing between session “homework” tasks</li> </ul>
Schulte, 1997 (in Drieschner et al., 2004)	Basic behavior: behavior necessary within a specific type of treatment	<ul style="list-style-type: none"> <li>• Continuous attendance at appointments</li> <li>• Cooperation both at and between appointments</li> <li>• Self-disclosure</li> <li>• Trying new behaviors</li> <li>• Restrain from resistant behavior</li> </ul>

## **The Impact of Engagement**

### **Engagement and Outcome**

Several researchers have clearly identified engagement as an important construct in counseling and related settings (Castro-Blanco, North, & Karver, 2010; Kaye, 1998; Krause, 1966; Orlinsky et al., 1994; Rosenbaum & Horowitz, 1983). For example, Castro-Blanco et al., (2010) proposed that “effective treatment is predicated on effective engagement” (p. 8). Shirk and Karver (2006) stated that “it is likely that treatment involvement and participation define the boundaries of treatment effectiveness” (p. 487). The engagement of people with disabilities participating in vocational rehabilitation programs may have similar importance; however, there is little empirical research available on the construct of engagement in the rehabilitation literature. In a review of predictive outcome studies, engagement is only one of many variables that have been found to predict employment outcomes (Saunders et al., 2006). Several studies from the field of rehabilitation will be reviewed in this section. Typically, these studies do not directly address engagement; rather, some aspect of engagement (e.g., cooperation, compliance, decision-making) is typically noted in part of the findings or discussion. These studies hint at the importance of engagement, but also show that little research has focused on accurately defining and investigating this construct.

In an analysis of VR statistics from federal-fiscal year 1995, Kaye (1998) found that 53.9 % of all VR participants, or 39.6 percent of participants who signed an IPE, did not successfully complete the program. Kaye reviewed the reasons that participants exited the program before obtaining employment. During the year examined, 30.9 % of

unsuccessful cases had “refused services” and 19.0 % had “failed to cooperate.”

Grouping these cases together, Kaye states that about half of the unsuccessful participants in VR fail to complete the program due to a “lack of participation on the client’s part” (p. 1). Kaye compares the substantial number of cases in this category against those who cannot be located (26.0 %) and those who have a disability “too severe” for rehabilitation (3.6 %). Based on Kaye’s review, it appears that VR agencies and counselors need to identify better ways to mitigate participant disengagement from the program.

In a longitudinal study, Rogers, Anthony, Cohen, and Davies (1997) investigated factors that predict employment outcomes for individuals with psychiatric disabilities. In contrast to other predictive outcome studies (Bolton, Bellini, & Brookings, 2000; Dutta et al., 2008), the researchers found that demographic variables were not significant predictors of long-term, full-time employment outcomes. They attributed the uniqueness of their findings to the fact that their sample was drawn from individuals who were already “engaged in a vocational program” with a recently established vocational goal (p. 110). The authors note that these results are encouraging because they provide evidence that, regardless of background, most individuals who enter a VR program can be successful if they are willing and able to be actively engaged.

In a study involving proprietary rehabilitation, Bose et al. (1998) investigated whether several factors were predictive of the successful placement of injured workers. Participants who more actively participated (i.e., complied) in the job placement process were more likely to be successfully placed. The authors note that the participants’ attitudes toward the placement process probably influenced their participation and

subsequent outcomes. Bose et al. highlight the importance of active participation in particular because it is a factor that can be influenced by counselors.

Rucker, Rice, Lustig, and Strauser (2003) studied gender differences in rehabilitation participants' reports of involvement and subsequent employment outcomes. These researchers note the interrelation of empowerment and involvement, explaining that it is difficult to determine if one of these concepts precedes the other in the rehabilitation process. Participants reported being either "Involved" or "Not Involved" in (1) developing vocational goals, (2) selecting program services, and (3) selecting service providers. Rucker et al. found a positive correlation between each of these three aspects of involvement and employment outcomes. Although the definition of involvement utilized by these researchers incorporates only one aspect of engagement (e.g., involvement in vocational goal development), these results again allude to the importance of engagement in the VR process. Rucker et al. concluded that "exploring innovative counseling techniques to enhance client involvement could be particularly beneficial in the development of intervention strategies for participants who are not *actively engaged* (emphasis added) in their rehabilitation program" (p. 25).

### **Engagement and Process**

Thomas and Whitney-Thomas (1996) conducted a study with two very small focus groups, one composed of VR participants and the other of VR counselors. The authors sought to identify elements that contributed to a successful VR process. Several themes emerged based on the discussions from both counselors and participants, including the importance of participant involvement. Although Thomas and Whitney-

Thomas included some behavioral components (i.e., engagement) as part of participant “involvement,” the primary focus of this concept is the participant’s ability to make choices (i.e., self-determination or empowerment). A similar investigation of VR participant perspectives conducted by Timmons et al. (2002) also identified active involvement—as a component of consumer direction—as an essential element of quality service delivery. These authors note that giving participants opportunities for involvement may lead to greater motivation to participate and succeed.

In another qualitative study examining the perspectives of VR participants, Wagner, Wessel, and Harder (2011) used semi-structured interviews to better understand the experiences of injured workers. One of the five themes emerging from the study involved communicating more clearly to participants so that they could be more involved in the return-to-work process. Such involvement might include the contribution of participant opinions during the planning process. Again, this study points to one aspect of engagement (i.e., sharing ideas for planning) that may be an important part of effective service delivery.

Because the construct of engagement has not been clearly defined for VR settings, researchers have not directly studied the relationship of this variable to other VR process variables or to VR outcomes. The development and validation of a reliable measure of VR participant engagement is another prerequisite for such studies. The next section will provide a review of existing engagement instruments.



## **Engagement Instruments**

A minimal degree of engagement is generally necessary for participants to obtain the intended benefits from psychosocial and employment-oriented services such as VR. A participant's levels of engagement may follow various trajectories throughout the VR process, and such changes over time are probably natural and compatible with successful program completion. However, a participant whose degree of engagement drops below a certain level is at risk for dropping out of the program completely (Chu et al., 2010). Giving VR counselors an instrument to reliably assess a participant's level of engagement at various points throughout the VR process can provide a way to (a) verify that the current approach is working well with the participant, (b) flag potential dropouts, and (c) investigate how engagement correlates with other variables in the process (e.g., motivation, progress, etc.). As Chu and Kendall (2004) have observed in child therapy settings, "Growing signs of withdrawal, avoidance, and diminished participation may signal to the therapist that strategies to re-engage the child may be required" (p. 827). Similarly in VR settings, understanding engagement levels may help counselors become more aware of individual barriers to engagement that may need immediate attention before the participant can focus on and continue with planned services.

### **Published Review**

In a systematic review, Tetley et al. (2011) identified 40 treatment engagement instruments. The engagement measures were utilized in a variety of psychosocial and psychological treatment settings, but none of the reviewed instruments focused on VR settings and participants. Based on the review, engagement was defined as the extent of

active participation in therapy and as being composed of the following six core construct domains:

treatment attendance, treatment completion, completion of expected between-session tasks (e.g. homework), expected contribution to therapy sessions (including self-disclosure and/or other tasks or activities), appropriate working alliance with the therapist, and supportive and helpful behavior towards other participants (in group therapies). (p. 936)

The researchers rank-ordered the instruments, giving higher scores to measures that assessed more of their identified dimensions of engagement. None of the instruments assessed more than four of the six domains, and most assessed only one of the domains. Nearly half of these instruments were categorized as appropriate for any clinical population and treatment modality (i.e., general application). The remaining measures were designed for specific populations or treatment types such as therapy in a group setting, treatment for drug misuse, or treatment for individuals experiencing mental illness and homelessness. Reliability and validity coefficients were also reported for each of the instruments when available. Based on their review, the researchers call for the development of psychometrically and conceptually sound measures of the construct of engagement. Although they would like to see the development of an instrument that can be used across many therapeutic settings, Tetley et al. also “acknowledge that in some specific circumstances, it could be desirable to design measures that are specifically applicable to a particular client group or clinical setting” (p. 936). The intent of the current research is to design an instrument that is specifically applicable to VR participants.

## **Review of Additional Instruments**

Through a review of the literature, other relevant engagement scales were identified that were not included in the Tetley et al. (2011) review. These instruments will be individually reviewed in this section.

Krause (1967) developed the Client Behavior Inventory (CBI) which included 47 therapist-rated items of the client's therapy-related behaviors indicative of motivation. The CBI measures the clients behaviors related to four features of the client role: (1) attending and fully utilizing appointments; (2) openly informing the therapist about his or her problem, situation, and feelings; (3) listening and/or responding to the therapist's contributions; and (4) completing between session "homework" tasks. Krause (1967) demonstrated some degree of content and construct validity for the instrument, and use of the CBI in subsequent studies has shown its possible utility (Krause, 1968; Krause, Fitzsimmons, & Wolf, 1969).

The Vanderbilt Psychotherapy Process Scale (VPPS) is an instrument designed to assess psychotherapy processes related to outcome (O'Malley, Suh, & Strupp, 1983). The three dimensions of the scale include patient involvement, exploratory processes, and the quality of the relationship. The dimension of Patient Involvement is made up of the Patient Participation and Patient Hostility scales, each of which has demonstrated high internal consistency and high interrater reliability. The Patient Participation scale, which is described as the "patient's active involvement in the therapy interaction" (p. 584), is made up of eight items representing the following concepts: withdrawn, inhibited, passive, actively participated in the interaction, and spontaneous. The Patient Hostility scale is described as the "level of negativism, hostility, or distrust displayed by the

patient” (p. 584). The combination of the Patient Participation and Patient Hostility scales, which makes up the Patient Involvement dimension, provides the score that has shown the greatest consistency and strength in predicting client outcomes (O’Malley et al., 1983). Additional process-outcome studies have helped to validate the utility of the VPPS (Bachelor, 1991; Cordaro, 2006; Jackson-Gilfort, Liddle, Tejada, & Dakof, 2001; Karver et al., 2008; Smith, Hilsenroth, Baity, & Knowles, 2003; Windholz & Silberschatz, 1988).

The Child Involvement Rating Scale (CIRS) is a six-item scale used to assess a child’s level of involvement or participation in sessions of psychotherapy (Chu & Kendall, 1999). The instrument assesses to what extent the following behaviors are present: (a) initiating discussion or introducing new topics; (b) demonstrating enthusiasm for the tasks of therapy; (c) self-disclosing personal information; (d) withdrawing or failing to respond; and (e) avoiding participation in suggested activities. Similar items may be relevant in VR settings. The instrument has demonstrated moderately strong internal consistency ( $\alpha = .73$ ) and, when used to measure changes in involvement over time, has been useful in predicting treatment outcomes (Chu & Kendal, 2004).

Each of these additional measures of engagement can be examined according to the domains identified by Tetley et al. (2011; see Table 4). The CBI (Krause, 1967) assesses three of the domains named in the Tetley et al. review. The VPPS Patient Involvement subscale (O’Malley et al., 1983) and the CIRS (Chu & Kendall, 1999) each measure just one of the Tetley et al. domains. These additional instruments provide further support for some of the domains identified by Tetley et al.

Table 4  
*Examination of Additional Engagement Instruments According to Tetley et al. (2011)*  
*Domains*

Authors, Instrument	<u>Aspects of Engagement</u> <u>Assessed<sup>a</sup></u>						Other Aspects Assessed	Application Setting
	A	B	C	D	E	F		
Krause (1967) CBI	✓		✓	✓			Responsiveness to the therapist	Psychotherapy
O'Malley et al. (1983) VPPS, Patient Involvement subscale				✓			Hostility	Psychotherapy
Chu & Kendall (1999) CIRS				✓			Enthusiasm	Child Psychotherapy

<sup>a</sup>The letters A through F refer to the following respective dimensions: A denotes *attendance*; B denotes *timely completion* of treatment; C denotes completion of *between-meeting tasks* (*homework*); D denotes *expected contributions* to therapy (including self-disclosure and/or other tasks); E denotes a *working alliance*; and F denotes *helpful behaviors* in group therapy settings.

There is not currently a published measure of engagement specific to VR settings. The absence of such a measure reflects the small number of studies relating to engagement and involvement in rehabilitation counseling settings. The lack of a measure and the lack of research related to engagement is somewhat surprising. First, almost 50 years have elapsed since Krause (1967) developed and published the CBI that included 47 items related to motivation. It is curious that there have been few, if any, researchers who sought to build on and refine Krause's instrument. Next, despite the availability of a large database that tracks all participants through the highly structured VR program (i.e., RSA 911 data), researchers have not taken the opportunity to examine levels of participation among VR consumers. Furthermore, federal guidelines have not been added to require any specific measures of engagement for VR participants. Indeed, the

exigency for understanding participant engagement in the VR process and its relationship to outcomes has been overlooked for too long by researchers and policy makers in the field of rehabilitation counseling.

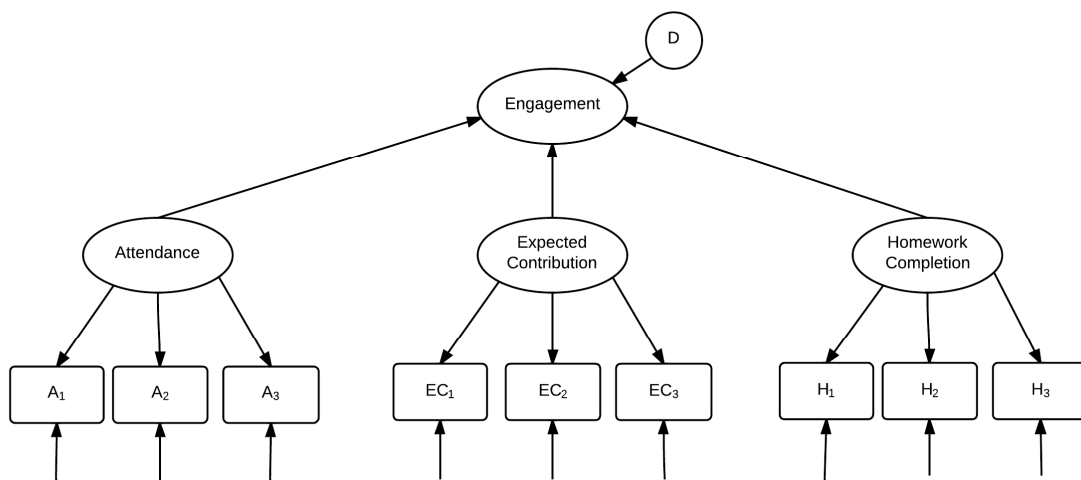
The systematic review published by Tetley et al. (2011) and the additional instruments reviewed in this section help provide a basis for the dimensions of engagement in psychosocial settings. However, based on the selected frameworks for this study (Drieschner et al., 2004; Hill, 2005), three of the aspects are not applicable to this construct in VR. First, the dimension related to helpful behaviors for group settings does not apply because VR services are provided on an individual basis. Next, the working alliance dimension will not be included in this construct in order to maintain a narrow definition specifically related to behaviors of active participation (as has previously been discussed in the section “Differentiating Engagement from Related Concepts”). Although a strong working alliance and a high level of participant engagement may develop in tandem, the relationship and consensus between counselor and participant (i.e., working alliance) are factors outside of the intensional definition of engagement. Indeed, it is possible to envision a participant who agrees with his or her counselor verbally, but who is unable to follow through with the tasks of VR. It is also worth noting that maintaining a distinction between the concepts of engagement and alliance will allow future research to address the relationship between these two variables. Finally, the dimension related to timely completion of treatment will also be excluded from the current conceptualization of engagement. An examination of this dimension reveals that it is more aligned with the concept of progress than engagement, a concept that is unnecessarily merged with many definitions of engagement. Rather, as

pointed out by the reviewers, “it is a likely consequence of treatment engagement” (Tetley et al., 2011, p. 928). Thus, the three remaining aspects of engagement identified by Tetley et al., namely, attendance, expected contribution during meetings, and between-meeting task or homework completion, will be used in the conceptualization of engagement for VR participants.

### **Conclusion**

The extent to which participants engage in psychosocial and psychological treatment settings is critical to treatment processes and outcomes. Because there is very little empirical research, neither a clear definition nor a reliable instrument by which to assess VR participant engagement has emerged. Based on this review, engagement is conceptualized as the cumulative result of participant behaviors related to (1) attendance, (2) expected contribution, and (3) “homework” completion (see Figure 5). In other words, a participant’s engagement score can be calculated as the weighted linear composite of the three sub-dimensions. Although these three sub-dimensions have frequently been addressed in the literature, it is critical to gain a clear understanding of the observable and measurable behaviors that constitute each of these three dimensions in VR-specific settings (Tetley et al., 2011). Although it is possible to measure overall engagement through global indicators (e.g., “Overall, the participant is highly engaged in the VR process”), assessing engagement through its multiple sub-dimensions has some advantage (MacKenzie, Podsakoff, & Podsakoff, 2011). Whereas a global measure is subject to a wide range of interpretations (e.g., considering only one of the sub-dimensions in the response), more specific measures help a responder focus on the

desired sub-dimensions. This specificity may result in more reliable scores. The proposed model will provide the framework for developing an index of VR participant engagement levels based on empirically established measures of each of the sub-dimensions.



*Figure 5.* Proposed structural regression model of engagement. D = Disturbance (error term). A<sub>1-3</sub>, EC<sub>1-3</sub>, and H<sub>1-3</sub> represent potential measurement items.



## **CHAPTER III**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **Purpose of the Study**

The purpose of this research was to (a) operationally define the construct of participant engagement in the VR process, and (b) develop and validate an instrument to measure engagement based on this definition.

#### **Research Questions**

RQ<sub>1</sub>: What are the primary factors of VR participant engagement and how can each be measured?

RQ<sub>2</sub>: What is a strong structural regression model that explains the relationships among the primary factors and the overall construct of engagement?

#### **Instrumentation**

Because there is currently no measure of engagement for participants in VR settings, the first phase in this study will involve the development of a new instrument. In the following sub-sections, details will be provided about the type of instrument to be constructed, as well as the reasons for this type of instrument. Next, an overview of structural equation modeling (SEM) will be given. Finally, the steps and technicalities involved in instrument construction will be explained.

## Index Construction

Creating instruments by which to measure latent constructs is one aspect of psychometrics that continues to be of growing interest to psychological researchers (DeVellis, 2003). Constructs are human-constructed, abstract variables of interest that cannot be directly observed because they do not have a basis in physical reality (Netemeyer, Bearden, & Sharma, 2003). In order to measure latent constructs, multiple assessment items are typically required in order to more accurately represent characteristics of the construct in its entirety (Cohen, Cohen, West, & Aiken, 2003). Such measures can include *polls* of purely empirical or atheoretical constructs (e.g., opinion polls), social-psychological construct *scales* with reflective indicators (e.g., employee attitude), or *index* scores with formative indicators (e.g., Apgar score, socioeconomic status [SES]; Netemeyer et al., 2003).

Although the steps to create scales and indexes are fairly similar, it is important to distinguish between the psychometric and conceptual differences between the two (Bollen & Lennox, 1991; MacKenzie et al., 2011). Scales are the most common type of psychological measurement (Borsboom, 2005). Whereas a scale is used to measure a focal construct with indicators that *reflect* the underlying construct (i.e., reflective measurement model), an index of a focal construct is used to obtain a score that is *formed* from several indicators. In other words, the score for the latent variable acts as a summary of the indicator scores and the overall construct. In this formative measurement model, “the latent variable is regressed on its indicators” instead of the other way around (Borsboom, 2005, p. 61).

MacKenzie et al. (2011) point out that a construct is not inherently reflective or formative—rather, this distinction is dictated through the choice and conceptualization of the indicators. For example, although SES is typically measured through somewhat objective formative indicators (e.g., income, educational attainment, etc.), it is possible to create subjective indicators that reflect a person’s SES. For example, asking “How high are you up the social ladder?” (Borsboom, 2005, p. 169), or “To what extent does your income meet your needs and wants?” may reflect a person’s social and economic status, respectively.

Although it is possible to conceive a situation in which a reflective measurement model would be desirable for constructs like SES, there may be a few benefits to using formative indicators instead of reflective ones to measure some variables. In the case of SES, a better estimate of a person’s status can be obtained through responses to formative indicators that can be answered with straightforward, objective items (e.g., annual income). From an ontological stance, SES is a constructed variable that does not exist as a real entity within the person. As such, the scores reflected on the indicators cannot vary as a function of SES (Borsboom, 2005). In other words, SES is not a real entity that can cause the scores on the indicators. Finally, “predictive value would be the main motivation for conceptualizing SES as a single latent variable” (Borsboom, 2005, p. 62). By obtaining a single summarized score (i.e., SES) through a formative measurement model, we can test whether this variable acts as a predictor of important outcomes (e.g., physical and mental health).

Several criteria have been proposed by which to judge whether an indicator should be considered reflective or formative (see Table 5; Jarvis, MacKenzie, &

Podsakoff, 2003; MacKenzie, Podsakoff, & Jarvis, 2005). These criteria help address whether the latent construct causes the indicators (i.e., latent to manifest) or if the indicators cause or form the latent construct (i.e., manifest to latent; Grace & Bollen, 2008). The three components that act as indicators of VR participant engagement (viz., attendance, expected contribution during meetings, and “homework” completion) will be judged against these criteria. First, each of these components is a defining characteristic of engagement, rather than a manifestation of it; indeed, together they make up the basic ways in which a participant engages in the VR program and services. Next, increases in the level of one component of engagement may not necessarily correlate to changes in another component of engagement, which would render them interchangeable. For example, individuals who regularly attend may have high or low rates of participation in tasks outside of VR meetings. Thus, it appears that these indicators are definitionally indispensable because each captures a unique aspect that makes up the conceptual domain of VR participant engagement (MacKenzie et al., 2005). Based on an examination of the identified components through these criteria, these indicators will be specified as formative indicators. Indeed, a participant’s level of engagement in VR is a combination of how well he or she performs his or her role in each of the following facets: (1) attendance, (2) expected contributions during meetings, and (3) fulfillment of tasks (“homework”) outside of meetings. Further specification of the measurement model will be addressed below (i.e., model specification).

Table 5  
*Criteria to Determine whether Indicators are Reflective or Formative*

Criteria	Reflective Indicators	Formative Indicators
What is the nature of the relationships between constructs and measures?	The indicators are manifestations of the construct; the construct produce changes in the indicators	The indicators are defining characteristics of the construct; the indicators produce changes in the construct
Are the indicators interchangeable?	Yes, the indicators are sampled from the same conceptual domain and share a strong common theme	No, each indicator may capture a unique and essential aspect of the conceptual domain
Are the indicators expected to covary?	Yes, the indicators are strongly correlated with each other	No, correlations among indicators are free to vary
Are all of the indicators expected to have the same antecedents and/or consequences?	Yes, the indicators have the same antecedents and consequences	No, each indicator may differ in antecedents and consequences <sup>a</sup> based on the unique aspect of the conceptual domain it taps

Note. Adapted from “A critical review of construct indicators and measurement model misspecification in marketing and consumer research,” by C. B. Jarvis, S. B. MacKenzie, and P. M. Podsakoff, 2003, *Journal of Consumer Research*, 30, p. 203.

<sup>a</sup>Some researchers have noted that formative indicators may share common consequences (DeVellis, 2003).

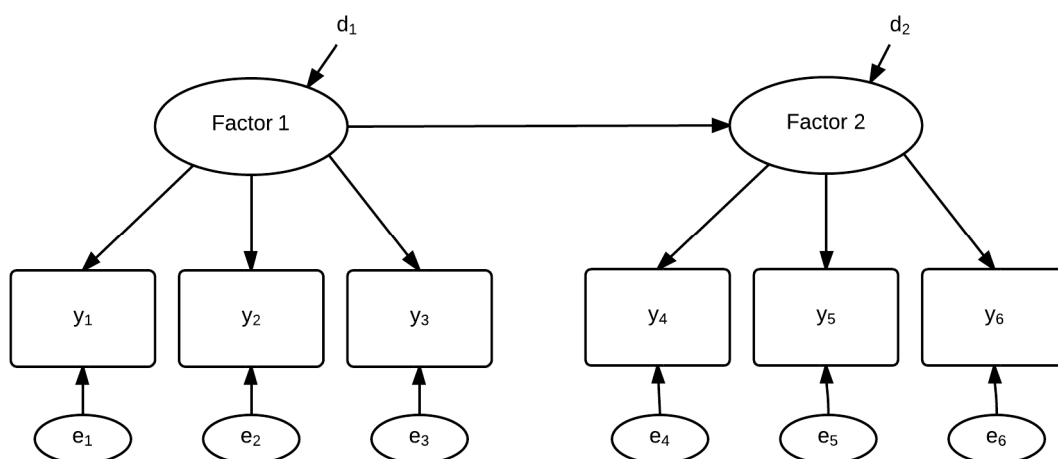
## Structural Equation Modeling

**Basics and notation.** The evaluation of the hypothesized measurement model of engagement is achieved through structural equation modeling (Diamantopoulos & Winklhofer, 2001). Although factor analysis methods alone could help establish the structure of the measured variables, further analyses through structural equation modeling procedures make it possible to estimate the differential weight that each sub-dimension may have on the overall engagement construct (Law, Wong, & Mobley, 1998).

Structural equation modeling (SEM) is a data analysis method that allows researchers to

investigate the relationships among observable (i.e., measured, manifest) variables and unobservable (i.e., latent) constructs through a combination of factor analysis and multiple regression (Schreiber, Nora, Stage, Barlow, & King, 2006). In SEM, the two general parts of the model include (1) the measurement model that shows the relationship of the observed variables to the factors (i.e., factor analysis), and (2) the structural model that shows the hypothesized relationships among unobservable constructs (Ullman, 2013). Ullman (2013) provided a summary of the conventions used in drawing SEM diagrams (see Figure 6):

Measured variables . . . are represented by squares or rectangles. Factors have two or more indicators and . . . are represented by circles or ovals in path diagrams. Relationships between variables are indicated by lines; lack of a line connecting variables implies that no direct relationship has been hypothesized. Lines have either one or two arrows. A line with one arrow represents a hypothesized direct relationship between two variables, and the variable with the arrow pointing to it is the DV [dependent variable]. A line with an arrow at both ends indicates an unanalyzed relationship, simply a covariance between the two variables with no implied direction of effect. (p. 682)



*Figure 6.* Basic structural equation modeling (SEM) diagram.  $d_{1-2}$  = disturbance (error term). Factors 1 and 2 are constructs measured through the items labeled  $y_{1-6}$ . Finally,  $e_{1-6}$  = measurement error associated with each measurement item.

In addition to this explanation, it should be noted that latent constructs with an arrow pointing away from them are *exogenous* (similar to an independent variable in that the model does not attempt an explanation of its causes) and latent constructs with an arrow pointing to them are *endogenous* (similar to a dependent variable; Klem, 2000). A single construct can be both exogenous and endogenous (Schreiber et al., 2006). Finally, error terms are indicated by arrows pointing to variables that may have a circle, oval, or a letter “e” (i.e., variable-level *error*) or “d” (i.e., construct level *disturbance*) from which the arrow originates.

**Necessary steps.** Schumacker and Lomax (2004) identified the following steps in SEM analyses: (1) model specification, (2) model identification, (3) model estimation, (4) model testing, and (5) model modification. *Model specification* is an a priori procedure of specifying which variables will be included (and excluded) from the model and the hypothesized relationships (or lack of relationships) among variables. Following the review of the literature, this is a process of proposing a theoretical model that incorporates the researcher’s hypotheses.

*Model identification* is the process of evaluating whether a unique set of parameter estimates (i.e., paths, variances, and covariances) can be obtained for the model. In contrast, a lack of identification in a statistical model is similar to an algebra problem that has too many free variables to come to a unique solution (i.e., an underidentified model). Approaches to achieving model identification include fixing parameters (e.g., factor loadings or variances fixed to the value of 1); constraining parameters to be equal to another parameter (i.e., equality constraints); and initially proposing a simple model with fewer parameters (Schumacker & Lomax, 2004).

Following model specification and identification, data are collected. Next, *model estimation*, a fitting function procedure (e.g., ordinary least squares, maximum likelihood), is used to estimate parameters “that will maximize the fit between the observed covariance structure and the hypothesized structure” (Law & Wong, 1999, p. 146). Based on the parameter estimates, an appraisal of the model can then be made through goodness-of-fit analyses (i.e., *model testing*) such as chi-square, root mean square error of approximation (RMSEA), and others (Schreiber et al., 2006). A global analysis as well as individual parameter analyses can be performed to test the fit of the hypothesized model. Basically, the hypothesized model can be evaluated against the relationships found in the sample data. A poor fit between the proposed model and actual data indicates a misspecified model, whereas a good model fit provides support for a plausible explanation. If a strong model fit is not found (i.e., indices of model fit are unacceptable), the researcher can attempt *model modification*. Although there is no single approach to modifying a model, this process should “still be guided by theory and practical considerations” (Schumacker & Lomax, 2004, p. 74). Following a modification of the model, the steps involving model estimation and testing should be followed again. The final goal is to identify the strongest plausible model for the data that are collected.

**Two-step approach to modeling.** The previous explanation of SEM steps is consistent with the one-step approach to modeling because it analyzes the entire model all at once. If the model is not a good fit, the researcher has nothing to indicate whether the misspecification is in the measurement model, the structural model, or both (Kline, 2010). The two-step approach remedies this problem by first testing the measurement model portion through a confirmatory factor analysis (CFA) and next testing the entire

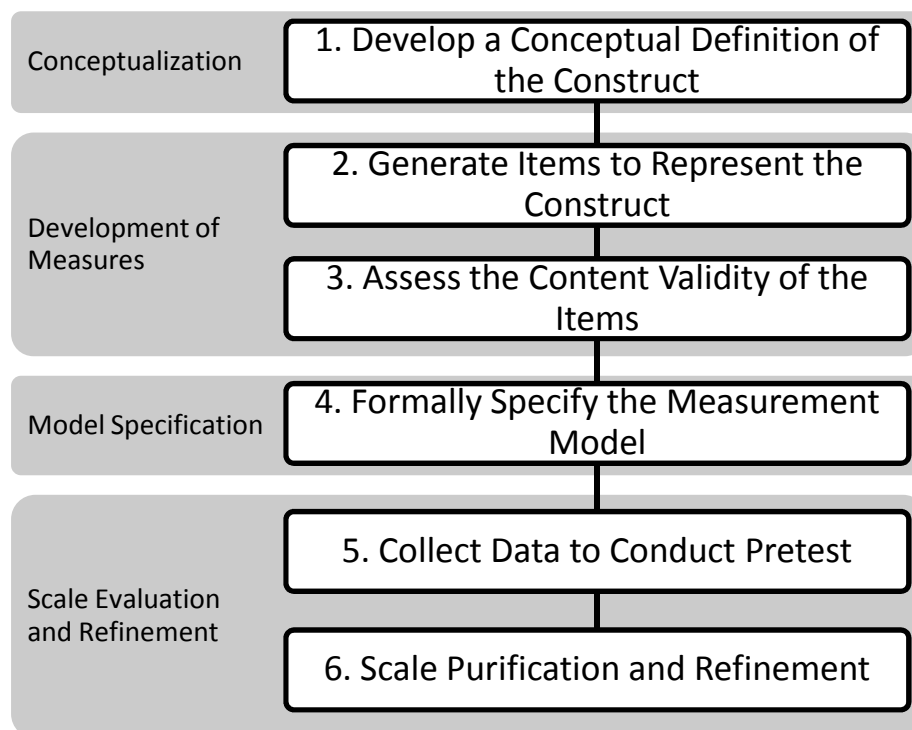


model through SEM analyses (Anderson & Gerbing, 1988). Convergent and discriminant validity of the items are assessed through the CFA and nomological validity is assessed through the analysis of the structural model (Schumacker & Lomax, 2004). Because of its merits over the one-step approach, the two-step approach will be used in the current study.

### **Steps for Index Construction**

MacKenzie et al. (2011) outline steps for the development of an index or scale (see Figure 7). The steps of index construction incorporate the SEM steps outlined above. Details about how these steps were followed in the current study are included in the following sections. For the sake of clarity in reporting, the order in which each of these steps is addressed below differs from the original order of the recommended steps.

**Conceptualization: Develop a conceptual definition of the construct.** The first step outlined by MacKenzie et al. (2011) is to conceptually define the construct of interest. A clear definition of the construct is critical to instrument development (DeVellis, 2003; Netemeyer et al., 2003). Through the literature review (chapter 2), the following working definition of VR participant engagement was proposed: Engagement is the extent to which VR applicants and eligible participants actively participate in the requisite tasks and services of the VR program. The “requisite tasks and services” includes both tasks that are generally applicable to all VR participants (e.g., meeting and communicating with the counselor, completing necessary paperwork, etc.) and those tasks that may only be applicable to specific participants as identified and agreed upon in the IPE (e.g., services, training). The operational definition includes observable



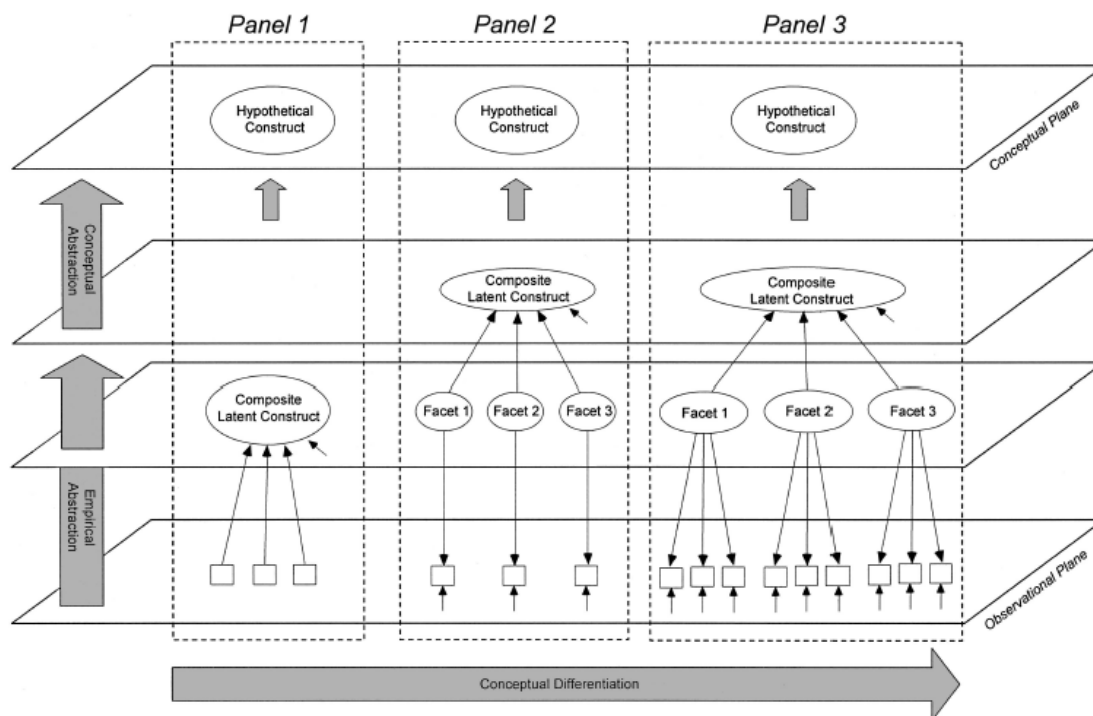
*Figure 7.* Overview of index development procedures. Adapted from “Construct Measurement and Validation Procedures in MIS and Behavioral Research: Integrating New and Existing Techniques,” by S. B. MacKenzie, P. M. Podsakoff, and N. P. Podsakoff, 2011, *MIS Quarterly*, 35, p. 297. Copyright © 2011, Regents of the University of Minnesota. Used with permission.

participant behaviors and excludes items strictly associated with motivation (e.g., desire or intent to act), readiness (e.g., environmental and personal factors that enable action), progress (e.g., short-term and long-term outcomes), attitude, or working alliance (e.g., quality of the relationship or level of agreement).

In this study, engagement was conceptualized as a multidimensional construct with three sub-dimensions. The three sub-dimensions include the applicable domains identified from the Tetley et al. (2011) review: (1) attendance, (2) expected contribution during meetings, and (3) completion of between-meeting tasks (“homework”).

*Attendance* was defined as being present for the full length of required and/or scheduled meetings with the VR counselor or staff. *Expected contribution during meetings* was defined as the communication, attention, and participation necessary during face-to-face VR appointments. *Completion of between-meeting tasks (“homework”)* was defined as the carrying out of tasks between VR appointments that contribute to the goals of the VR program generally and/or the services or tasks on the IPE specifically.

**Model specification: Formally specify the measurement model.** Several measurement model prototypes have been described in the literature. MacKenzie et al. (2011) provides examples of four models, two of which are first-order models and two of which are second-order models. A first-order latent construct is only one step removed from measurable indicators whereas a second-order latent construct is two steps removed from measurable indicators because of its multiple dimensions. The four models identified by MacKenzie et al. are as follows: (1) a first-order latent construct measured with reflective indicators; (2) a first-order latent construct measured with formative indicators; (3) a second-order latent construct *reflected* in multiple first-order constructs that are measured with reflective indicators (i.e., “indirect reflective model”; Diamantopoulos, Riefler, & Roth, 2008); and (4) a second-order latent construct *formed* through multiple first-order constructs that are measured with reflective indicators. The second and fourth types described are shown in Figure 8, panels 1 and 3 respectively.



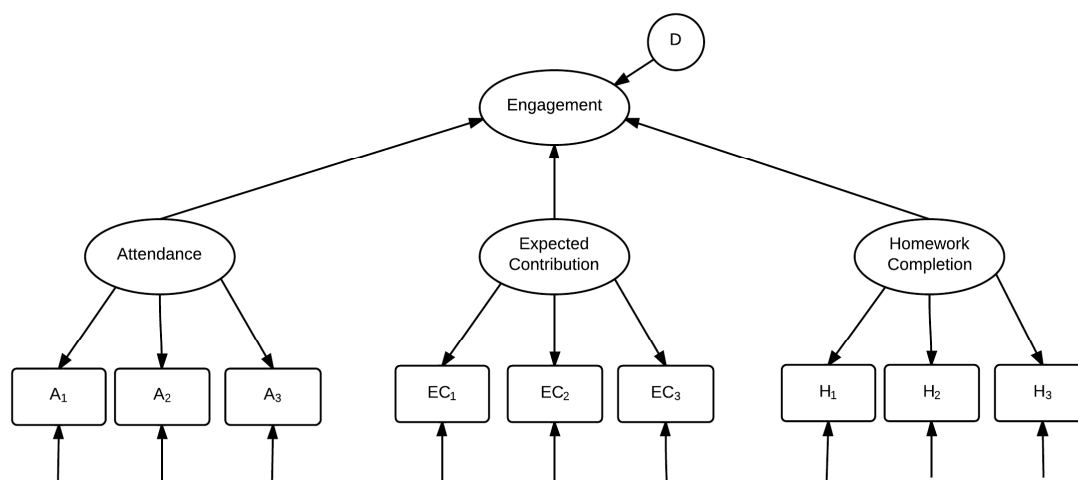
*Figure 8.* Formative- and mixed-indicator measurement models. From “The Problem of Measurement Model Misspecification in Behavioral and Organizational Research and Some Recommended Solutions,” by S. B. MacKenzie, P. M. Podsakoff, and C. B. Jarvis, 2005, *Journal of Applied Psychology*, 90, p. 715. Copyright 2005, by the American Psychological Association. Used with permission.

Some researchers have criticized the use of formative measurement models similar to those in Panel 1 of Figure 8 (Edwards, 2011; Iacobucci, 2010). Criticisms of purely formative models typically cite the lack of psychometric rigor (e.g., pretension of error-free measurement) and therefore recommend reflective or mixed-indicator measurement models similar to those shown in Panels 2 and 3 of Figure 8 (Edwards, 2011; Iacobucci, 2010). Such mixed-indicator models have the advantage of following established psychometric theory that is used in reflective measurement models.

In the current study, a mixed-indicator measurement model similar to the model shown in panel 3 of Figure 8 was specified. The hypothetical construct of VR participant

*engagement* is represented by a composite score of engagement. This score is formed from the three sub-dimensions of engagement—Attendance, Expected Contribution, and “Homework” completion. The score for each sub-dimension is assessed reflectively through the respective measurement items. This is also known as a reflective first-order, formative second-order model (see Figure 9; Diamantopoulos, et al., 2008).

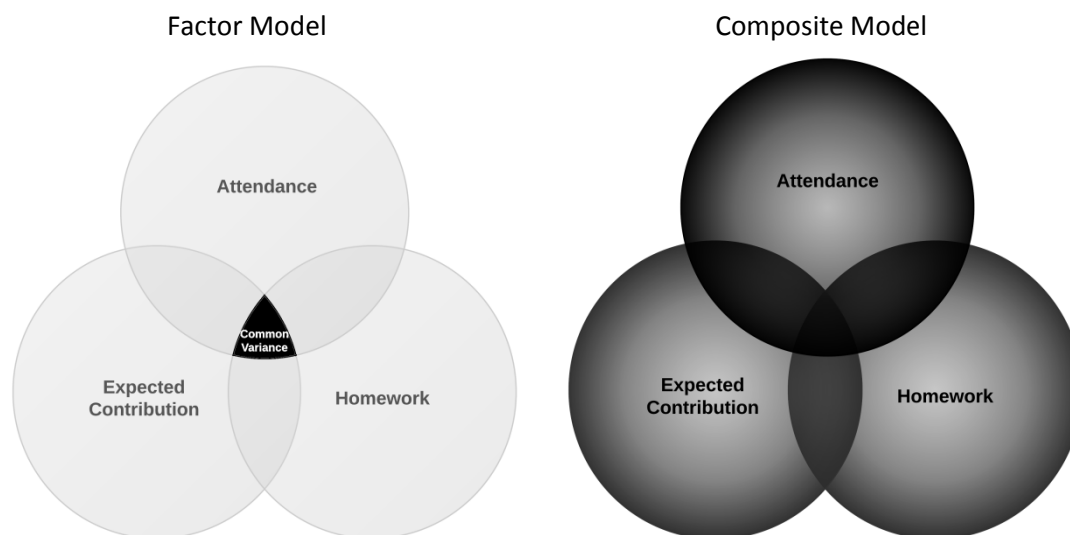
Again, it is proposed that the three sub-dimensions form the composite engagement score because each facet is a definitional component of engagement that “causes” the overall score. In other words, a participant’s level of performance on each of these facets is what makes up the overall score for engagement. On the other hand, if each first-order construct varied as a function of the overall engagement score, then the sub-dimensions would be considered reflective indicators. This would mean that overall engagement would have to drive the scores on the indicators—making it more like a measure of motivation, a conflation that needs to be avoided. As has previously been



*Figure 9.* Mixed-indicator measurement model of engagement. D = Disturbance (error term). A<sub>1-3</sub>, EC<sub>1-3</sub>, and H<sub>1-3</sub> represent potential measurement items.

explained, one of the goals of the current study is to measure engagement as a construct separate from motivation.

**Specification and identification technicalities.** An explanation of several technicalities related to the model specification and identification in the current study is in order. First, one reason to specify a formative second-order model relates to the explained variance of the model. In a reflective model, only the common variance among factors is extracted from each of the indicators (similar to a common factor analysis; Kline, 2010). However, the first-order indicators in the proposed model are not necessarily correlated; they do not necessarily contribute substantial common variance. Rather, considering the total variance contributed from the combination of first-order indicators is more appropriate in this case (see Figure 10; Law & Wong, 1999; MacKenzie et al., 2011).



*Figure 10.* Common variance from factor model versus total variance from composite model. Adapted from “Multidimensional Constructs in Structural Equation Analysis: An Illustration Using the Job Perception and Job Satisfaction Constructs,” by K. S. Law and C. S. Wong, *Journal of Management*, 25, p. 145. Copyright 1999 by JAI Press Inc.

The second technicality to be mentioned is that in a reflective first-order, formative second-order measurement model, error terms should be included at two different levels. Measurement error exists “at the level of the manifest indicators” and also as a disturbance term “at the level of the second-order construct” that recognizes variance that is not captured by the sub-dimensions (Diamantopoulos et al., 2008, p. 1207). Careful item construction and purification can help reduce measurement error. Furthermore, a clear operational definition that includes all indicators (i.e., a census) that form the second-order, focal construct can help reduce error found in the disturbance term. To the extent possible, both of these steps have been followed in the current study.

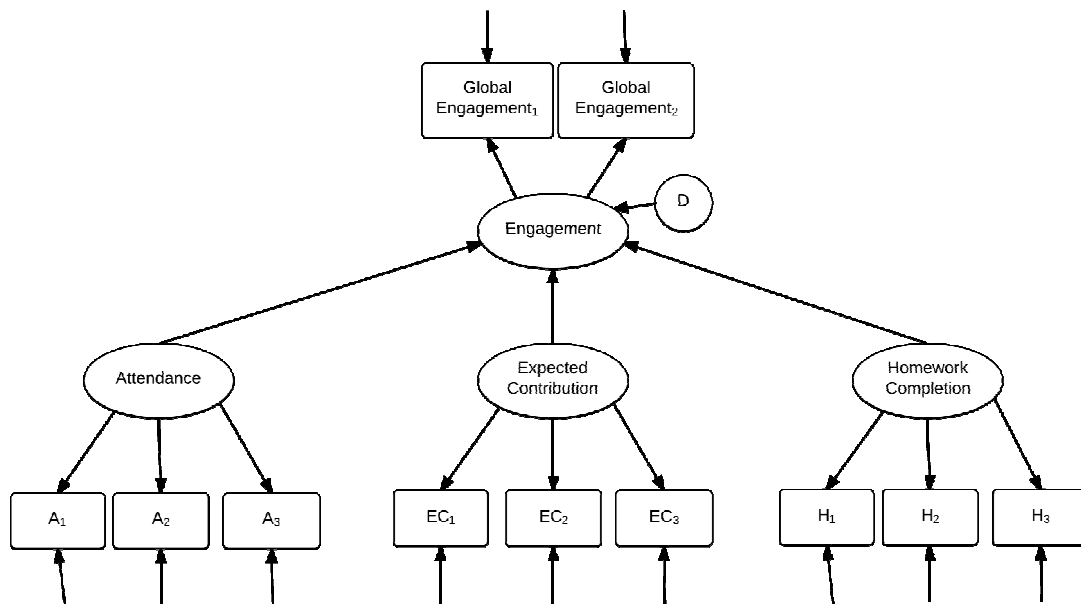
Finally, the proposed model shown in Figure 9, as shown, does not allow for statistical identification of the second-order construct level error term. A lack of identification in a statistical model is similar to an algebra problem that has too many variables to solve (Schumacker & Lomax, 2004). The identification problem can be solved by adding two reflective indicators at the overall second-order construct level (Bollen & Davis, 2009; Diamantopoulos et al., 2008; Kline, 2010; MacKenzie et al., 2011). The two paths leading to indicators that reflect overall engagement have been added to the model shown in Figure 11.

**Development of measures: Generate items to represent the construct.** Item pool development can be achieved through various methods. MacKenzie et al. (2011) suggested the following techniques:

reviews of the literature, deduction from the theoretical definition of the construct, suggestions from experts in the field, interviews or focus group discussions with representatives of the population(s) to which the focal construct is expected to generalize, and an examination of other measures of the construct that already exist. (p. 304)

Items were generated based on the literature review, methods of deduction, and existing measures of engagement, in order to represent each sub-dimension. Each of the sub-dimensions of engagement was represented through multiple items, as shown in the following list:

- Attendance
  - Keeps scheduled meeting appointments (CBI)
  - Arrives at meetings on time (CBI)
  - Stays for the duration of the meeting
  - Calls (if necessary) to cancel or reschedule appointments
  - Initiates new appointments



*Figure 11.* Measurement model of engagement with global items for purposes of identification. D = Disturbance (error term). A<sub>1-3</sub>, EC<sub>1-3</sub>, and H<sub>1-3</sub> represent potential measurement items.



- Expected Contribution During Meetings
  - Provides open and honest self-disclosure (CBI)
  - Actively participates in the interaction (VPPS)
  - Withholds relevant information (CBI)
  - Asks questions relevant to the VR program or process
  - Initiates discussion or introduces new topics (CIRS)
  - Demonstrates enthusiasm for the tasks of VR (CIRS)
  - Withdraws or fails to respond (CBI, CIRS, VPPS)
  
- Tasks Between Meetings (“homework”)
  - Initiates communication with the counselor (phone, email)
  - Returns phone calls in a timely manner
  - Completes assigned tasks
  - Completes planned training
  - Completes planned services
  - Investigates and considers vocational goal
  - Tries new skills independently (CBI)

Lengthy, double barreled, and complex or trendy wording was avoided in the items in order to maximize item clarity (DeVellis, 2003; Netemeyer et al., 2003).

Response option formats included continuous (e.g., number of minutes) and Likert-type response options. For items using Likert-type scales, an even number of scale points was used in order to force an opinion and avoid a “neutral” response (Netemeyer et al., 2003).

**Development of measures: Assess the content validity of the items.** A panel of four expert reviewers was selected to review the initial pool of items. Two reviewers

with expertise in psychometrics and two reviewers with expertise in the state-federal VR system participated. The first psychometric reviewer holds a Ph.D. in Rehabilitation Psychology, is a licensed psychologist, and is credentialed as a CRC and as a Certified Vocational Evaluator (CVE). This reviewer has 18 years of psychometric experience and 13 years of experience as a professor in rehabilitation programs. The second psychometric reviewer holds a Ph.D. in Rehabilitation Psychology and the CRC credential. This reviewer has 20 years of psychometric experience and 14 years of experience as a professor in rehabilitation programs. The first reviewer with expertise in the state-federal VR system holds a M.S. in Rehabilitation Counseling and the CRC credential. This reviewer has 19 years of experience as a counselor, supervisor, or administrator in state-federal VR agencies. The second reviewer with expertise in the state-federal VR system holds a M.R.C. in Rehabilitation Counseling and the following credentials: CRC, Licensed Vocational Rehabilitation Counselor (LVRC), and Certified Public Manager (CPM). This reviewer has 13 years of experience as a counselor, supervisor, or administrator in a state-federal VR agency. The instrument review was completed through an online survey platform (i.e., Qualtrics).

Content validity was established by showing the degree to which the items on an instrument were relevant to and representative of the focal construct being measured (Netemeyer et al., 2003). The panel of reviewers commented on the directions and then evaluated 18 initial items to address item specificity, item clarity, and response option clarity (see Appendix A; DeVellis, 2003; Netemeyer et al., 2003). An additional five global engagement items were rated for clarity. For specificity, the reviewers judged to what extent each item was representative of the three sub-domains of engagement (i.e.,

attendance, expected contribution, and “homework” tasks) based on the following scale: 1, not representative; 2, only slightly representative; 3, somewhat representative; 4, nearly completely representative; and 5, completely representative. Clarity of items and response options were also rated on the following five-point scale: 1, poor; 2, fair; 3, good; 4, very good; and 5, excellent.

Although formal criteria for interpreting initial content validity were not set (Haynes, Richard, & Kubany, 1995), the resulting descriptive statistics were used to refine or omit items. In general, items which did not appear to clearly and exclusively measure one of the sub-dimensions were omitted, and unclear items were re-worded or re-structured. Through these procedures, a set of content-valid items was generated and compiled into the initial instrument. Demographic survey items were added to the instrument (see Table 6). The instrument was piloted with a small sample ( $n = 17$ ) from the target population of rehabilitation counselors working in the state-federal VR system. The pilot sample was recruited from among four of the six VR agencies who were involved in the full-scale field test. These counselors completed the instrument as intended in the final version, but they also had the opportunity to comment about any items that lacked clarity and/or concision and to provide recommendations for improvement (Gall, Gall, & Borg, 2007). The instructions and measurement items were again refined based on feedback from the pilot study and then compiled into an instrument for a full-scale field test.

Table 6  
*Demographic Characteristics Survey Items*

Items regarding the counselor-rater:	Items regarding the VR participant:
Age	Age
Gender	Gender
Ethnicity/Race	Ethnicity/Race
CRC status	VR status
Years as a rehabilitation counselor	Date of Eligibility (i.e., time in program)
Level of job satisfaction	Type of Disability - Primary
State in which counselor is employed	Type of Disability - Secondary
	Level of Education

### **Final Instrument**

The instrument directions and items were compiled into an online survey through Qualtrics (see Appendix B). The instrument included basic directions and a total of 44 items in six blocks related to (a) the VR participants' (i.e., consumers') demographic information; (b) measures of attendance; (c) measures of expected contribution during meetings; (d) measures of "homework" completion; (e) measures of overall engagement; and (f) the counselor's (i.e., respondents') demographic information.

### **Participants**

Participants for this research were drawn from a sample of convenience including 827 counselors from state-federal VR agencies from participating states (viz., Florida [400], Idaho [70], Oregon[124], Texas[99], and Utah[134]). Because this research study was supported by the administration within these agencies, a response rate of about 25% was expected ( $n \approx 200$  responses). This relatively large sample was necessary for the planned data analysis that includes structural equation modeling (SEM).

Recommendations for a sample size in SEM procedures vary between 10 and 20 cases

per observed variable (Mueller, 1997; Thompson, 2000), or 5 to 10 cases per estimated parameter (viz., path coefficients, variances, and covariances; Bentler & Chou, 1987; Klem, 2000). In general, more complex models should have more cases per observed variable, and simpler models require fewer cases (Gefen, Straub, & Rigdon, 2011; Iacobucci, 2010). It was estimated that the proposed model would contain a total of 8 to 17 observed variables. This total was calculated based on an estimated 2 to 5 indicators for each of the 3 sub-dimensions (factors) and 2 global indicators added for model identification purposes. Based on these estimates, the model could include between 18 to 40 parameter estimates (8 to 17 residuals for each observed variable, 8 to 17 variances for each residual term, and 6 covariances between latent variables). With these considerations in mind, a sample size of at least  $n = 200$  was sought for this study.

### **Data Collection Procedures**

Approval from the Institutional Review Board (IRB) at Utah State University (USU) was obtained before initiating this research study. Before participating in the study, counselors had the opportunity to review a letter of information and indicate the desire to voluntarily participate. VR participants (i.e., consumers) were also given the opportunity to withdraw or to verbally consent to having information about them recorded in the study.

Data were collected through a one-time response from VR counselors who completed the instrument in the form of an online survey. During the week prior to the opening of data collection, an overview of the study (see Appendix C) including a link to the online instrument was emailed to VR counselors in state agencies that had agreed to

participate. Letters of information for both the counselor and the client were also attached to the email (see Appendix D). To participate in this study, counselors completed the online survey after meeting in person with one of their participants who met the criteria (see Table 7). Counselors were asked to think about the participant with whom they met that day as they completed the online survey. They were instructed to wait to complete the survey until after the participant had left the office. Although only a one-week long data-collection period was initially planned, due to a poor response rate, the period was extended by several additional weeks. In the end, counselors had the opportunity to respond during a 6-week data collection period. A reminder email to complete the survey was sent to counselors multiple times throughout the data collection period. All responses were recorded through Qualtrics and maintained in an anonymous format. The researchers protected the confidentiality of the data. At no point was the name of the counselor or the consumer whom the counselor was rating asked or identified.

### **Data Analysis Procedures**

The characteristics of the collected data were first examined in order to ensure the appropriateness of the planned inferential statistics analyses. These examinations included checks for the following (Tabachnick & Fidell, 2013):

- missing data
- multivariate normality
- outliers
- linear relationships among variables

- absence of multicollinearity and singularity
- residual covariances

The means and standard deviations of all manifest ordinal and continuous variables were summarized using SPSS. Bivariate correlations between these variables were also calculated.

### **Exploratory and Confirmatory Factor Analysis Procedures**

Following the preparation and screening of the data, Research Question 1 was addressed: What are the primary factors of VR participant engagement and how can each be measured? To answer this question, the measurement model was tested first through exploratory factor analysis (EFA) and then through confirmatory factor analysis (CFA) procedures. When evaluating items for a new instrument, EFA procedures are recommended to ensure that measurement items load on the expected factors and that

Table 7  
*VR Participant Inclusion Criteria*

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The VR participant must:

- Must be able to speak English
  - Must be 18-65 years old
  - Must give verbal consent to have information about himself or herself recorded in the study
  - Must be determined eligible for VR services
  - Must have a current open case
  - Must have attended his or her appointment today
  - Must have had 3 or more scheduled appointments with the counselor as of the day of data collection (For example, a participant can be included in the study if he or she has met with his or her counselor for an intake interview, has met for a second appointment following eligibility, and is currently meeting for a third time to start planning. In general, any participant who has had three or more scheduled appointments is eligible for inclusion.)
  - May have any type of disability or disabilities, provided the disability does not impair the person's ability to give consent
-

each of the expected engagement sub-dimensions is represented (Gaskin, 2014). The CFA is used as a follow-up verification of the measurement model (Brown, 2006).

MacKenzie et al. (2011) recommend the following steps for factor analysis steps for testing of the measurement model:

- Evaluate the goodness of fit or validity of the overall measurement model (i.e., non-significant chi-square [ $p > .05$ ] and root mean square error of approximation [RMSEA]  $< .06$  indicates a good fit; Schreiber et al., 2006)
- Assess the validity of the sets of reflective indicators (i.e., the average variance extracted by the relevant factor is greater than .50)
- Assess the reliability of the sets of reflective indicators for their respective factor (i.e., Cronbach's alpha  $> .70$ )
- Evaluate the validity and reliability of individual indicators and eliminate problematic indicators (i.e., each item significantly loads [ $p < .05$ ] on the expected factor)

After these procedures are completed, the model can be purified and refined as necessary (i.e., model modification and testing).

### **Structural Equation Modeling Procedures**

Following the identification of a good fitting measurement model (through the EFA and CFA procedures above), SEM procedures were planned to test the structural model and answer Research Question 2: What is a strong structural regression model that explains the relationships among the primary factors and the overall construct of engagement? “The goal of SEM analysis is to determine the extent to which the



theoretical model is supported by sample data” (Schumacker & Lomax, 2004, p. 2). A structural regression model is accepted as plausible if it passes the recommended indices shown in the literature (see Table 8). If a plausible model makes sense theoretically, then it can be considered a strong model. In addition to checking the model against these indices, the following steps for purification and refinement were followed (MacKenzie et al., 2011):

- Evaluate the validity of the entire set of sub-dimensions which act as formative indicators of the second-order construct ( $R^2_a$ , an adequacy coefficient that shows “the degree to which the construct captures the total variance of its dimensions” [Edwards, 2001])
- Evaluate the validity of each individual sub-dimension (i.e., what proportion of variance in the construct is accounted for by each sub-dimension?)
- Evaluate the reliability of each individual sub-dimension (Fornell and Larcker’s [1981] construct reliability index)

Table 8  
*Model Test Statistics and Approximate Fit Indexes with Suggested Cutoff Values*

Index	Cutoff value
Model chi-square (badness-of-fit)	$\geq .05$
Comparative Fit Index (CFI)	$\geq .95$
Standardized Root Mean Square Residual (SRMR)	$\leq .08$
Root Mean Square error of Approximation (RMSEA)	$\leq .06$
Joreskog-Sorbom Goodness of Fit Index (GFI)	$\geq .90$

Note. Adapted from “Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives,” by L. Hu and P. M. Bentler, 1999, *Structural Equation Modeling*, 6, pp.1-55. Copyright 1999 by Lawrence Erlbaum Associates, Inc.

## CHAPTER IV

### RESULTS

The results of the planned data analyses for this study will be provided in the following sections. First, results of the initial item review by the expert panel will be provided. Next, the data preparation and screening procedures will be described. Demographic information will then be provided for the study participants (i.e., counselors) and for the VR participants (i.e., consumers) whose levels of engagement were recorded. The results of the factor analyses and structural equation modeling procedures as they relate to the research questions will then be reported. Finally, the results of alternative model testing through partial least squared methods will be presented.

#### **Phase I: Initial Item Review and Pilot**

During the review and pilot process, 23 items were sent to a review panel to collect data on clarity and specificity. It was expected that each item would represent a specific sub-domain. Ratings for item representativeness were generally high: All of the items received average ratings of at least 4.25 for the expected sub-domain. All but two of the items appeared to represent a specific sub-domain (i.e., specificity), with a single sub-domain receiving average ratings of at least one point higher than other sub-domains. The remaining two items received high ratings in the expected sub-domain, but also received a relatively high rating in a second domain. One of these items stated, “The participant initiates new appointments.” To some degree, this item may be partially

representative of multiple sub-dimensions. These items were retained in the survey, but were not found useful during the data analyses.

Most of the ratings for clarity of items and response options were rated “very good” to “excellent” on the following 5-point scale: 1, poor; 2, fair; 3, good; 4, very good; and 5, excellent. Two of the items that received average ratings lower than 4.0 were revised. Based on comments received by the reviewers, seven items were reworded for clarity and one item was added regarding appointment frequency. Finally, piloting the instrument with 17 counselors revealed the need to provide a few additional instructions about the survey procedures (e.g., clarifying the purpose of the survey). The pilot also revealed several minor measurement item issues that were revised in the final version of the instrument (see Appendix B). For example, one item (“The participant asks to schedule new appointments”) was made more specific (“At the end of each meeting, the participant asks to schedule the next appointment”). These changes contributed to a more reliable set of responses during the full-scale data collection period.

## **Phase II: Full-Scale Field Test**

### **Data Preparation and Screening**

All data were downloaded from Qualtrics into an SPSS file. The variables of interest were renamed for convenience in performing the data analyses (see Appendix E), and several additional variables were calculated in Excel (e.g., Days between appointments, Percentage of appointments attended). The results were first examined for missing data. Cases with missing data were excluded (i.e., listwise deletion), making the final sample size smaller than anticipated ( $n = 88$ ). Factor analysis methods typically rely

on sample sizes larger than 300 or with a ratio of 10 respondents to 1 variable (Yong & Pearce, 2013). Because the communality of the variables was high (mean communality = 0.83), model error was found to be low (SRMR < .06), and the number of expected factors was relatively low, it was determined that the small sample size was not of exceeding concern for the EFA (Osborne & Costello, 2005; Preacher & MacCallum, 2002). SEM procedures usually require similarly large sample sizes (Kline, 2010). In some cases, smaller sample sizes may be admissible, and new statistical methods have made model estimation in SEM possible with as few as 60 participants (Tabachnick & Fidell, 2013). Because the current analyses estimated a fairly simple model in which only 17 parameters were estimated, a minimum of 85 responses were needed to meet the recommendations (i.e., 5 to 10 cases per estimated parameter; Bentler & Chou, 1987; Klem, 2000). A post-hoc power analysis (Preacher & Coffman, 2006) also revealed that the power of the sample to detect a *poor-fitting* model was strong ( $1 - \beta > .99$ ).

The data was next examined for outliers and univariate normality. No out-of-range outliers were detected. The means, standard deviations, and statistics of skewness and kurtosis for all manifest and calculated variables can be found in Appendix F. A few variables (Att2\_late, Att3\_leftearly, Att6\_DaysBLastNextLast) were excluded from further analyses because of distributions with high levels of skewness ( $SI > 3.0$ ) and/or kurtosis ( $KI > 10.0$ ). Multivariate normality and linear relationships among the remaining variables was assumed based upon their univariate normality (Kline, 2010). Finally, because a converged solution was ultimately obtained, the absence of multicollinearity and singularity was also assumed (Tabachnick & Fidell, 2013).

## Demographic Information

The participants in the study included rehabilitation counselors from five state-federal vocational rehabilitation agencies: two from the Mountain West region, one from the Pacific West region, one from the West South Central region, and one from the South Atlantic region. In total, 827 counselors were invited to participate in the study. The overall response rate was 19%, making a total of 159 responses. Partial responses ( $n = 69$ ), most of which only had answers for the first few survey questions, were excluded listwise. Of the remaining complete responses ( $n = 90$ ), two additional responses which were classified as unengaged responses (i.e., high responses on a reverse-coded question) and were consequently excluded from the planned analyses. Characteristics of the final sample of usable responses ( $n = 88$ ; 10.6% response rate) are described below.

Table 9 shows the basic demographic information of the respondents. Because there were no complete and usable responses obtained from counselors in one state (West South Central region)—perhaps because of a lack of support from upper administration in that agency—all responses were attributed to the remaining four state agencies. The mean age of responding counselors was 47.8 years ( $SD = 11.7$ ) and a median age of 50 years. The mean number of years reported working as a rehabilitation counselor was 10.5 years ( $SD = 9.0$ ) and a median of 8 years.

Because counselors (i.e., respondents) provided data based on observations of VR consumers, it is appropriate to report demographic information regarding this group of consumers. Table 10 shows the basic demographic information of the VR participants (i.e., consumers) whose engagement levels were rated by their counselor. The mean age of VR participants was 36.8 years ( $SD = 13.0$ ) and a median age of 34 years. Participants

had been eligible for VR services for a median of 421 days. Most of the participants were highly engaged as evidenced by several measurement items. First, 82 (93%) of the participants in this sample had established individual plans for employment (IPEs) with their counselor. Next, 76 (86%) of the participants had shown up for all three of their most recently scheduled appointments, and 73 (83%) had shown up on time for the current appointment. Finally, the score (out of 100) for overall engagement among this sample of VR participants was also very high ( $M = 83.0$ ,  $SD = 21.6$ ).

Table 9  
*Demographic Characteristics of Respondents (N=88)*

Characteristic	<i>f</i>	%
<b>Age (26-69)</b>		
26-29	7	8.0
30-39	16	18.2
40-49	20	22.7
50-59	28	31.2
60-69	17	19.3
<b>Gender</b>		
Female	64	72.7
Male	24	27.3
<b>Ethnicity/Race</b> (selected all that apply)		
American Indian or Alaska Native	0	0.0
Asian	4	4.6
Black or African American	12	13.8
Native Hawaiian or Other Pacific Islander	1	1.1
White	60	68.2
Hispanic/Latino	17	19.5
<b>CRC status</b>		
Yes	50	56.8
No	38	43.2
<b>Years as a rehabilitation counselor</b>		
0-4	28	31.8
5-9	20	22.7
10-14	15	17.0
15-19	10	11.4
20-24	5	5.7
25-29	5	5.7
30+	5	5.7

<b>State in which you are employed</b>		
South Atlantic VR Agency	59	67
Mountain West VR Agency 1	14	16
Mountain West VR Agency 2	14	16
Pacific West VR Agency 2	1	1
<b>Job Satisfaction</b>		
Somewhat to Very Satisfied	80	90.9
Somewhat to Very Dissatisfied	8	9.1

Table 10  
*Demographic Characteristics of VR Participants (consumer)*  
 (N=88)

Characteristic	<i>f</i>	%
<b>Age (18-62)</b>		
18-24	23	26.1
25-34	23	26.1
35-44	12	13.6
45-54	20	22.7
55-62	10	11.4
<b>Gender</b>		
Female	39	44.3
Male	49	55.7
<b>Ethnicity/Race (selected all that apply)</b>		
White	58	65.9
Black or African American	17	19.3
Hispanic/Latino	15	17.0
American Indian or Alaska Native	1	1.1
Asian	1	1.1
Native Hawaiian or Other Pacific Islander	1	1.1
<b>VR status</b>		
10	6	6.8
14, 16, 18, or 20	71	80.7
22	11	12.5
<b>Current level of education</b>		
High school graduate or equivalency certificate (GED)	30	34.1
Post-secondary education, no degree or certificate	24	27.3
Secondary education, no high school diploma (grades 9-12)	7	8.0
Bachelor's degree	6	6.8
Special education certificate of completion/diploma or in attendance	4	4.5
Post-secondary academic degree, Associate degree	3	3.4

Elementary education (grades 1-8)	3	3.4
Master's degree	1	1.1
Vocational/Technical Certificate or License	10	11.4
<b>Primary Disability – Type</b>		
Other Mental Impairments	25	28.4
Psychosocial Impairments	20	22.7
Cognitive Impairments	13	14.8
Mobility Orthopedic/Neurological Impairments	7	8.0
Other Orthopedic Impairments	6	6.8
Hearing Loss, Primary Communication Auditory	5	5.7
Other Physical Impairments (not listed above)	5	5.7
[All others]	< 5	< 5.7
<b>Presence of Secondary Disability</b>		
Yes	57	64.8
<b>Majority of Prior Work Experience</b>		
Employment without supports in an integrated setting (e.g., competitive, paid)	67	76.1
No Work Experience	9	10.2
Supported Employment	6	6.8
Unpaid work experience (volunteer, trainee, or intern)	4	4.5
Self-Employment	2	2.3
Homemaker	0	0

### Research Questions and Hypothesis Analysis

#### **RQ<sub>1</sub>: What are the primary factors of VR participant engagement and how can each be measured?**

To address the first research question, a series of exploratory factor analyses was used to identify factors and item factor loadings. All manifest variables for each of the three sub-dimensions and for the global measures of engagement were initially included, except for those with highly skewed or kurtose distributions. The initial Bartlett's Test of Sphericity was significant ( $p < .001$ ) and the Kaiser-Meyer-Olkin (KMO) statistic was also high (.765). Variables were excluded pairwise if the factor loadings were lower than .5 on any given variable or if cross-loadings were within a value of .2 on multiple factors.



The remaining variables with path loadings on a single factor greater than .5 were retained (Gaskin, 2014; Osborne & Costello, 2005). Based on a significant result on the Bartlett's Test of Sphericity ( $p < .001$ ) and a high KMO statistic (.737), it was determined that a factor analysis was feasible with the remaining measurement items. The optimal solution (see Table 11) was obtained through the use of a 4-factor, maximum likelihood extraction method and varimax rotation with Kaiser normalization. Although a *factor* typically consists of at least two manifest items (Yong & Pearce, 2013), MacKenzie et al. (2005) suggest that a single-item factor is admissible, as is the case for the Attendance factor. Maximum likelihood is the recommended extraction method for maximizing the probability for obtaining factor loadings that will provide the best model fit (Tabachnick & Fidell, 2013). It is typically the default extraction method in preparation for CFA and SEM procedures. Varimax is a type of orthogonal rotation method that minimizes both the complexity within factors and the correlations between factors (Brown, 2006). Finally, none of the nonredundant residuals had an absolute value greater than .05, indicating a good fit (Yong & Pearce, 2013). Strong reliability for each factor was evidenced through Chronbach's alpha with a range between .870 and .918 (see Table 11;), and the resulting solution accounted for 83.3% of the variance.

The confirmatory factor analysis (CFA) confirmed the factor solution identified in the EFA and further demonstrated the reliability and validity of the measurement model. The factor solution shown in Table 11 was entered into SPSS AMOS (version 22) for the CFA. The Attendance factor (i.e., Factor 1) was not included in the CFA because only one item loaded well, making attendance a manifest variable (no longer a latent factor). Figure 12 shows the results of the CFA. The model estimated 17 parameters and had 11

Table 11  
*Rotated Factor Matrix Solution*

<u>Item</u>	Factor 1 (Attendance)	Factor 2 (Homework)	Factor 3 (Expected Contribution)	Factor 4 (Overall Engagement)
<b>Chronbach's Alpha</b>	<b>n/a</b>	<b>.890</b>	<b>.870</b>	<b>.918</b>
Attend1	.907			
HW1		.792		
HW2		.938		
EC1			.942	
EC2			.778	
EC10			.589	
Engage1				.875
Engage 2				.871

degrees of freedom. Each of the factor loadings shown in the figure are significant ( $p < .001$ ). When these coefficients are squared, the proportion of variance in each measured variable that the factor solution explains can be calculated (as shown). The correlations between latent factors are also significant ( $r = .66, p < .001$ ;  $r = .38, p < .01$ ;  $r = .30, p < .05$ ). Correlations between factors lower than .80 indicate discriminant validity, as is the case in this analysis (Brown, 2006).

Additional statistics related to reliability and validity of the factors are shown in Table 12. Convergent validity of each factor is evidenced by the average variance extracted (AVE). When the AVE is greater than .50, it demonstrates that, on average, the factor accounts for a majority of the variance in its indicator items (MacKenzie et al., 2011). The Expected Contribution and Homework factors both have sufficient AVE. Discriminant validity is further demonstrated through AVE statistics that are greater than measures of shared variance. Reliability of the factors is further established through the measure of composite reliability (CR; similar to a Chronbach's alpha). These statistics

are also reported for the overall Engagement factor, which was found to have slightly lower reliability based on its two measurement items and relatively high levels of shared variance with the other factors (as expected).

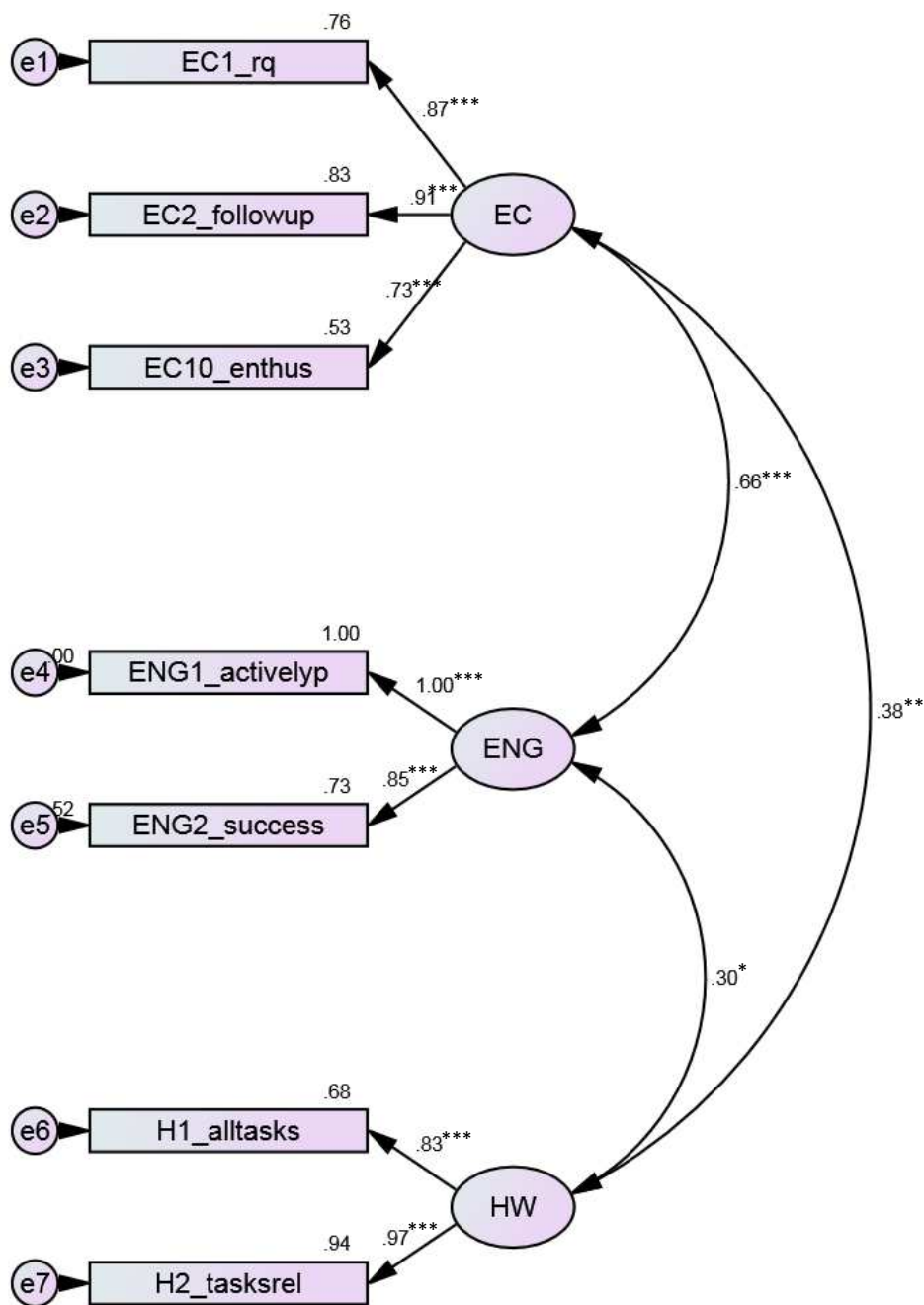


Figure 12. Confirmatory factor analysis with factor loadings and correlations.

Table 12  
*Factor Validity and Reliability Statistics (CFA)*

<u>Factor</u>	Composite Reliability (CR)	Average Variance Extracted (AVE)	Average Shared Variance (ASV)	Maximum Shared Variance (MSV)
Expected Contribution	0.821	0.607	0.286	0.431
Homework	0.761	0.616	0.117	0.141
Overall Engagement	0.631	0.463	0.262	0.431

Because there are no “iron-clad rules” for assessing model fit, several indices are used as criteria to help judge the adequacy of the proposed model (Hoyle, 2011, p. 44). An evaluation of the goodness of fit for the measurement model showed sufficient model fit according to most indices, with the exception of the chi-square test and the RMSEA metric (see Table 13). The chi-square test is a type of model test statistic that checks for “badness-of-fit,” indicating (when significant) that the proposed model does not provide a good structure for how the variables in the sample covary (Kline, 2011). The chi-square test is routinely reported in the literature, but this criterion “is rarely met” and “is no longer seen as a viable goodness-of-fit statistic” (Hatcher, 2014, p. 144). The main problem is that the chi-square indicates a bad fit even when the model provides a good fit to the data. A significant chi-square statistic is often the result of large correlation sizes and/or a high sample size (Kenny, 2014). Because this fit statistic has fallen out of favor with many researchers, the adequacy of the model was judged based on several indices that assess *reasonable* fit rather than an index of *perfect* fit (i.e., the  $\chi^2$  test; Brown, 2006; Hoyle, 2011; Tabachnick & Fidell, 2013).

Relative fit indexes (e.g., CFI) compare the fit of the data to the researcher's proposed model against a baseline model—a model in which the covariances between the factors are set to zero (i.e., no relationship; Kline, 2011). Absolute fit indexes (e.g., GFI, RMSEA, and SRMR) assess how well a proposed model explains the covariances in the sample data (Kline, 2011). In the current analysis, the RMSEA may have rejected this model because of its limited degrees of freedom (Hu & Bentler, 1999; Kenny, 2014). Although some researchers suggest that the RMSEA should not be calculated for models with a small sample size (Kenny, Kaniskan, & McCoach, in press), it is recorded here as a reference because of the popularity of the measure. Finally, an examination of the standardized residual covariances from both the CFA and SEM found no absolute values greater than 2.0, adding further evidence of a good-fitting model (Arbuckle, 2012).

**RQ<sub>2</sub>: What is a strong structural regression model that explains the relationships among the primary factors and the overall construct of engagement?**

After confirming a good fitting measurement model, the structural model was tested through structural equation modeling procedures. The structural model used the two latent factors (i.e., Expected Contribution and Homework) as endogenous variables

Table 13

*Model Fit Statistics and Thresholds for Measurement Model*

Metric	Observed Value	Threshold	Type of Fit Index
$\chi^2$ test	0.0008	$\geq .05$	Omnibus
CFI	0.95	$\geq .95$	Relative
GFI	0.91	$\geq .90$	Absolute
RMSEA	0.148	$\leq .06$	Absolute
SRMR	0.058	$\leq .08$	Absolute

to predict the overall Engagement score (see Figure 13). The model estimated 17 parameters with 11 degrees of freedom. For the structural paths (between latent factors), there is a significant direct effect (standardized) of Expected Contribution on Engagement ( $\beta = .63, p < .001$ ); however, the direct effect of Homework on Engagement is not significant ( $p = .47$ ). These factors explain 43% of the variance in the overall Engagement variable. The model fit values for the structural model were the same as the values for the measurement model (see Table 13).

### Model Modification and Analysis through Partial Least Square Path Modeling

Due to the inability to include the Attendance factor in the CFA and SEM analyses in AMOS, an additional analysis was performed in SmartPLS (version 2).

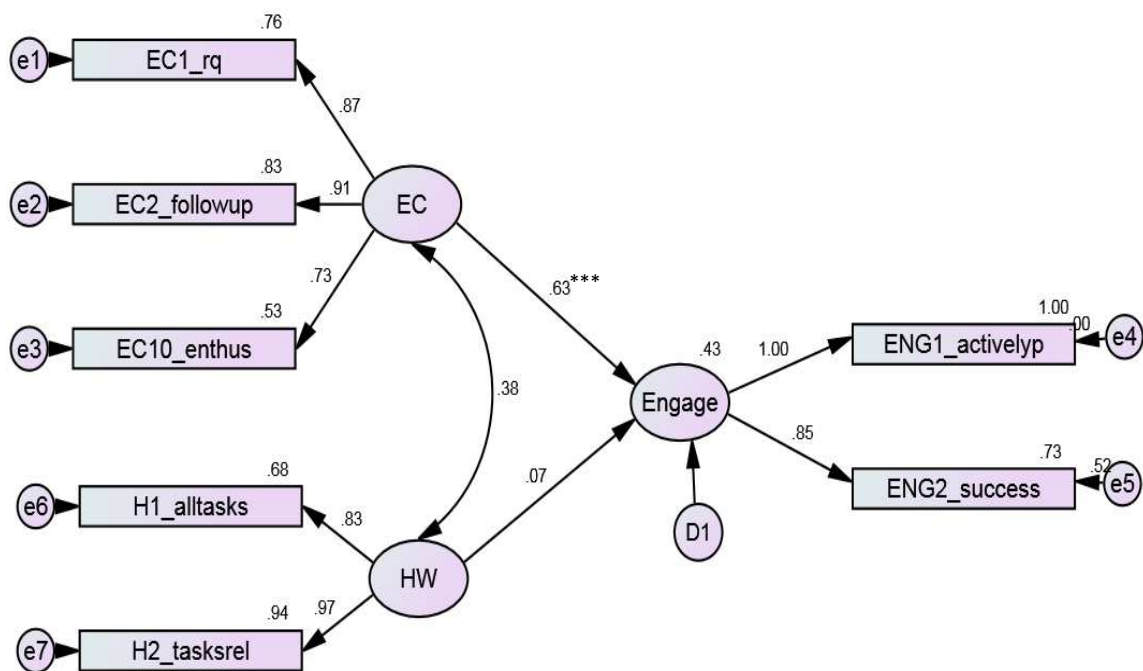


Figure 13. Structural equation modeling analysis with factor loadings and amounts of variance explained.

Partial Least Squares (PLS) is a type of SEM that allows for an exploratory approach to path modeling, including the use of formative and single-item factors (Lowry & Gaskin, 2014). The second research question, including the Attendance factor, was again tested through PLS path modeling. The results are shown in Figure 14. In this analysis, there is a significant direct effect (standardized) of Expected Contribution on Engagement ( $\beta = .538, p < .001$ ). The direct effects of Attendance and Homework on Engagement are not significant ( $p > .05$ ). These factors explain 38.3% of the variance in the overall Engagement variable. Validity and reliability statistics for this model are shown in Table 14.

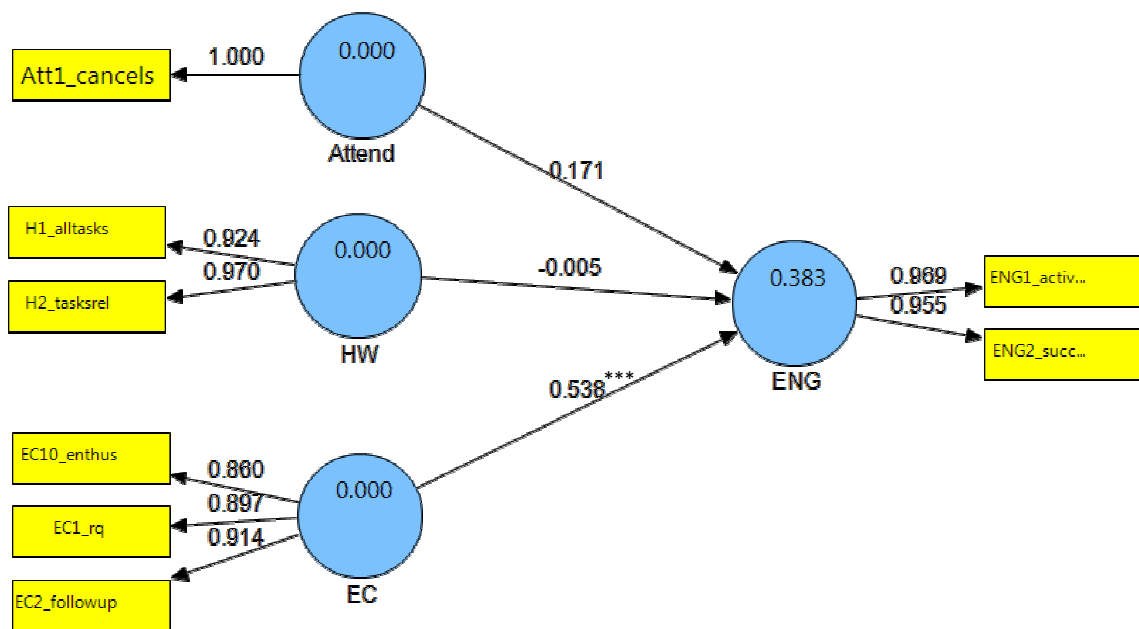


Figure 14. Partial least squares path model with three formative factors. Factor loadings and amounts of variance explained are shown.

Table 14  
*Factor Validity and Reliability Statistics for 3-Factor Model (PLS)*

Factor	Composite Reliability (CR)	Average Variance Extracted (AVE)
Attendance	1.0	1.0
Homework	0.946	0.897
Expected Contribution	0.920	0.793
Overall Engagement	0.961	0.925

A respecification of the model was considered appropriate at this point for two reasons. First, based on logic, attendance and homework completion should contribute to overall engagement. Second, based on the high correlations among the retained measurement items (see Appendix G), it was also believed that attendance and homework should influence overall engagement. A respecified model was tested to see if the Expected Contribution factor mediated the impact of Attendance and Homework on overall Engagement. The results of this model are shown in Figure 15. The Sobel (1982) test checks whether the mediating variable (i.e., Expected Contribution) significantly transmits the influence of the independent variables (i.e., Attendance and Homework) to the dependent variable (i.e., Engagement; Soper, 2014). A Sobel test confirmed that Expected Contribution indirectly mediates the influence of both the Attendance factor (Sobel = 2.38,  $p < .05$ ) and the Homework factor (Sobel = 2.32,  $p < .05$ ) on Engagement. In this model, 35.9% of the variance in the Engagement factor is accounted for by the three sub-dimensions. Following the recommendations of MacKenzie et al. (2011), the adequacy coefficient was calculated for this model ( $R^2_a = .158$ ). Because only one factor (i.e., Expected Contribution) had a strong direct impact on Engagement, the aggregate construct did not capture a majority of the total variance of its dimensions. The validity and reliability statistics for this mediation model are shown in Table 15.



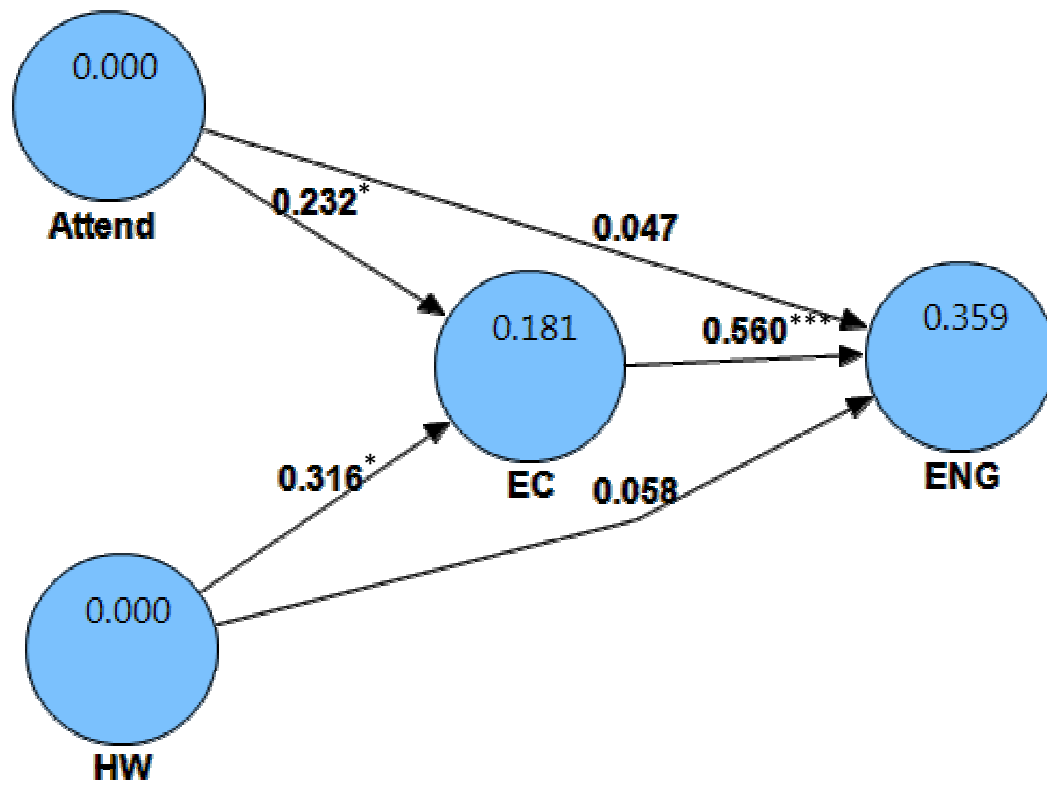


Figure 15. Partial least squares path model with mediation. Factor loadings and amounts of variance explained are shown.

Table 15

*Factor Validity and Reliability Statistics for Mediation Model (PLS)*

<u>Factor</u>	Composite Reliability (CR)	Average Variance Extracted (AVE)
Attendance	1.0	1.0
Homework	0.948	0.900
Expected Contribution	0.921	0.795
Overall Engagement	0.961	0.925

## Summary

The results of the study indicate that the three sub-dimensions of engagement could be reliably assessed with a small set of measurement items. The way in which a VR consumer fulfills his or her expected contribution during VR meetings significantly impacts the rehabilitation counselor's perception of the consumer's overall engagement in the VR process. Although the participant's attendance and completion of tasks between VR meetings did not impact the perception of engagement directly, the influences of these factors were mediated by the participant's fulfillment of his or her expected contribution during VR meetings.

## **CHAPTER V**

### **DISCUSSION**

This is the first study in the field of rehabilitation counseling to construct a definition of participant engagement and to specifically address its importance in the VR process. It appears that VR participant engagement can be reliably measured and that each sub-dimension differentially contributes to the overall perception of engagement. The results of this study can act as a stepping stone to gain a better understanding of VR processes—especially the factors that lead to engagement and how various levels of engagement influence outcomes. In the following sections, a discussion of the implications and limitations of the research findings will be given as they apply to theory, practice, policy, and research.

#### **Construct Definition and Dimensionality of Engagement**

The construct of participant engagement in VR settings has received little attention from researchers. Only a few empirical studies have indirectly addressed the importance of engagement in VR processes and outcomes (Bose et al., 1999; Kaye, 1998; Rogers et al., 1997; Rucker et al., 2003). In the current study, VR participant engagement was defined as a multi-dimensional construct consisting of three factors: (1) Attendance, (2) Expected Contribution, and (3) Homework Completion. The 3-factor structure of the engagement construct was confirmed through the factor analysis procedures. These factors align with the expected dimensions of engagement that are frequently assessed in various therapeutic settings (Tetley et al., 2011). The Expected

Contribution factor demonstrated the strongest influence on the overall score of Engagement, and this factor also mediated the influences of Attendance and Homework on overall Engagement.

The Attendance factor was measured through a single-item: If the participant misses a scheduled appointment, he or she notifies you or the agency prior to the appointment time to cancel or reschedule. Although records of attendance and other attendance-related measures (e.g., punctuality, asking to schedule subsequent appointments) can indicate levels of engagement (or disengagement), in the current study such variables were not useful measurement items based on their inability to predict engagement. Their lack of usefulness was primarily due to the fact that a large majority of the VR participants in this study had high levels of attendance and punctuality, resulting in skewed distributions. However, in practical settings (as opposed to research settings), such additional measures should be retained as mediated indicators of engagement.

The Expected Contribution factor was measured through the following three items:

- During our meeting today, the participant asked relevant questions.
- During our meeting today, the participant asked important follow-up questions.
- During our meeting today, the participant demonstrated enthusiasm for the tasks of VR.

In contrast to the other expected contribution measurement items (i.e., those that did not load well), the first two items shown here focus more on the VR participant's willingness and ability to take initiative during meetings with his or her VR counselor. Many of the

other survey questions related to expected contribution centered on the participant's ability to respond to questions or share information openly and honestly (e.g., During our meeting today, the participant disclosed personal strengths and/or interests with me). The results of the study suggest that asking relevant questions may be one of the most influential components of fulfilling one's role as a VR participant.

The Homework factor was measured through the following two items:

- During the time from our last meeting to today's meeting, the participant worked on all agreed upon tasks.
- Between our last meeting to today's meeting, the participant engaged in tasks relevant to his or her current VR status.

This factor appeared to be an accurate measure of participation in homework or other necessary tasks between meetings with the VR counselor. Similar to the Attendance factor, it did not directly predict the overall score of Engagement.

### **Structural Model of Engagement and Mediation**

The Expected Contribution factor stood out as the strongest predictor of the overall score of Engagement. On the other hand, the factors of Attendance and Homework did not directly impact counselors' perceptions of participant levels of Engagement. Rather, the impact of these factors was mediated by the Expected Contribution factor. Because any effect of Attendance on Engagement was fully mediated by the Expected Contribution factor, it appears that perfunctory attendance and homework completion without follow up do not add up to a high level of engagement.

First, in the case of Attendance, simply showing up to appointments does not equate to engagement in the VR process. The current research findings suggest that participants will need to show up *and* work closely with their VR counselor in order to attain a satisfactory level of engagement. In order for participants to fulfill this role as a “full partner,” counselors will need to provide encouragement, support, and high expectations for this level and quality of participation. Many participants may not immediately gain an understanding of their expected role in VR (i.e., full partnership with the counselor), or they may not readily have the ability to fulfill such a role (Taylor-Ritzler et al., 2010). If counselors are unable to help a participant fulfill his or her Expected Contribution, it is doubtful that the VR program will be effective.

Similar to Attendance, completion of homework assignments appears to be a necessary but insufficient requirement in and of itself for full engagement in the VR process. The influence of the homework factor on overall engagement may have been limited in this study for several reasons. First, it is possible that not all counselors gave homework for the participants to complete between meetings. Next, even when counselors gave homework, they may have failed to follow up on the assignment during the meeting. Finally, some homework tasks might be completed by participants over an extended period of time, making it difficult to report levels of engagement in homework tasks. For example, if a participant is involved in a lengthy training program, the counselor may be unable to assess the degree to which the participant has engaged in the training until the end of program.

Based on the current model, the influence of Homework is transmitted to Engagement through the Expected Contribution factor. One possible interpretation of

this relationship is that a VR participant's homework is not *complete* until he or she has meaningfully discussed it with his or her counselor. For example, even though a participant may have participated in a job shadowing experience, if he or she does not (or cannot) discuss the experience and the outcome with the counselor, the experience may not significantly contribute to the VR process. Again, the participant may need to be taught and supported (by the counselor and/or by an advocate) in fulfilling his or her expected contribution.

### **Implications for Practice: Counselor Role**

Counselors will frequently need to teach VR participants what is expected of them and then continue to support them in fulfilling their role. Through the appropriate use of counseling skills, VR counselors can ensure that participants understand both the general expectations of the program and the specific expectations of the counselor. This may be especially critical because a high percentage of VR participants do not know what to anticipate in the VR program, particularly in regards to the "client role" and interactions during meetings (Koch, 1996). Counselors should plan to teach VR participants their role in regards to appointments, contributions during meetings, and fulfillment of tasks between meetings. For appointments, counselors should explain the need to schedule and keep appointments, the typical frequency and length of appointments, the procedures for canceling or rescheduling appointments, and the circumstances that would necessitate additional communication with the counselor (e.g., change in address or change in disability status). Counselors can help VR participants understand that they are "full partners" in the VR process. This partnership is especially necessary during face-to-face

meetings, a time when participants should be strongly encouraged—even empowered—to ask questions, share ideas, and make informed choices. When participants are given assignments to complete between meetings, counselors should outline clear steps and set timelines for completing the tasks and/or services. Participants may be more likely to succeed if counselors clearly show the connection between the assigned tasks and how they relate to preparation for employment. In these ways, counselors can help support VR participants in fulfilling each of the sub-dimensions of engagement.

If a participant is disengaging from the process—especially from working together as partners during meetings—the counselor’s efforts may need to focus on resolving or mitigating obstacles to engagement. The use of counseling skills and theory might aid the counselor in identifying factors that are impeding a high level of engagement. Based on the Drieschner et al. (2004) framework, such factors might include the participant’s circumstances (e.g., limited resources, time, or support), type of problem (e.g., severity and/or persistence of the disability), and limitations of volitional control (e.g., cognitive ability or self-efficacy). Because many of these factors cannot be easily or completely overcome, the counselor should expect to personally provide or otherwise obtain additional supports (e.g., an advocate or mentor) for struggling participants (i.e., those whose needs may not be met through a minimalist or streamlined approach to service provision).

To look at the issue of disengagement more specifically, it should be recognized that VR participants may fail to ‘ask relevant questions’ due to personality, functional limitations of the disability (i.e., ability or skill), a misunderstanding of the expectations in VR, or the failure of the counselor to allow and/or encourage questions. How, then,



can VR counselors help such participants? In any of these cases, the counseling skills of the counselor should not be underestimated. Based on a study by McCarthy (2014), it appears that VR counselors who have greater self-efficacy in counseling skills may be better able to help participants successfully engage in and complete the VR process.

Finally, counselors in public VR are sometimes referred to as “case managers” (a necessary role in VR; Leahy, Muenzen, Saunders, & Strauser, 2009). This designation may be detrimental because it connotes a counselor role of “moving” people through the “system.” Such an approach may produce perfunctory attendance and homework completion among participants. On the other hand, an emphasis on the counseling role, including the competent application of counseling theories and skills, is more likely to support participant success through engagement in each of the necessary dimensions.

### **Implications for Policy**

Agency policies can either hinder or support high levels of engagement among their VR participants. First, agencies can facilitate engagement by instituting plans to regularly teach participants their role in the VR process. For example, orientations to VR should include information about the expectations for participation. Counselors might follow up by directly discussing what it means to be an active and full partner in the VR process. It may also be beneficial to make a brief, formal assessment of the participant’s understanding and willingness to adopt the role as a full partner with the counselor in the VR process. Finally, a very basic but powerful way to teach the expectations could be accomplished by calling individuals who are eligible for services *participants* instead of *clients* or *consumers*.

Program evaluation is a requirement for all state-federal VR programs (Capella & Turner, 2004). The goal of such evaluation is to continuously improve services to better meet the needs of VR participants. This improvement process can be augmented and enhanced by tracking the engagement levels of participants throughout the VR process. Such a tracking system could be incorporated into the existing case management system by recording the measures of engagement identified in the current study. Some VR case management systems already display reminders to counselors about upcoming deadlines for determining eligibility or other requirements. Similar reminders or flags could be provided within the case management system, helping counselors to identify participants who have started to disengage from services and may therefore benefit from additional supports. Providing reminders and flags to the counselor is characteristic of a quality assurance system which provides timely feedback about the integrity of service provision for each participant (Southwick & Millington, 2013). This feedback system is a two-edged sword, one that could be used as justification for closing the cases of disengaged participants, or one that could be used to enhance the VR process for many participants who might otherwise fail. For agencies willing to implement such a system, it is hoped that the latter would be their priority.

### **Limitations of the Research**

Several limitations of the research are addressed in this section. First, the sampling procedures and characteristics of the sample merit attention. The results of this research are from a convenience sample and cannot be generalized to other populations. Participation in the research was voluntary and only 10.6% of the target sample provided

usable response data. Some of the administrators who agreed to have counselors within their VR agency surveyed commented that counselors receive many solicitations for survey responses, a factor that may partly explain the low response rate. Counselors may simply not have enough time to respond to all survey invitations. The data collection period extended longer than initially anticipated due to very low initial response rates. The counselors who chose to respond may have differed from counselors who provided only partial responses or who did not respond at all. For example, the responding counselors may have had a more positive view of their participants and provided engagement ratings that were biased upwards. Furthermore, because counselors were free to provide ratings about any consumer with whom they met during the data collection period, it is probable that counselors chose to report on a consumer who was highly engaged. Highly engaged consumers may have been more likely to agree to having information about them recorded in the study, and high engagement ratings would reflect better on the counselors (i.e., demonstrate competence). In addition to this potential selection bias, high estimates of engagement were expected because the study design required that VR participants attend their meeting on the day of data collection (thereby excluding participants who were more likely to be disengaged from the VR process). In general, the data reflected participants who were engaged in the VR process and offered less information about participants who were disengaged from the process.

Based on the study design, counselors provided ratings about levels of participant engagement shortly after meeting with participants in person. This design may have made the Expected Contribution factor more salient to the counselors as they rated levels of engagement, an aspect that could partly explain the high correlation between Expected

Contribution and overall Engagement. The need for the participant to work on tasks between meetings and to maintain high rates of attendance may have been overshadowed by the immediate demands of the face-to-face meeting. On the other hand, participants who completed homework assignments and regularly attended meetings appeared to be better prepared to fulfill their Expected Contribution during meetings. Because the Attendance factor was measured by only one item, the analyses that included this factor may have been less reliable and valid than if a multi-item factor could have been used.

Because the actual levels of engagement in the VR process are difficult to measure directly, several measurement-related limitations deserve consideration. First, although many of the measurement items were very objective (e.g., dates of appointments), the results of this research are primarily based on the perceptions of VR counselors. Second, counselors were assured that the information they reported in the survey would be kept anonymous and confidential; however, counselors may have felt that giving higher ratings of engagement was more socially desirable. Third, the directions to the survey asked counselors to report pure ratings of engagement (i.e., to not factor in effort due to the barriers of engagement); however, there is no way to know whether counselors gave pure ratings. Fourth, the current research design only provides a snapshot of engagement levels at one point in time—levels that are likely to wax and wane over time. Fifth, measures of engagement cannot assess intent and/or motivation for long-term outcomes. For example, a certain level of engagement will be evident in cases in which participants *comply* to the degree necessary in order to receive VR funding for highly desirable services or items (e.g., assistance with college tuition or expensive assistive technology devices); however, there is currently no evidence to suggest whether

such compliance would or would not be associated with long-term outcomes. Finally, the true impact of participant engagement levels is still unknown because the current research did not address factors that lead to engagement or actual outcomes of engagement; rather, the focus was on defining and measuring the construct of engagement.

### **Recommendations for Future Research**

The current research findings represent a vital first step in better understanding the role of the participant in the VR process. Future research can now utilize the definition and measures of engagement resulting from this study. It may be useful to first provide further validation of this index of engagement by gathering data from a new sample (MacKenzie et al., 2011). Gathering data from counselors regarding a random sample of open VR cases will provide a better description of average engagement levels among VR participants. Such a study might also provide more accurate information about the levels of engagement necessary for success and the levels which act as red flags of disengagement in the VR process.

The current study utilized the perceptions of the rehabilitation counselor. It may be useful to study engagement based on the perceptions of participants and their family members. A better understanding of participants' perspectives about the difficulties of engagement or about the importance of fulfilling their role may allow for better support of the participant. Furthermore, if both the counselor and the participant rated levels of engagement, discrepancies between their ratings could be used as a quality assurance indicator to improve the VR process. For example, cases in which the participant reports high levels of engagement whereas the counselor reports low levels might indicate a need

for the dyad to discuss the counselor's expectations and the participant's volitional control in the process.

### **Engagement and VR Process**

In hopes of understanding how to improve outcomes among VR participants, many researchers have focused on factors that predict employment outcomes. From 1980-2004, 118 predictive outcome studies were published in rehabilitation-related journals (Saunders et al., 2006). From 1986-2010, 106 rehabilitation counseling dissertations have been classified as predictive outcome studies (Tansey, Phillips, & Zanskas, 2012; Tansey, Zanskas, & Phillips, 2012). These predictive outcome studies tend to focus on identifying

relationships between existing data and employment outcomes, rather than designing studies to define what types of intervention or services appear to work best with what specific populations, under what specific conditions. Clearly, this is an area of weakness and limitation in regard to our existing research on employment outcomes that needs to be addressed in future research initiatives. (Saunders, et al., 2006, p. 15-16)

There are substantially fewer studies that focus on the *processes* of VR counseling that lead to successful outcomes (Fleming, Del Valle, Kim, & Leahy, 2012), and little or no research published on the quality of participants' engagement in the VR counseling process. In order to better study interventions and services that work, there is a need to define more process variables instead of *unmanipulated* variables (e.g., demographic data, outcomes). As noted by Campbell and Stanley (1963), the inclusion of unmanipulated independent variables such as personal characteristics and environmental factors can help identify which interventions work best with specific individuals; however, the inclusion of manipulated variables should be researchers' "primary interest"

(p. 30). In the search for interventions that can be considered evidence-based (i.e., evidence-based practices [EBPs] or empirically-supported treatments [ESTs]), VR outcome variables such as employment status may be too distal of an outcome measure; a more *proximal indicator* of whether or not interventions are working could prove quite beneficial for research and practice (Shirk & Karver, 2006). An operationalized definition of the construct of consumer engagement in the VR process, as provided in the current study, is perhaps the best variable for such an indicator. Obtaining a better understanding of variables within the VR process will give researchers and practitioners more influence over outcomes.

### **Engagement as an Independent or Dependent Variable**

As noted by Drieschner et al. (2004), in clinical helping situations “engagement is not only important as criterion for treatment motivation but also as a predictor of treatment outcome” (p. 1121). Because the construct of engagement can be used as both a dependent and an independent variable, there are many exciting research possibilities involving the use of this construct. Understanding the factors that lead to engagement (and disengagement) could greatly enhance the effectiveness of VR services. For example, studies might identify factors that increase the ability and/or willingness of the participant to highly engage in the VR process that can later be examined quantitatively. Through the use of multiple regression, researchers could learn how variables such as counselor factors, agency policies, and new interventions predict engagement. Again, the focus of this research should be on variables that can be manipulated, and secondarily on assessing the effects of unmanipulated independent variables (Campbell & Stanley,

1963). This type of intervention research will allow a better understanding of the processes that result in better outcomes. Additional studies might also examine the relationship between engagement and several closely related variables such as motivation and the working alliance.

As an independent variable, a participant's level of engagement at various stages of the VR process can indicate sufficient investment in the VR process and readiness to continue moving forward. By tracking levels of engagement throughout the VR process, longitudinal or internal evaluation studies could be conducted that predict critical outcomes (e.g., employment, quality of life) based on varying levels and trajectories of engagement. Such studies will better explain the impact of engagement on long-term outcomes than studies that involve measurement at a single point in time.

### **Relationship to Counselor and Agency Factors**

In the current study, a substantial portion of the variance in engagement was unexplained by the sub-dimensions of engagement (i.e., consumer factors). It is reasonable to hypothesize that counselor factors—especially the degree to which a VR counselor competently fulfills his or her role—may account for a large portion of the unexplained variance. The degree to which counselor factors impact levels of participant engagement should be examined empirically. For example, it may be hypothesized that counselors can support engagement by teaching and then requiring a participative role. Research may also verify whether genuine support, empathic concern, and unconditional positive regard (Rogers, 1957) from counselors can help the participant develop into a full partner.



The relationship between a strong working alliance and the participant's level of engagement also merits examination (Bordin, 1979; Hill, 2005). Indeed, purposefully focusing on the establishment of a quality working alliance in VR may provide the best foundation for the ongoing engagement and success of the VR participant (Ackerman & Hilsenroth, 2001; Lustig, Strauser, Rice, & Rucker, 2002; Safran & Muran, 1998). Researchers might evaluate how participant engagement is impacted when counselors provide more detailed explanations of the VR process, emphasize collaboration between counselor and participant, and directly discuss the quality of the working relationship (Meara & Patton, 1994).

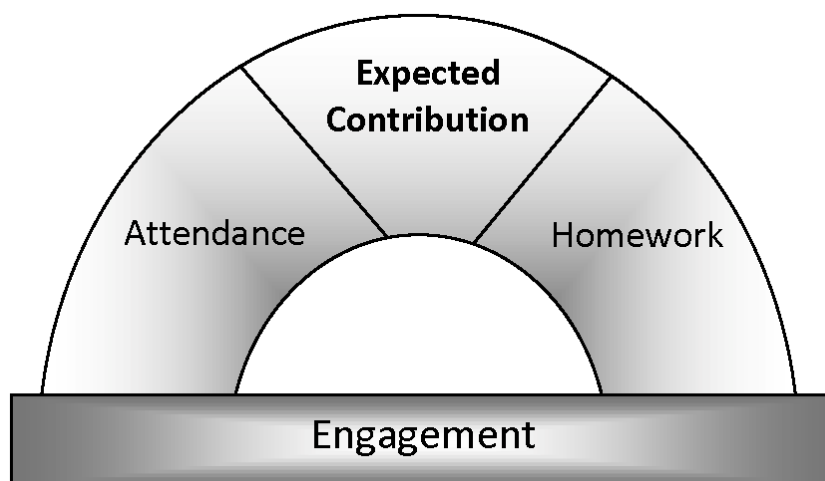
Future research should also assess the relationship between engagement and counseling skills, especially when participants appear to be disengaging from VR. In McCarthy's (2014) research, counseling skills that helped to build rapport and to work through a consumer's lack of motivation were the strongest predictors of successful outcomes. These types of counseling skills may also be called for when participants fail to 'demonstrate enthusiasm' for the VR process. Although VR participants often begin the VR process with great enthusiasm, over time their excitement and level of engagement can wane. The ability to re-engage VR participants through approaches such as motivational interviewing or solution focused therapy should be examined (Olney, Gagne, White, Bennett, & Evans, 2009; Wagner & McMahon, 2004).

Finally, agency factors may warrant empirical investigation. Agencies may want to reconsider current policies or workplace cultures if research suggests that they create barriers to establishing a quality working alliance between the counselor and the participant. For example, excessively large caseloads, an overemphasis on achieving a

specific number of successful closures, and mandatory timelines for plan implementation might each impede the formation of a strong working alliance. Consequently, a low-quality relationship might limit the ability of a consumer to engage and succeed in VR counseling.

### **Conclusion**

Participant engagement in the VR process is a multidimensional construct consisting of three sub-dimensions. It appears that the most critical role for participants includes the Expected Contribution during VR meetings. Factors of Attendance and Homework indirectly influence overall engagement through their connection with the Expected Contribution. The Expected Contribution may be compared to the keystone in an arch that upholds a high level of engagement (see Figure 16). Counselors may be able to facilitate high levels of engagement among VR participants by using appropriate counseling skills and techniques to build a strong working alliance.



*Figure 16.* Keystone of participant engagement.

Agency policies should ensure that participants understand their role and should support the ability of counselors to form a strong working alliance with each participant. In future research, the engagement construct can be a powerful variable for gaining a better understanding of the VR process.

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APPENDICES

Appendix A

Item Review

## Item Review

Reviewer Directions:

First enter your name and then comment on the counselor survey directions below.

Next, for each item:

First, rate the extent to which the item is representative of each sub-dimension (Attendance, Expected Contribution during Appointment, Tasks Between Meetings):

1=not representative; 2=only slightly representative; 3=somewhat representative; 4=nearly completely representative; 5=completely representative.

Second, rate the clarity of the overall item, including response options:

1=poor; 2=fair; 3=good; 4=very good; 5=excellent

Third, provide comments (if necessary).

Sub-Dimension Definitions:

*Attendance*: requirements related to attendance of scheduled VR meetings

*Expected Contribution during Appointment*: the communication, attention, and participation necessary during face-to-face VR meetings

*Tasks Between Meetings*: the participant's work on “homework” or other tasks between appointments

**1. Comment on the clarity of the counselor survey directions:**

## Text Response

Clear

Will there be an Overview given to staff or just the directions? If there is an overview, I think the directions are fine.

Do you need to provide a timeframe for how long they have to complete the survey from when the person leaves the office? Counselors may not have immediate time to complete survey and I'm guessing you want to limit how long after they take it.

Statistic	Value
Total Responses	3

**2. The participant attended \_\_ of the last 3 scheduled appointments (including today's; refer to case notes if necessary). (a) 1 (33%)(b) 2 (66%)(c) 3 (100%)**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	4.00	5.00	4.75	0.50	4
2	How representative is this item of Expected Contribution during Appointment	1.00	4.00	2.00	1.41	4
3	How representative is this item of Tasks Between Meetings	1.00	3.00	2.00	1.15	4
4	Rate the overall clarity of the item (including response options).	3.00	5.00	4.25	0.96	4
<b>Comments:</b>						
Might want to rephrase to missed appointments- If client cancels and appointment would you count this as a non-attendance?						

**3. If the participant misses a scheduled appointment, he or she notifies you or the agency prior to the appointment time to cancel or reschedule. (a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	4.00	5.00	4.25	0.50	4
2	How representative is this item of Expected Contribution during Appointment	1.00	4.00	1.75	1.50	4
3	How representative is this item of Tasks Between Meetings	2.00	4.00	3.00	0.82	4
4	Rate the overall clarity of the item (including response options).	2.00	5.00	4.00	1.41	4

Comments:

**4. The participant was \_\_ minute(s) late for his or her appointment today. [0-99]**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	3.00	5.00	4.25	0.96	4
2	How representative is this item of Expected Contribution during Appointment	1.00	4.00	3.00	1.41	4
3	How representative is this item of Tasks Between Meetings	1.00	3.00	2.25	0.96	4
4	Rate the overall clarity of the item (including response options).	4.00	5.00	4.50	0.58	4

Comments:

**5. If the participant left early from today's meeting, estimate the additional number of minutes he or she needed to stay to complete the necessary tasks. \_\_ minutes[0-99]**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	4.00	5.00	4.50	0.58	4
2	How representative is this item of Expected Contribution during Appointment	3.00	4.00	3.50	0.58	4
3	How representative is this item of Tasks Between Meetings	1.00	3.00	2.00	1.15	4
4	Rate the overall clarity of the item (including response options).	3.00	5.00	4.00	0.82	4

Comments:

**6. The participant initiates new appointments. (a) Never(b) Rarely(c) Sometimes(d) Often(e) All of the Time**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	4.00	5.00	4.75	0.50	4
2	How representative is this item of Expected Contribution during Appointment	3.00	5.00	4.00	1.15	4
3	How representative is this item of Tasks Between Meetings	2.00	5.00	3.25	1.26	4
4	Rate the overall clarity of the item (including response options).	3.00	5.00	4.00	0.82	4

Comments:

Might want to reconsider initiate.

**7. During our meeting today, the participant asked relevant questions. (a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	1.00	5.00	3.25	1.71	4
2	How representative is this item of Expected Contribution during Appointment	5.00	5.00	5.00	0.00	4
3	How representative is this item of Tasks Between Meetings	2.00	5.00	3.50	1.29	4
4	Rate the overall clarity of the item (including response options).	4.00	5.00	4.75	0.50	4

Comments:

**8. During our meeting today, the participant asked important follow-up questions. (a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	1.00	4.00	2.75	1.26	4
2	How representative is this item of Expected Contribution during Appointment	5.00	5.00	5.00	0.00	4
3	How representative is this item of Tasks Between Meetings	1.00	5.00	2.50	1.91	4
4	Rate the overall clarity of the item (including response options).	4.00	5.00	4.50	0.58	4

Comments:

**9. During our meeting today, the participant shared important information with me. (a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	1.00	4.00	2.50	1.73	4
2	How representative is this item of Expected Contribution during Appointment	4.00	5.00	4.75	0.50	4
3	How representative is this item of Tasks Between Meetings	1.00	4.00	2.00	1.41	4
4	Rate the overall clarity of the item (including response options). Comments:	3.00	5.00	4.25	0.96	4

Comments:

**10. During our meeting today, the participant disclosed personal priorities and/or concerns with me. (a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	1.00	5.00	2.75	2.06	4
2	How representative is this item of Expected Contribution during Appointment	3.00	5.00	4.50	1.00	4
3	How representative is this item of Tasks Between Meetings	1.00	4.00	2.50	1.29	4
4	Rate the overall clarity of the item (including response options). Comments:	4.00	5.00	4.75	0.50	4

Comments:



**11. During our meeting today, the participant disclosed personal strengths and/or interests with me. (a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	1.00	4.00	2.75	1.26	4
2	How representative is this item of Expected Contribution during Appointment	3.00	5.00	4.50	1.00	4
3	How representative is this item of Tasks Between Meetings	1.00	3.00	2.00	0.82	4
4	Rate the overall clarity of the item (including response options). Comments:	4.00	5.00	4.75	0.50	4
Comments:						

**12. During our meeting today, the participant initiated important discussion topics. (a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	1.00	4.00	2.75	1.26	4
2	How representative is this item of Expected Contribution during Appointment	5.00	5.00	5.00	0.00	4
3	How representative is this item of Tasks Between Meetings	1.00	5.00	3.00	1.63	4
4	Rate the overall clarity of the item (including response options). Comments:	5.00	5.00	5.00	0.00	4
Comments:						

**13. During our meeting today, the participant answered questions openly. (a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	1.00	5.00	3.00	1.83	4
2	How representative is this item of Expected Contribution during Appointment	4.00	5.00	4.75	0.50	4
3	How representative is this item of Tasks Between Meetings	1.00	3.00	1.50	1.00	4
4	Rate the overall clarity of the item (including response options). Comments:	4.00	5.00	4.50	0.58	4
Comments:						

**14. During our meeting today, the participant paid attention to the things I said.(a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	3.00	5.00	3.75	0.96	4
2	How representative is this item of Expected Contribution during Appointment	4.00	5.00	4.75	0.50	4
3	How representative is this item of Tasks Between Meetings	1.00	4.00	2.25	1.50	4
4	Rate the overall clarity of the item (including response options). Comments:	4.00	5.00	4.50	0.58	4
Comments:						

**15. During our meeting today, the participant failed to respond or was quieter than usual.(a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	1.00	5.00	3.25	1.71	4
2	How representative is this item of Expected Contribution during Appointment	4.00	5.00	4.75	0.50	4
3	How representative is this item of Tasks Between Meetings	1.00	3.00	2.25	0.96	4
4	Rate the overall clarity of the item (including response options). Comments:	3.00	5.00	4.50	1.00	4
<b>Comments:</b>						
Failed to respond seems confusing						

**16. During our meeting today, the participant demonstrated enthusiasm for the tasks of VR.(a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	1.00	4.00	2.25	1.50	4
2	How representative is this item of Expected Contribution during Appointment	3.00	5.00	4.50	1.00	4
3	How representative is this item of Tasks Between Meetings	1.00	5.00	3.50	1.73	4
4	Rate the overall clarity of the item (including response options). Comments:	3.00	5.00	4.25	0.96	4
<b>Comments:</b>						

**17. During the time from our last meeting to today's meeting, the participant worked on all agreed upon tasks (such as assignments, services, and/or training).(a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	1.00	3.00	1.75	0.96	4
2	How representative is this item of Expected Contribution during Appointment	2.00	5.00	3.25	1.26	4
3	How representative is this item of Tasks Between Meetings	5.00	5.00	5.00	0.00	4
4	Rate the overall clarity of the item (including response options). Comments:	4.00	5.00	4.50	0.58	4

**18. Between our last meeting to today's meeting, the participant engaged in tasks relevant to his or her current VR status (for example, but not limited to, identifying a vocational goal, updating a resume, filling out job applications, etc). (a) Strongly Disagree (b) Disagree (c) Somewhat Disagree (d) Somewhat Agree (e) Agree (f) Strongly Agree**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	1.00	5.00	2.25	1.89	4
2	How representative is this item of Expected Contribution during Appointment	2.00	5.00	3.75	1.50	4
3	How representative is this item of Tasks Between Meetings	3.00	5.00	4.50	1.00	4
4	Rate the overall clarity of the item (including response options). Comments:	3.00	5.00	4.25	0.96	4

Comments:

**19. Between our last meeting and today's meeting, the participant initiated communication with me (via phone or email).(a) Never(b) Rarely(c) Sometimes(d) Often(e) Very Often**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	How representative is this item of Attendance	1.00	4.00	2.25	1.50	4
2	How representative is this item of Expected Contribution during Appointment	1.00	4.00	2.75	1.50	4
3	How representative is this item of Tasks Between Meetings	2.00	5.00	4.25	1.50	4
4	Rate the overall clarity of the item (including response options). Comments:	2.00	5.00	4.25	1.50	4

**Comments:**

If it was appropriate communication it could mean something, but some communications between scheduled times indicates an inability to understand structure. So not sure of the intent.

**20. Please rate the following on a scale from 0 to 100 (0 = Completely False, 100 = Completely True):Overall, the participant is highly engaged in the VR process.\*Note to Reviewer: This item addresses overall engagement. Please rate and comment only on its clarity.**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	Rate the overall clarity of the item (including response options). Comments:	4.00	5.00	4.75	0.50	4

**Comments:**

what do you mean by engaged?

**21. Please rate the following on a scale from 0 to 100 (0 = Completely False, 100 = Completely True):The participant fulfills all facets (i.e., attendance, expected contributions during meetings, and participation in tasks between meetings) of his or her role in VR.[0-100]\*Note to Reviewer: This item addresses overall engagement. Please rate and comment only on its clarity.**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	Rate the overall clarity of the item (including response options). Comments:	2.00	5.00	4.25	1.50	4
<b>Comments:</b>						
Seems like a lot of information to process in a single question						

**22. Please rate the following on a scale from 0 to 100 (0 = Completely False, 100 = Completely True):Overall, the participant is actively participating in the VR program to the extent necessary to benefit from VR services.[0-100]\*Note to Reviewer: This item addresses overall engagement. Please rate and comment only on its clarity.**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	Rate the overall clarity of the item (including response options). Comments:	2.00	5.00	3.75	1.50	4
<b>Comments:</b>						
benefit and succeed can mean two different things						
Kind of two queries in one, not sure if scoring scale is best option.						

**23. Given the nature of the disability, the participant is making a good faith effort to accomplish the objectives of VR.(a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree\*Note to Reviewer: This item addresses overall engagement. Please rate and comment only on its clarity.**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	Rate the overall clarity of the item (including response options). Comments:	1.00	5.00	3.50	1.73	4
<b>Comments:</b>						
I don't see the correlation as we evaluate individuals regardless of disability.						
I'd drop "good faith"						

**24. The participant understands his or her role in the VR process.(a) Strongly Disagree(b) Disagree(c) Somewhat Disagree(d) Somewhat Agree(e) Agree(f) Strongly Agree\*Note to Reviewer: This item addresses overall engagement. Please rate and comment only on its clarity.**

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	Rate the overall clarity of the item (including response options). Comments:	3.00	5.00	4.00	1.15	4

**Comments:**

One could argue that a participant has multiple roles in the VR process- you might want to provide a definition of the specific role you're interested in.

**25. Are there any additional measurement items you would suggest, or other final comments?**

**Text Response**

I think I have missed your intent on how you were rating Attendance.

Only a caution that the survey has a number of broad terms that may vary by social context. These may introduce unwanted variability into the survey.

Statistic	Value
Total Responses	2



Appendix B

VR Participant Engagement Survey – Final Version

## VR Participant Engagement Survey – Final Version

Q1.1 \*Note: If the participant (consumer) does not meet the criteria, please return to this survey after meeting with another participant who does. Does the participant (consumer) you will be providing ratings about meet ALL of the following criteria?

- (1) able to speak English
  - (2) 18-65 years old
  - (3) determined eligible and has a current open case
  - (4) showed up for the appointment today
  - (5) as of today, has had 3 or more scheduled appointments
  - (6) disability does not impair the ability to give consent
  - (7) verbally consented to be included in this study
- Yes (1)

### Q1.2 Directions:

Please complete this survey today after the VR participant (consumer) has left your office. As you answer each question, think about the specific participant and rate how well he or she is functioning in each area.

\*Note: Although many factors contribute to a successful VR outcome, this survey focuses on the impact of the participant's level of engagement. Engagement (participation) levels can be impacted by a person's disability, social situation, readiness, etc.; however, please do NOT try to compensate for such factors when reporting engagement levels; rather, please provide a pure rating of current engagement levels.

Q2.1 Please provide the following demographic information about the VR participant (based on the case file).

Q2.2 Participant's age in years:

- 18 (18)
- ...
- 65 (65)

Q2.3 Participant's gender:

- Male (0)
- Female (1)

Q2.4 Participant's race and ethnicity (select all that apply):

- America Indian or Alaska Native (1)
- Asian (2)
- Black or African American (3)
- Native Hawaiian or Other Pacific Islander (4)
- White (5)
- Hispanic/Latino (6)
- Other (please specify) (7) \_\_\_\_\_

Q2.5 Participant's current VR status:

- Eligible, no IPE (10) (10)
- In Plan / Receiving Services (14, 16, 18, or 20) (18)
- Employed / Working (22) (22)
- Program Interrupted (24) (24)
- Post Employment Services (32) (32)

Q2.6 Participant's date of eligibility:

	Month	Day	Year
Eligibility Date:	January-December	1-31	1990-2014

## Q2.7 Participant's Type of Disability - Primary:

- Blindness (1)
- Other visual impairments (2)
- Deafness, Primary Communication Visual (3)
- Deafness, Primary Communication Auditory (4)
- Hearing Loss, Primary Communication Visual (5)
- Hearing Loss, Primary Communication Auditory (6)
- Other Hearing Impairments (7)
- Deaf-Blindness (8)
- Communicative Impairments (expressive/receptive) (9)
- Mobility Orthopedic/Neurological Impairments (10)
- Manipulation/Dexterity Orthopedic/Neurological Impairments (11)
- Both Mobility and Manipulation/Dexterity Orthopedic/Neurological Impairments (12)
- Other Orthopedic Impairments (13)
- Respiratory Impairments (14)
- General Physical Debilitation (fatigue, weakness, pain, etc.) (15)
- Other Physical Impairments (not listed above) (16)
- Cognitive Impairments (17)
- Psychosocial Impairments (18)
- Other Mental Impairments (19)

**Q2.8 Source of Primary Disability:**

- Cause unknown (00)
- Accident/Injury (other than TBI or SCI) (01)
- Alcohol Abuse or Dependence (02)
- Amputations (03)
- Anxiety Disorders (04)
- Arthritis and Rheumatism (05)
- Asthma and other Allergies (06)
- Attention-Deficit Hyperactivity Disorder (ADHD) (07)
- Autism (08)
- Blood Disorders (09)
- Cancer (10)
- Cardiac and other Conditions of the Circulatory System (11)
- Cerebral Palsy (12)
- Congenital Condition or Birth Injury (13)
- Cystic Fibrosis (14)
- Depressive and other Mood Disorders (15)
- Diabetes Mellitus (16)
- Digestive (17)
- Drug Abuse or Dependence (other than alcohol) (18)
- Eating Disorders (e.g., anorexia, bulimia, or compulsive overeating) (19)
- End-Stage Renal Disease and other Genitourinary System Disorders (20)
- Epilepsy (21)
- HIV and AIDS (22)
- Immune Deficiencies excluding HIV/AIDS (23)
- Mental Illness (not listed elsewhere) (24)
- Mental Retardation (25)
- Multiple Sclerosis (26)
- Muscular Dystrophy (27)
- Parkinson's Disease and other Neurological Disorders (28)
- Personality Disorders (29)
- Physical Disorders/Conditions (not listed elsewhere) (30)
- Polio (31)
- Respiratory Disorders other than Cystic Fibrosis or Asthma (32)
- Schizophrenia and other Psychotic Disorders (33)
- Specific Learning Disabilities (34)
- Spinal Cord Injury (SCI) (35)
- Stroke (36)
- Traumatic Brain Injury (TBI) (37)

Q2.9 Participant's Type of Disability - Secondary:

- None (0)
- Blindness (1)
- Other visual impairments (2)
- Deafness, Primary Communication Visual (3)
- Deafness, Primary Communication Auditory (4)
- Hearing Loss, Primary Communication Visual (5)
- Hearing Loss, Primary Communication Auditory (6)
- Other Hearing Impairments (7)
- Deaf-Blindness (8)
- Communicative Impairments (expressive/receptive) (9)
- Mobility Orthopedic/Neurological Impairments (10)
- Manipulation/Dexterity Orthopedic/Neurological Impairments (11)
- Both Mobility and Manipulation/Dexterity Orthopedic/Neurological Impairments (12)
- Other Orthopedic Impairments (13)
- Respiratory Impairments (14)
- General Physical Debilitation (fatigue, weakness, pain, etc.) (15)
- Other Physical Impairments (not listed above) (16)
- Cognitive Impairments (17)
- Psychosocial Impairments (18)
- Other Mental Impairments (19)

## Q2.10 Source of Secondary Disability:

- N/A (38)
- Cause unknown (00)
- Accident/Injury (other than TBI or SCI) (01)
- Alcohol Abuse or Dependence (02)
- Amputations (03)
- Anxiety Disorders (04)
- Arthritis and Rheumatism (05)
- Asthma and other Allergies (06)
- Attention-Deficit Hyperactivity Disorder (ADHD) (07)
- Autism (08)
- Blood Disorders (09)
- Cancer (10)
- Cardiac and other Conditions of the Circulatory System (11)
- Cerebral Palsy (12)
- Congenital Condition or Birth Injury (13)
- Cystic Fibrosis (14)
- Depressive and other Mood Disorders (15)
- Diabetes Mellitus (16)
- Digestive (17)
- Drug Abuse or Dependence (other than alcohol) (18)
- Eating Disorders (e.g., anorexia, bulimia, or compulsive overeating) (19)
- End-Stage Renal Disease and other Genitourinary System Disorders (20)
- Epilepsy (21)
- HIV and AIDS (22)
- Immune Deficiencies excluding HIV/AIDS (23)
- Mental Illness (not listed elsewhere) (24)
- Mental Retardation (25)
- Multiple Sclerosis (26)
- Muscular Dystrophy (27)
- Parkinson's Disease and other Neurological Disorders (28)
- Personality Disorders (29)
- Physical Disorders/Conditions (not listed elsewhere) (30)
- Polio (31)
- Respiratory Disorders other than Cystic Fibrosis or Asthma (32)
- Schizophrenia and other Psychotic Disorders (33)
- Specific Learning Disabilities (34)
- Spinal Cord Injury (SCI) (35)
- Stroke (36)

- Traumatic Brain Injury (TBI) (37)

Q2.11 Participant's Current Level of Education:

- No formal schooling (0)
- Elementary education (grades 1-8) (1)
- Secondary education, no high school diploma (grades 9-12) (2)
- Special education certificate of completion/diploma or in attendance (3)
- High school graduate or equivalency certificate (GED) (4)
- Post-secondary education, no degree or certificate (5)
- Post-secondary academic degree, Associate degree (6)
- Bachelor's degree (7)
- Master's degree (8)
- Any degree above a Master's (e.g., Ph.D, Ed.D, J.D.) (9)
- Vocational/Technical Certificate or License (10)
- Occupational credential beyond undergraduate degree work (11)
- Occupational credential beyond graduate degree work (12)

Q2.12 Which of the following best describes the majority of the participant's prior work experience?

- Employment without supports in an integrated setting (e.g., competitive, paid) (1)
- Extended Employment (e.g., sheltered workshop, CRP) (2)
- Self-Employment (3)
- Randolph-Sheppard Business Enterprise Program (BEP) (4)
- Homemaker (5)
- Unpaid Family Worker (6)
- Employment with supports in an integrated setting (e.g., supported employment) (7)
- Unpaid work experience (volunteer, trainee, or intern) (8)
- No work experience (0)

Q3.1 Please confirm today's appointment date (edit if necessary):

Today: (Month Day, Year)



Q3.2 In reverse chronological order, enter the dates of the participant's last 2 scheduled appointments with you (before today's), and whether or not the participant showed up (refer to case notes if necessary):

	Year	Month	Day	Showed up to Scheduled Appointment?
Last scheduled appointment (before today's):	2000-2014	January-December	1-31	Yes/No
Scheduled appointment before last:	2000-2014	January-December	1-31	Yes/No

Q3.3 If the participant misses (or were to miss) a scheduled appointment, he or she notifies (or would notify) you or the agency prior to the appointment time to cancel or reschedule.

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q3.4 The participant was \_\_ minute(s) late for his or her appointment today.

- 0 (0)
- 1 (1)
- ...
- 99 (99)

Q3.5 If the participant left early from today's meeting, estimate the additional number of minutes he or she needed to stay to complete the necessary tasks. \_\_ minutes

- 0 (0)
- 1 (1)
- ...
- 99 (99)

Q3.6 At the end of each meeting, the participant asks to schedule the next appointment.

- Never (1)
- Rarely (2)
- Sometimes (3)
- Often (4)
- All of the Time (5)

Q4.1 During the time from our last meeting to today's meeting, the participant worked on all agreed upon tasks (such as assignments, services, and/or training).

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q4.2 Between our last meeting to today's meeting, the participant engaged in tasks relevant to his or her current VR status (for example, but not limited to, identifying a vocational goal, updating a resume, filling out job applications, etc).

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q4.3 Between the last meeting and today's meeting, how frequently did the participant call and/or email you?

- Far too few times (1)
- Too few times (2)
- About the right number of times (3)
- Too many times (4)
- Far too many times (5)

Q5.1 During our meeting today, the participant asked relevant questions.

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q5.2 During our meeting today, the participant asked important follow-up questions.

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q5.3 During our meeting today, the participant shared important information with me.

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q5.4 During our meeting today, the participant disclosed personal priorities and/or concerns with me.

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q5.5 During our meeting today, the participant disclosed personal strengths and/or interests with me.

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q5.6 During our meeting today, the participant brought up important discussion topics.

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q5.7 During our meeting today, the participant answered questions openly.

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q5.8 During our meeting today, the participant paid attention to the things I said.

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q5.9 During our meeting today, the participant was quieter than usual or didn't respond.

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q5.10 During our meeting today, the participant demonstrated enthusiasm for the tasks of VR.

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q6.1 Please rate the following statement on a scale from 0 to 100 (0 = Completely False, 100 = Completely True)

Overall, the individual is actively participating in the VR process. (1)

Q6.2 In the previous question, you rated active participation as  $\{q://QID48/ChoiceGroup/AllChoicesTextEntry\}$ . Please rate the following statement on a scale from 0 to 100 (0 = Completely False, 100 = Completely True)

Based on this level of participation ( $\{q://QID48/ChoiceGroup/AllChoicesTextEntry\}$ ), the VR participant will successfully establish and achieve his or her vocational goal. (1)

Q6.3 Given the functional limitations of the disability, the participant is making an effort to accomplish the objectives of VR.

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q6.4 The VR participant role includes three main facets: (1) attendance, (2) expected contributions during meetings, and (3) participation in tasks between meetings. Please rate the following statement on a scale from 0 to 100 (0 = Completely False, 100 = Completely True)

The VR participant fulfills all facets of his or her role. (1)

Q6.5 The participant understands his or her role as an active and full partner in the VR process.

- Strongly Disagree (1)
- Disagree (2)
- Somewhat Disagree (3)
- Somewhat Agree (4)
- Agree (5)
- Strongly Agree (6)

Q7.1 Please provide the following demographic information about you (the counselor).

Q7.2 Counselor's age in years:

- 18 (18)
- ...
- 99 (99)

Q7.3 Counselor's gender:

- Male (0)
- Female (1)

Q7.4 Counselor's race and ethnicity (select all that apply):

- America Indian or Alaska Native (1)
- Asian (2)
- Black or African American (3)
- Native Hawaiian or Other Pacific Islander (4)
- White (5)
- Hispanic/Latino (6)
- Other (please specify) (7) \_\_\_\_\_

Q7.5 Are you a certified rehabilitation counselor (CRC)?

- Yes (1)
- No (0)

Q7.6 How many years have you worked as a rehabilitation counselor?

- 0 (0)
- ...
- 34 (34)
- 35+ (35)

Q7.7 Rate your current level of job satisfaction:

- Very Dissatisfied (1)
- Dissatisfied (2)
- Somewhat Dissatisfied (3)
- Somewhat Satisfied (4)
- Satisfied (5)
- Very Satisfied (6)



## Q7.8 In which state are you employed?

- Alabama (1)
- Alaska (2)
- Arizona (3)
- Arkansas (4)
- California (5)
- Colorado (6)
- Connecticut (7)
- Delaware (8)
- Florida (9)
- Georgia (10)
- Hawaii (11)
- Idaho (12)
- Illinois (13)
- Indiana (14)
- Iowa (15)
- Kansas (16)
- Kentucky (17)
- Louisiana (18)
- Maine (19)
- Maryland (20)
- Massachusetts (21)
- Michigan (22)
- Minnesota (23)
- Mississippi (24)
- Missouri (25)
- Montana (26)
- Nebraska (27)
- Nevada (28)
- New Hampshire (29)
- New Jersey (30)
- New Mexico (31)
- New York (32)
- North Carolina (33)
- North Dakota (34)
- Ohio (35)
- Oklahoma (36)
- Oregon (37)
- Pennsylvania (38)

- Rhode Island (39)
- South Carolina (40)
- South Dakota (41)
- Tennessee (42)
- Texas (43)
- Utah (44)
- Vermont (45)
- Virginia (46)
- Washington (47)
- West Virginia (48)
- Wisconsin (49)
- Wyoming (50)

Appendix C  
Overview Letter

Dear VR Counselor:

Your state agency has agreed to participate in a research study investigating VR participants' levels of engagement (participation) in VR programs. Please see the overview of the study below:

What is the study?

The purpose of this study is (1) to understand levels of engagement in the vocational rehabilitation process, and (2) to develop a brief instrument to measure engagement levels.

Why should I participate?

Participation is voluntary, but this study will help the researchers learn more about how VR participants are expected to participate in VR programs. This information can be used to better educate VR participants (consumers) about how to fully participate and benefit from VR programs.

Are there any risks of participating?

The risks of participating are minimal. No identifiable information will be collected. Responses are anonymous and reported in the aggregate.

How do I participate?

To participate in this study, you will first need to ask for verbal consent from one of your participants to report non-identifiable information about him or her. For example, counselors will answer questions about the participant's (consumer's) engagement in the VR program related to (a) *recent attendance*; (b) *completion of assignments between appointments*; and (c) *the quality of communication with the counselor during the meeting*. The participant (consumer) must meet the criteria in Table 1 below. After meeting with the person you will fill out a short online survey (~10 minutes) about your perceptions of the participant's recent levels of engagement in the VR program. Counselors are invited to respond during the week of [DATES].

**Link to the Survey: [link]**

For more information about the study, please see the attached Letters of Information.

Thank you,  
Joshua Southwick  
Utah State University  
joshua.southwick@aggiemail.usu.edu  
(435) 554-1016

Appendix D  
Letters of Information

## Letters of Information

### Counselor Version

**Introduction/ Purpose** Professor Jared Schultz and graduate student Joshua Southwick in the Department of Special Education and Rehabilitation at Utah State University are conducting a research study to find out more about levels of active participation in vocational rehabilitation (VR) programs. You have been asked to take part because you are a vocational rehabilitation counselor. There will be approximately 200 total participants in this research study from multiple states.

**Procedures** If you agree to be in this research study, the following steps will be taken. At the end of a meeting or interview with an adult client who (1) has a current open case with VR and (2) has had three or more scheduled appointments as of today, you will provide the client with the Client Letter of Information. After a client gives consent and leaves your office, you will complete the online survey which will ask you to answer questions about the client's recent levels of active participation in the VR program. You will also report basic demographic information, but you will not report any identifiable information about yourself or your client such as name or contact information.

**Risks** There are no anticipated risks for participation in this research study.

**Benefits** There may or may not be any direct benefit to you from these procedures. The investigator, however, may learn more about how clients are expected to participate in VR programs. The investigator may also develop a way to measure participation levels of VR clients that will help counselors to identify barriers to client participation, and to understand how to better enable future VR clients to fully participate and benefit from VR programs.

**Explanation & offer to answer questions** Dr. Schultz and Joshua Southwick have explained this research study to you through this letter and answered your questions. If you have other questions or research-related problems, you may reach Joshua at (435) 554-1016.

**Payment/Compensation** There is no cost to you for participating in this research study.

**Voluntary nature of participation and right to withdraw without consequence** Participation in research is entirely voluntary. You may refuse to participate or withdraw at any time without consequence.

**Confidentiality** Research records will be kept confidential, consistent with federal and state regulations. Only the investigator and Joshua Southwick will have access to the data which will be kept in a locked file cabinet or on a password protected computer in a locked room. The surveys will be completed through a secure online format. The

researchers do not have access to which counselors complete the survey. The VR agency does not have access to who participated in this survey.

**IRB Approval Statement** The Institutional Review Board for the protection of human participants at Utah State University has approved this research study. If you have any pertinent questions or concerns about your rights or think the research might have harmed you, you may contact the IRB Administrator at (435) 797-0567 or email [irb@usu.edu](mailto:irb@usu.edu). If you have a concern or complaint about the research, and would like to contact someone other than the research team, you may contact the IRB Administrator to obtain information or to offer input.

**Investigator Statement** “I certify that the research study has been explained to the individual, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions that have been raised have been answered.”

**Signature of Researcher(s)**

---

*Dr. Jared Schultz*  
Principal Investigator  
(435) 797-3478  
[Jared.schultz@usu.edu](mailto:Jared.schultz@usu.edu)

---

*Joshua Southwick*  
Student Researcher  
(435) 554-1016  
([joshua.southwick@aggiemail.usu.edu](mailto:joshua.southwick@aggiemail.usu.edu))

## Client Version

**Introduction/ Purpose** Professor Jared Schultz and graduate student Joshua Southwick in the Department of Special Education and Rehabilitation at Utah State University are conducting a research study to find out more about levels of active participation in vocational rehabilitation (VR) programs. You have been asked to take part because you are an adult client of vocational rehabilitation who (1) has a current open case with VR and (2) has had three or more scheduled appointments as of today. There will be approximately 200 total participants in this research study from multiple states.

**Procedures** If you agree to be in this research study, the following steps will be taken. After you leave today, your counselor will answer questions in a survey about your recent levels of active participation in the VR program. For example, your counselor will record the percentage of appointments you have recently attended, the extent to which you completed assigned tasks, and the extent to which you openly communicated with the counselor. Your counselor will not report any identifiable information about you such as your name or contact information.

**Risks** There are no anticipated risks for participation in this research study.

**Benefits** There may or may not be any direct benefit to you from these procedures. The investigator, however, may learn more about how clients are expected to participate in VR programs. The investigator may also develop a way to measure participation levels of VR clients that will help counselors to identify barriers to client participation, and to understand how to better enable future VR clients to fully participate and benefit from VR programs.

**Explanation & offer to answer questions** Dr. Schultz and Joshua Southwick have explained this research study to you through this letter and answered your questions. If you have other questions or research-related problems, you may reach Joshua at (435) 554-1016.

**Payment/Compensation** There is no cost to you for participating in this research study.

**Voluntary nature of participation and right to withdraw without consequence** Participation in research is entirely voluntary. You may refuse to participate or withdraw at any time without consequence. If you do not want to participate, please tell your counselor.

**Confidentiality** Research records will be kept confidential, consistent with federal and state regulations. Only the investigator and Joshua Southwick will have access to the data which will be kept in a locked file cabinet or on a password protected computer in a locked room. The surveys will be completed through a secure online format. The researchers do not have access to your information or to which counselors complete the survey. The VR agency does not have access to who participated in this survey.



**IRB Approval Statement** The Institutional Review Board for the protection of human participants at Utah State University has approved this research study. If you have any pertinent questions or concerns about your rights or think the research might have harmed you, you may contact the IRB Administrator at (435) 797-0567 or email [irb@usu.edu](mailto:irb@usu.edu). If you have a concern or complaint about the research, and would like to contact someone other than the research team, you may contact the IRB Administrator to obtain information or to offer input.

**Investigator Statement** “I certify that the research study has been explained to the individual, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions that have been raised have been answered.”

**Signature of Researcher(s)**

---

*Dr. Jared Schultz*  
Principal Investigator  
(435) 797-3478  
[Jared.schultz@usu.edu](mailto:Jared.schultz@usu.edu)

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*Joshua Southwick*  
Student Researcher  
(435) 554-1016  
([joshua.southwick@aggiemail.usu.edu](mailto:joshua.southwick@aggiemail.usu.edu))

Appendix E

Renamed Variables of Interest

Table 16 <i>Renamed Variables of Interest</i>		
New Variable Name	Question #	Question text or description
<b>Att1_cancels</b>	Q3.3	If the participant misses (or were to miss) a scheduled appointment, he or she notifies (or would notify) you or the agency prior to the appointment time to cancel or reschedule.
Att2_late	Q3.4	The participant was __ minute(s) late for his or her appointment today.
Att3_leftearly	Q3.5	If the participant left early from today's meeting, estimate the additional number of minutes he or she needed to stay to complete the necessary tasks.__ minutes
Att4_askstosch	Q3.6	At the end of each meeting, the participant asks to schedule the next appointment.
Att5_DaysBLastAppt_1	calculated (Q3.1,Q3.2)	Days between the current and last appointment.
Att6_DaysBLastNextLast	calculated (Q3.2)	Days between the last and the next to last appointment.
Att7_ShowedUpCount	calculated (Q3.1,Q3.2)	Number of appointments participant showed up to (out of last three).
<b>H1_alltasks</b>	Q4.1	During the time from our last meeting to today's meeting, the participant worked on all agreed upon tasks (such as assignments, services, and/or training).
<b>H2_tasksrel</b>	Q4.2	Between our last meeting to today's meeting, the participant engaged in tasks relevant to his or her current VR status (for example, but not limited to, identifying a vocational goal, updating a resume, filling out job applications, etc).
H3_callemail	Q4.3	Between the last meeting and today's meeting, how frequently did the participant call and/or email you?
<b>EC1_rq</b>	Q5.1	During our meeting today, the participant asked relevant questions.
<b>EC2_followup</b>	Q5.2	During our meeting today, the participant asked important follow-up questions.
EC3_impinfo	Q5.3	During our meeting today, the participant shared important information with me.
EC4_ppc	Q5.4	During our meeting today, the participant disclosed personal priorities and/or concerns with me.
EC5_psi	Q5.5	During our meeting today, the participant disclosed personal strengths and/or interests with me.
EC6_dt	Q5.6	During our meeting today, the participant brought up important discussion topics.
EC7_open	Q5.7	During our meeting today, the participant answered questions openly.
EC8_paidatt	Q5.8	During our meeting today, the participant paid attention to the things I said.
EC9_quieter	Q5.9	During our meeting today, the participant was quieter than usual or didn't respond.
<b>EC10_enthus</b>	Q5.10	During our meeting today, the participant demonstrated enthusiasm for the tasks of VR.

<b>ENG1_activelyp</b>	Q6.1	Please rate the following statement on a scale from 0 to 100
<b>ENG2_success</b>	Q6.2	Based on [the current] level of participation, the VR participant will successfully establish and achieve his or her vocational goal.
Effort	Q6.3	Given the functional limitations of the disability, the participant is making an effort to accomplish the objectives of VR.
ENG3_3facets	Q6.4	The VR participant fulfills all facets of his or her role.
UnderstandRole	Q6.5	The participant understands his or her role as an active and full partner in the VR process.

\*Bold items indicate those retained for final analyses

Appendix F  
Descriptive Statistics

Table 17  
Descriptive Statistics

Variable Name	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Att1_cancels	1	6	4.48	1.508	-1.230	.257	.615	.508
<b>Att2_late</b>	0	30	1.69	4.984	<b>3.885</b>	.257	<b>16.857</b>	.508
<b>Att3_leftearly</b>	0	60	3.15	10.744	<b>4.190</b>	.257	<b>18.397</b>	.508
Att4_askstosch	1	5	2.52	1.268	.346	.257	-.905	.508
Att5_DaysBLas tAppt_1	.00	371.00	61.7045	83.32186	2.214	.257	4.678	.508
<b>Att6_DaysBLas stNextLast</b>	.00	707.00	93.8864	115.83207	2.794	.257	<b>9.558</b>	.508
Att7_ShowedU pCount	1.00	3.00	2.8409	.42579	-2.761	.257	7.392	.508
H1_alltasks	1	6	4.35	1.661	-.966	.257	-.290	.508
H2_tasksrel	1	6	4.50	1.626	-1.149	.257	.230	.508
H3_callemail	1	5	2.73	.739	-.391	.257	2.098	.508
EC1_rq	1	6	4.77	1.319	-1.627	.257	2.258	.508
EC2_followup	1	6	4.75	1.206	-1.394	.257	2.116	.508
EC3_impinfo	1	6	5.08	.985	-1.860	.257	4.709	.508
EC4_ppc	1	6	4.88	1.173	-1.327	.257	1.550	.508
EC5_psi	1	6	4.50	1.278	-1.184	.257	.858	.508
EC6_dt	1	6	4.59	1.171	-1.081	.257	.735	.508
EC7_open	1	6	5.06	.998	-1.818	.257	4.930	.508
EC8_paidatt	1	6	5.03	.940	-1.937	.257	6.338	.508
EC9_quieter	1	5	1.86	.886	1.388	.257	2.621	.508
EC10_enthus	1	6	4.59	1.228	-1.186	.257	1.210	.508
ENG1_actively p	10.00	100.00	82.9886	21.62879	-1.495	.257	1.600	.508
ENG2_success	.00	100.00	82.3864	23.92442	-1.866	.257	3.199	.508
Effort	1	6	4.98	1.222	-1.695	.257	2.842	.508
ENG3_3facets	.00	100.00	83.5455	20.44387	-1.948	.257	4.220	.508
UnderstandRol e	1	6	5.01	.877	-1.380	.257	4.092	.508

\*Bold items indicate those with high levels of skewness and/or kurtosis

## Appendix G

### Bivariate Correlations for Variables of Interest

Table 18  
*Bivariate Correlations for Variables of Interest*

		Att1_ca ncels	H1_allt asks	H2_tas ksrel	EC1_ rq	EC2_fol lowup	EC10_ enthus	ENG1_a ctivelyp	ENG2_ success
Att1_ca ncels	Pearson Correlation	1	.450**	.530**	.373**	.262*	.355**	.316**	.393**
	Sig. (2-tailed)		.000	.000	.000	.014	.001	.003	.000
	N	88	88	88	88	88	88	88	88
H1_allt sks	Pearson Correlation	.450**	1	.802**	.394**	.228*	.285**	.197	.175
	Sig. (2-tailed)	.000		.000	.000	.033	.007	.066	.104
	N	88	88	88	88	88	88	88	88
H2_task srel	Pearson Correlation	.530**	.802**	1	.391**	.270*	.276**	.304**	.280**
	Sig. (2-tailed)	.000	.000		.000	.011	.009	.004	.008
	N	88	88	88	88	88	88	88	88
EC1_rq	Pearson Correlation	.373**	.394**	.391**	1	.802**	.644**	.480**	.314**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.003
	N	88	88	88	88	88	88	88	88
EC2_fol lowup	Pearson Correlation	.262*	.228*	.270*	.802**	1	.629**	.626**	.491**
	Sig. (2-tailed)	.014	.033	.011	.000		.000	.000	.000
	N	88	88	88	88	88	88	88	88
EC10_e nthus	Pearson Correlation	.355**	.285**	.276**	.644**	.629**	1	.591**	.480**
	Sig. (2-tailed)	.001	.007	.009	.000	.000		.000	.000
	N	88	88	88	88	88	88	88	88
ENG1_ actively p	Pearson Correlation	.316**	.197	.304**	.480**	.626**	.591**	1	.852**
	Sig. (2-tailed)	.003	.066	.004	.000	.000	.000		.000
	N	88	88	88	88	88	88	88	88
ENG2_ success	Pearson Correlation	.393**	.175	.280**	.314**	.491**	.480**	.852**	1
	Sig. (2-tailed)	.000	.104	.008	.003	.000	.000	.000	
	N	88	88	88	88	88	88	88	88

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

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



## CURRICULUM VITAE

**Joshua D. Southwick**

### **Education**

- 2014**      **Ph.D., Utah State University; Logan, UT**  
 Major: Disability Disciplines (Rehabilitation Counseling specialization)  
 Faculty Adviser: Dr. Jared Schultz
- 2005**      **M.R.C., Utah State University; Logan, UT**  
 Major: Rehabilitation Counseling
- 2004**      **B.S., Brigham Young University-Idaho; Rexburg, ID**  
 Major: Psychology  
 Minor: Child and Family Studies

### **Professional Certifications**

Certified Rehabilitation Counselor (CRC), Certification Number: 00095965  
 Expiration Date: 03/31/2016

Intensive Behavioral Intervention Professional, State of Idaho

### **Professional Experience**

- 2012-2013**      **Director / Interim Director**  
 National Clearinghouse of Rehabilitation Training Materials (NCRTM)  
 Utah State University, Logan, UT (U.S. Department of Education, RSA  
 Grant #H275A100001 - \$900,000)
- 2010-2012**      **Graduate Research Assistant**  
 National Clearinghouse of Rehabilitation Training Materials (NCRTM)  
 Utah State University, Logan, UT
- 2011**              **Rehabilitation Counseling Supervisor**  
 Utah State University, Logan, UT
- 2007 - 2010**      **Senior Counselor for the Blind**  
 Idaho Commission for the Blind and Visually Impaired (ICBVI)  
 Idaho Falls, ID
- 2006-2007**      **Intensive Behavioral Intervention Professional**  
 The Children's Center  
 Idaho Falls, ID

**2005-2006      Rehabilitation Counselor Trainee**  
Utah State Office of Rehabilitation  
Taylorsville, UT

**2004              Youth Specialist**  
Idaho Youth Ranch, Harbor House  
Idaho Falls, ID

### **Professional Teaching**

#### **Human Growth & Development – PSYCH 201**

Online Course Developer & Instructor, asynchronous distance education class

#### **Introduction to Rehabilitation Research – REH 6230**

Primary Instructor, integrated on-campus and distance education class

#### **Introduction to Assessment – REH 6190**

Teaching Assistant, integrated on-campus and distance education class

#### **Rehabilitation Counseling Skill Development – REH 6130**

Teaching Assistant, on-campus class

#### **Introduction to Rehabilitation Research – REH 6230**

Teaching Assistant, integrated on-campus and distance education class

#### **Theories of Counseling Applied to Persons with Disabilities – REH 6200**

Teaching Assistant, integrated on-campus and distance education class

### **Peer Reviewed Publications**

**Southwick, J. D.,** Duran, L. K., & Schultz, J. C. (2013). A pragmatic approach to cultural competency in vocational rehabilitation: The case of Hmong Americans. *Journal of Applied Rehabilitation Counseling, 44*(3), 23-31.

**Southwick, J. D.,** & Millington, M. J. (2013). Enhancing vocational rehabilitation quality through consumer satisfaction surveys: Toward a dyadic logic model. *Journal of Rehabilitation Administration, 37*(2), 65-72.

### **Publications in Preparation**

**Southwick, J. D.,** & Schultz, J. C. (in revision). Factors associated with employment of young adults with visual impairments: A systematic analysis of empirical evidence. *Journal of Visual Impairment & Blindness, V*(i), pp-pp.

**Southwick, J. D.,** Kupferman, S., & Schultz, J. C. (in preparation). The continuing education of Certified Rehabilitation Counselors: Evaluation of intended outcomes. *Journal of Rehabilitation Administration, V*(i), pp-pp.

**Presentations & Posters**

- Southwick, J. D.**, Lewis, M. J., & Schultz, J. C. (2014, March). Technological intoxication: Making learning strategies the designated driver in rehabilitation education. National Council on Rehabilitation Education Spring 2014 Conference. Manhattan Beach, CA.
- Kupferman, S., & **Southwick, J. D.** (2013, November). Universal design for learning in distance education. Poster presented at the National Council on Rehabilitation Education Fall 2013 Conference. Washington, DC.
- Southwick, J. D.**, & Vandergoot, D. (2013, September). Evaluating intended continuing education outcomes. 6<sup>th</sup> Annual Summit on Vocational Rehabilitation Program Evaluation and Quality. Providence, RI.
- Southwick, J. D.**, & Lewis, M. J. (2013, April). Using advanced learning technologies in rehabilitation education. National Council on Rehabilitation Education Spring 2013 Conference. San Francisco, CA.
- Southwick, J. D.** (2012, October). The continuing education of certified rehabilitation counselors: Evaluation through logic models. National Council on Rehabilitation Education Fall 2012 Conference. Arlington, VA. [*Presentation not given due to inclement weather*].
- Southwick, J. D.** (2012, September). Quality assurance of VR services: A new role for consumer satisfaction surveys. 5<sup>th</sup> Annual Summit on Vocational Rehabilitation Program Evaluation and Quality. San Antonio, TX.
- Southwick, J. D.** (2012, April). Enhancing VR quality through consumer satisfaction surveys: A dyadic logic model. Poster presented at the National Council on Rehabilitation Education Spring 2012 Conference. San Francisco, CA.
- Southwick, J. D.** (2012, April). The continuing education of certified rehabilitation counselors: Evaluation through logic models. Poster presented at Intermountain Graduate Research Symposium. Logan, UT.
- Southwick, J. D.** (2011, October). Enhancing vocational rehabilitation quality through consumer satisfaction surveys. 2011 National Rehabilitation Association Annual Training Conference. Salt Lake City, UT.
- Southwick, J. D.** (2011, June). Social skills for entry-level employment: What employers want. Utah Effective Practices Conference for Teachers and Human Service Professionals. Logan, UT.

Bryner, B., Gainan, H., & **Southwick, J. D.** (2008, March). Assistive technology for transition students who are blind or visually impaired. 4<sup>th</sup> Annual Tools for Life: Secondary Transition and Technology Fair. Idaho Falls, ID.

**Southwick, J. D.** (2005, June). Transition to VR: Understanding the philosophical changes of a new model. Utah Conference on Effective Practices in Special Education and Rehabilitation. Logan, UT.

### Community Service

<b>Jan. 2014-present</b>	<b>Secretary, Rehabilitation Program Evaluation Network (RPEN) Division of NRA</b>
<b>Oct. 2013-present</b>	<b>Student Mentor, BYU-Idaho</b>
<b>May 2011-Feb. 2014</b>	<b>Provide short-term counseling and support to church and community members</b>
<b>May 2011-Feb. 2014 Representative</b>	<b>Boy Scouts of America Chartered Organization</b>
<b>Oct. 2009 - Aug. 2010 Region</b>	<b>Projects With Industry Business Advisory Council, SE Region</b>
<b>Sept. 2007 - Aug. 2010</b>	<b>Idaho Falls Community Transition Team</b>

### Current Professional Memberships

National Rehabilitation Association, Rehabilitation Program Evaluation Network (RPEN)

National Council on Rehabilitation Education

### Awards

2010	<b>Presidential Fellowship</b> , Utah State University
2004	<b>Graduate Assistantship</b> , Utah State University
2004	<b>Outstanding Student Award</b> , Brigham Young University – Idaho, Psychology Department
1998	<b>Academic Full-Tuition Scholarship</b> , Brigham Young University – Idaho
1995	<b>Eagle Scout Award</b> , Boy Scouts of America