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Working Alliance and Stages of Change for Employment: The Intermediary Role of Autonomous Motivation, Outcome Expectancy and Vocational Rehabilitation Engagement

Kanako Iwanaga[1] · Fong Chan[2] · Timothy N. Tansey[2] · David Strauser[3] · Ellen Ritter[3] · Malachy Bishop[2] · Jessica Brooks[4,5]

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Abstract
Purpose Working alliance is one of the most important common factors for successful counseling/psychotherapy outcomes. Based on the empirical literature about working alliance, it seems that self-determination and self-efficacy theory (SDT/SET) can potentially be used as a motivational model to explain the relationship between working alliance and vocational rehabilitation (VR) outcomes. The purpose of this study is to evaluate three primary SDT/SET constructs, autonomous motivation, expectancy and engagement, as mediators for the relationship between working alliance and stages of change (SOC) for employment. *Methods* A serial multiple mediation analysis (SMMA) was computed to evaluate autonomy, outcome expectancy, and VR engagement as mediators of the relationship between working alliance and SOC for employment in a sample of 277 people with chronic illness and disability (CID) receiving services from state VR agencies in the United States. *Results* The SMMA results indicated that working alliance was positively associated with SOC for employment (total effect), while the direct effect between working alliance and SOC for employment was not significant after controlling for the effects of the mediators, indicating significant mediation effects. The mediation effects were estimates of the indirect effects for working alliance on SOC for employment through (a) autonomous motivation, (b) outcome expectancy, (c) VR engagement, and (d) autonomous motivation, outcome expectancy and VR engagement together. *Conclusions* The results indicated that a strong working alliance has the benefit of helping consumers develop autonomous motivation to work and increasing their vocational outcome expectancy and engagement in VR services, leading to employment.

Keywords Working alliance · Vocational rehabilitation · Engagement · Self-determination theory · Serial multiple mediation analysis · Stages of change for employment

Introduction

The issue of disability rights has received considerable attention in the field of vocational rehabilitation (VR) since the passage of the Rehabilitation Act of 1973 and its subsequent amendments that mandated client involvement in the rehabilitation planning process [1, 2]. The statutory requirements for an *Individualized Plan for Employment* (IPE) underscore the importance of involving clients as equal partners in the rehabilitation process [1–3]. Within the context of self-determination for treatment adherence and engagement, the consensus is that the goals of rehabilitation can be best achieved when there is maximum client involvement in the development, implementation, and use of medical and vocational rehabilitation services [1, 4–6].

✉ Kanako Iwanaga
iwanaga2@wisc.edu

1 School of Allied Health and Communicative Disorders, Northern Illinois University, Wirtz Hall, DeKalb, IL 60115, USA

2 Department of Rehabilitation Psychology and Special Education, University of Wisconsin-Madison, Education Building, 1000 Bascom Mall, Madison, WI 53706, USA

3 Department of Kinesiology and Community Health, University of Illinois, 213A Huff Hall MC-588, 1206 South Fourth Street, Champaign, IL 61820, USA

4 Department of Psychiatry, Geisel School of Medicine, Dartmouth College, Lebanon, NH, USA

5 Rehabilitation and Health Services, University of North Texas, Chilton Hall 218-G, 410 Avenue C, Suite 218, Denton, TX 76203, USA

The concept of working alliance, originated in counseling/psychotherapy, seems especially applicable for encouraging active participation between clients and rehabilitation health professionals in the rehabilitation process [7, 8]. It reflects a belief that the alliance between the client and the therapists makes it possible for the client to embrace and follow through with the counseling and rehabilitation process based on a sense of ownership [9]. Working alliance is also one of the most important "common factors," or the ingredients that all counseling/therapy approaches share (i.e., empathy, allegiance, and the working alliance), that contribute significantly to positive client outcomes [10–13].

Working alliance is the collaboration between the client and the therapist based on the development of an attachment bond as well as a shared commitment to the goals and tasks of counseling [14]. Bonds are the positive, personal attachments that exist between the client and the therapist including issues such as mutual trust, acceptance, and confidence. Goals are the targets of the intervention that are mutually endorsed and valued by the therapist and the client. Tasks are "in-counseling" behaviors and cognitions that the therapist and the client perceive as relevant and efficacious and that *both* agree to accept the responsibility to perform [15]. When these conditions for working alliance are met, it promotes active participation and partnership between clients and therapists in the counseling and rehabilitation process [1, 7, 8, 16, 17].

Counseling and psychology literature documents the relevance of the working alliance on client outcomes [18–20]. One seminal study that highlights the significance of the working alliance is Wampold's [13] meta-analysis of counseling/psychotherapy outcome study which revealed that 70% of therapists' effect on psychosocial outcome is due to the common factors, 8% to specific ingredients, and 22% due to individual client differences. Flückiger et al. [19] analyzed 190 studies representing over 14,000 clients and found a relatively robust relationship between working alliance and positive counseling outcomes ($r = .27$); equivalent to a Cohen's d of .57 and surpassing the threshold for a medium effect-size (.50) [21]. Likewise, within the field of rehabilitation counseling, working alliance is affirmed as an important element in client outcomes. Lustig et al. [22] surveyed 2732 VR clients and demonstrated that employed clients had a stronger working alliance with their counselors than unemployed clients ($d = .73$; large effect size). Furthermore, clients who had a stronger working alliance also had a higher perception of their future employment possibilities ($r = .51$; large effect), and satisfaction with their current job ($r = .15$; small effect) [22]. Groups of individuals with specific disabilities have also shown the positive impact of working alliance. For example, a positive relationship between alliance and employment outcomes has been identified in individuals with traumatic brain injuries [22], individuals with mild intellectual disabilities [23], and individuals with severe mental illness [24]. Finally, the working alliance is associated with a more positive view of future employment prospects by individuals with severe mental illness [24], individuals with mild intellectual disabilities [23] and cancer survivors [8]. The results of these studies reflect those within the broader counseling and professional psychology fields that the working alliance is central to successful medical and vocational rehabilitation outcomes [25].

Although available empirical literature suggests a strong working alliance is associated with positive counseling and rehabilitation outcomes, there has been a paucity of research completed to date examining the underlying change mechanisms by which working alliance facilitates positive medical and vocational rehabilitation outcomes for individuals with chronic illness and disability (CID). Understanding this mechanism for change represents an important theoretical question that needs to be addressed, as it would provide critical insight regarding how counselors or other health professionals can influence the medical or vocational rehabilitation outcome of individuals with CID. Insights gained from examining the mechanisms of change can also provide critical information to facilitate the development and validation of SDT related interventions for individuals with CID receiving rehabilitation services as well as working alliance-related interventions for rehabilitation health professionals to improve working relationship with their clients, leading to better employment outcomes.

To examine the underlying change mechanisms of the effect of working alliance on rehabilitation outcomes, one method is to utilize motivation theories that have been found to be related to working alliance and counseling outcomes. For example, recently, Tansey et al. [26] evaluated the self-determination theory (SDT) [27, 28] and self-efficacy theory (SET) [29, 30] as an integrated motivation-to-work model in a sample of VR clients and identified a strong relationship between working alliance, autonomy, competence, outcome expectancy, VR engagement and stages of change (SOC) for employment. Vocational rehabilitation engagement was defined by Dutta et al. [31] as comprising the cognitive (e.g., "I understand and accept the need for vocational rehabilitation services"), affective (e.g., "I am determined to complete all the services identified in my individualized plan for employment"), and behavioral (e.g., "I communicate with my rehabilitation counselor regularly") domains related to engagement in rehabilitation services.

Tansey et al. [26] suggest that SDT variables (i.e., autonomy support, autonomy, competence, and relatedness) and SET variables (i.e., competence and outcome expectancy) can be useful in identifying motivational factors that predict VR engagement and employment outcomes. Specifically, SDT postulates that individuals have fundamental psychological needs for autonomy (i.e., free to choose to engage in

an activity), competence (i.e., feeling efficient and capable to master tasks), and relatedness (i.e., feeling connected to and cared for by others in a meaningful way). When these needs are met, the individual is more empowered, more self-motivated, and more willing to participate in activities with persistence [28]. Beyond SDT, another widely applied theory of motivation is SET [29, 30]. One of the most prominent variables of this theory is outcome expectancy—personal beliefs that center on the probable and imagined outcomes of one's actions. For instance, Zuroff et al. [32] examined autonomous motivation (integrated and intrinsic regulation) or the extent to which patients experience participation in treatment as a freely made choice emanating from themselves, as a new common treatment factor. In their study of 95 patients with depression, they found that working alliance was significantly associated with autonomy support and autonomous motivation, and that both working alliance and autonomous motivation were significant predictors of reduction in post-treatment depression severity. Vîslă et al. [33] conducted a study to examine the mediational relationships among working alliance, outcome expectation and treatment outcome in group therapy. They found that the relationship between early alliance and posttreatment interpersonal problems was mediated by during therapy outcome expectation. Vong et al. [34] conducted a randomized controlled trial to evaluate the effectiveness of motivational interviewing training for physical therapists on pain rehabilitation outcomes, with encouraging results. They also used a path analytic model to study the underlying change mechanism of motivational interviewing techniques [25]. They found that motivational interviewing training improved the working alliance between the therapists and their patients, higher levels of working alliance were associated with higher levels of outcome expectancy, and higher outcome expectancy led to better pain rehabilitation outcome. It appears that SDT and SET variables may be mediators that help explain the relationship between working alliance and treatment outcomes.

To reiterate, although there is ample empirical literature to support the relationship between working alliance and counseling/psychotherapy outcomes, there is a paucity of research examining the underlying change mechanisms for this relationship in counseling and rehabilitation. In the present study, we are interested in autonomous motivation (i.e., when a person fully endorse a behavior and experiences volition and "choice") and not controlled motivation (i.e., when a person feels coerced or seduced into behaving, with the experience of pressure and obligation). The assumption is that when a person seeks assistance from VR in order to obtain and retain employment because they find work interesting and enjoyable, they are more willing to engage in VR services to develop job performance self-efficacy and job seeking self-efficacy for employment. Importantly, based on the SDT and SET, we hypothesize that high levels of working alliance will increase clients' autonomous motivation to work, which in turn will increase vocational outcome expectancies and engagement in VR services. Increased outcome expectancy and VR engagement would increase rehabilitation clients' SOC for employment.

With these relationships as the foundation, the primary purpose of this study is to evaluate autonomous motivation, outcome expectancy, and VR engagement as serial multiple mediators for the relationship between working alliance and SOC for employment. The following research question guided our theoretical examination:

1. Is the relationship between working alliance and SOC for employment mediated by autonomous motivation, outcome expectancy, and VR engagement?

Method

Participants

Participants in this study comprised 277 individuals with CID recruited from state VR agencies in Alaska, Kentucky, Florida, Michigan, New Mexico, Texas, Utah, and Wisconsin. Forty-three percent of the participants were White, 10% Black, 41% Hispanic, 4% American Indian or Alaska Native, and 1% Asian; 61% were women; 24% were married or cohabitating. Forty-three percent of participants had sensory or physical disabilities, 35% had mental health disabilities and 22% had developmental disabilities. Seventeen percent of the participants had less than high school education, 23% were high school graduates and 60% had at least some postsecondary education. In addition, using the classification provided by the Organization for Economic Co-operation and Development [35], 21% of the participants were in the age group of 15–24 years (those just entering the labor market following education); 67% were in the age group of 25–54 years (those in their prime working lives); and 10% were in the 55 years and older group (those passing the peak of their career and approaching retirement or in retirement).

Measures

Working Alliance

Working alliance was measured by the 12-item version of the *Working Alliance Inventory* (WAI) [36]. It assesses the goal, bond, and task dimensions of working alliance. The WAI-12 was modified by Chan, McMahon, Shaw and Lee [37] for use in VR settings. Items are rated on a 7-point Likert-type agreement scale ranging from 1 (*never*) to 7 (*always*). The scores on the 12 survey items were averaged,

with higher scores indicating the stronger working alliance. The WAI-VR had an internal consistency reliability coefficient (Cronbach's alpha) of .93 in this study.

Stages of Change for Employment

Stages of change for employment was measured by the 15-item version of the *Stages of Change for Vocational Rehabilitation Scale* (SOC-VRS); Rehabilitation Research and Training Center on Evidence-Based Practice in Vocational Rehabilitation (RRTC-EBP VR) [38]. Stages of change for employment comprises items that represent the four SOC for employment (precontemplation, contemplation, preparation, and action [in employment]). Items are rated on a 5-point Likert-type agreement scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Precontemplation items were reverse-scored and the scores on the 15 survey items were summed and averaged, with higher scores indicating higher SOC for employment. The SOC-VRS had a Cronbach's alpha of .78 in this study.

Autonomy

In this study, we are interested in autonomous motivation (i.e., when a person fully endorse a behavior and experiences volition and "choice") and not controlled motivation (i.e., when a person feels coerced or seduced into behaving, with the experience of pressure and obligation). The assumption is that when a person seeks assistance from VR in order to obtain and retain employment because they find work interesting and enjoyable, they are more willing to prepare engage in VR services to develop job performance self-efficacy and job seeking self-efficacy for employment. Autonomous motivation was measured by the *Vocational Rehabilitation Internal Motivation Scale*—7-item version (VRIMS) [39]. The VRIMS consists of seven items with four items assessing identified motivation and intrinsic motivation to work, and three items assess internal motivation to apply for VR services. Items are rated on a 5-point Likert type agreement scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The score on the seven survey items were averaged with higher scores indicating the higher autonomous motivation for employment. The VRIMS had a Cronbach`s alpha of .80 in this study.

Outcome Expectancy

Vocational rehabilitation outcome expectancy was assessed using the *Positive Vocational Expectancy Survey* (PVES) [40–42]. It assesses the expected benefits from completing the VR program. Respondents rate their level of agreement on 12 statements that begin with the stem: "Completing my vocational rehabilitation program will likely allow me to…" A sample item reflecting a positive outcome was, "… have a job with good pay and benefits." Each item is rated on a 5-point Likert-type agreement scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The scores on the 12-item survey were averaged, with higher scores indicating the more positive outcome expectancy. The PVES had a Cronbach`s alpha of .96 in this study.

Vocational Rehabilitation Engagement

Vocational rehabilitation engagement was measured by the 7-item version of the *Vocational Rehabilitation Engagement Scale* (VRES) [43]. It assesses level of engagement in rehabilitation services. Items are rated on a 5-point Likert type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The scores on the 7-item survey were averaged, with higher scores indicating the higher level of engagement in VR services. The VRES had a Cronbach`s alpha of .92 in this study.

Data Analysis

The Statistical Package for the Social Sciences (SPSS 24.0) for Windows was used for preliminary analyses of descriptive statistics and correlation analysis. The SPSS PROCESS v2.16 macro for SPSS developed by Hayes [44] was used to estimate the total, direct, and indirect effects as well as to implement the bootstrap testing approach recommended by Hayes [45] to test our mediation hypothesis. Mediation analyses were performed using ordinary least squares (OLS) regression to investigate autonomous motivation, outcome expectancy, and VR engagement as mediators of the relationship between working alliance and SOC for employment.

Results

Preliminary Analysis

The results from the correlational analysis indicate most variables were strongly correlated (see Table 1). Working alliance was related to autonomous motivation ($r = .423$, $p < .001$), outcome expectancy ($r = .356$, $p < .001$), VR engagement ($r = .651$, $p < .001$), and SOC for employment ($r = .394$, $p < .001$). Autonomous motivation, outcome expectancy and VR engagement were positively associated with SOC for employment ($r = .358$, $p < .001$, $r = .435$, $p < .001$, and $r = .526$, $p < .001$, respectively). Autonomous motivation and outcome expectancy were positively associated with VR engagement ($r = .516$, $p < .001$ and $r = .425$, $p < .001$, respectively). Autonomous motivation and outcome expectancy was related to each other ($r = .360$, $p < .001$).

Table 1 Correlations of the predictor, serial mediators, and outcome variable

	1	2	3	4	5
1. Working alliance	–				
2. Autonomous motivation	.423**	–			
3. Outcome expectancy	.356**	.360**	–		
4. VR engagement	.651**	.516**	.425**	–	
5. SOC for employment	.394**	.358**	.435**	.526**	–

SOC Stages of change
**$p < .01$

Serial Multiple Mediation Analysis

A serial multiple mediation analysis was computed to evaluate autonomous motivation, outcome expectancy, and VR engagement as mediators of the relationship between working alliance and SOC for employment in a sample of rehabilitation clients. The SPSS PROCESS macro [44] was used to estimate total, direct, and indirect effects. The estimates of the indirect effects were for (a) working alliance on SOC for employment through autonomous motivation (autonomous work motivation), through perceived vocational outcome expectancy, and through VR engagement; (b) through both autonomous motivation and outcome expectancy, through both autonomous motivation and VR engagement, and through both outcome expectancy and VR engagement; and (c) through autonomous motivation, outcome expectancy, and VR engagement. The following are key terms for the path coefficients used to describe the direct, indirect, and total effects:

Direct effect of working alliance: c'
Specific indirect effect of working alliance through autonomous motivation: a_1b_1
Specific indirect effect of working alliance through outcome expectancy: a_2b_2
Specific indirect effect of working alliance through VR engagement: a_2b_3
Specific indirect effect of working alliance through autonomous motivation and outcome expectancy: $a_1d_{21}b_2$
Specific indirect effect of working alliance through autonomous motivation and VR engagement: $a_1d_{31}b_3$
Specific indirect effect of working alliance through outcome expectancy and VR engagement $a_2d_{32}b_3$
Specific indirect effect of working alliance through autonomous motivation, outcome expectancy and VR engagement: $a_1d_{21}\ d_{32}b_3$
Total indirect effect of working alliance: $a_1b_1 + a_2b_2 + a_2b_3 + a_1d_{21}b_2 + a_1d_{31}b_3 + a_2d_{32}b_3$
Total effect of working alliance: $c = c' + a_1b_1 + a_2b_2 + a_2b_3 + a_1d_{21}b_2 + a_1d_{31}b_3 + a_2d_{32}b_3$

The R^2 for the SMMA model was computed to be .35 ($f^2 = .54$), indicating a large effect size. A graphical representation of this model and information for the standardized path coefficients are presented in Fig. 1.

Total Effect

As can be observed in Fig. 1, a strong working alliance is associated with higher level of SOC for employment ($c = .56$).

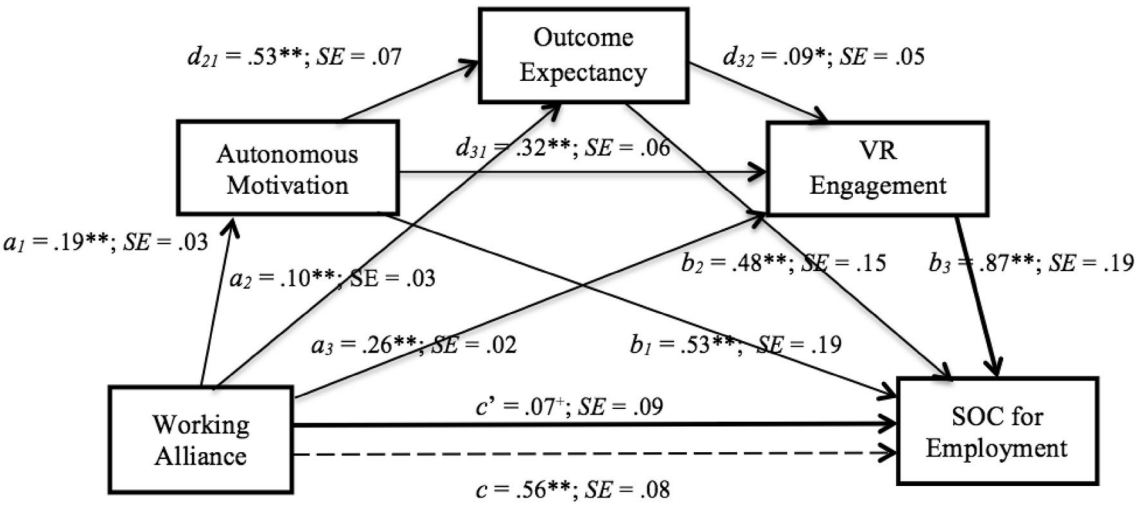

Fig. 1 Path coefficients for serial multiple mediation analysis on stage of change for employment.
Note. Dotted line denotes the effect of working alliance on stage of change for employment when autonomous motivation, outcome expectancy, and VR engagement are not included as serial mediators. a_1, a_2, a_3, b_1, b_2, b_3, d_{21}, d_{32}, d_{31}, and c' are unstandardized ordinary least squares (OLS) regression coefficients. $^{+}p > .05$, $^{*}p \leq .05$,$^{**}p < .01$. *SOC* Stages of change

Direct Effects

Working alliance was directly linked to autonomous motivation, vocational outcome expectancy, and VR engagement (path $a_1 = .19$, path $a_2 = .10$, and path $a_3 = .26$ respectively). Autonomous motivation was positively linked to outcome expectancy, VR engagement and SOC for employment (path $d_{21} = .53$, path $d_{31} = .32$, and path $b_1 = .53$, respectively). Outcome expectancy was positively linked to VR engagement and SOC for employment (path $d_{32} = .09$ and path $b_2 = .48$, respectively). Additionally, VR engagement had a direct effect on SOC for employment (path $b_3 = .87$). Importantly, the direct effect between working alliance and SOC for employment (path $c' = .07$) was not significant after controlling for the effects of the mediators, indicating that the serial multiple SDT/SET mediators completely mediated the effect of working alliance on SOC for employment.

Indirect Effects

The mediation effects were estimates of the indirect effects for working alliance on SOC for employment through (a) autonomous motivation, (b) outcome expectancy, (c) VR engagement, and (d) combination of autonomous motivation, outcome expectancy and VR engagement together. If the bias-corrected bootstrap confidence intervals (CI) for the products of these paths do not include zero, the specific indirect effects would be considered statistically significant [46, 47]. Using the PROCESS procedure with 10,000 bootstrap samples revealed a significant indirect effect of working alliance on SOC for employment:

- Through autonomous motivation (working alliance → [autonomous motivation] → SOC for employment; point estimate = .102, 95% CI: .006 to .231).
- Through outcome expectancy (working alliance → [outcome expectancy] → SOC for employment; point estimate = .048, 95% CI: .009 to .131).
- Through VR engagement (working alliance → [VR engagement] → SOC for employment; point estimate = .225, 95% CI: .097 to .381).
- Through autonomous motivation and outcome expectancy (working alliance → [autonomous motivation → outcome expectancy] → SOC for employment; point estimate = .049, 95% CI: .013 to .116).
- Through autonomous motivation and VR engagement (working alliance → [autonomous motivation → VR engagement] → SOC for employment; point estimate = .053, 95% CI: .023 to .106).

However, the following indirect effect of working alliance on SOC for employment were not significant:

- Through outcome expectancy and VR engagement (working alliance → [outcome expectancy → VR engagement] → SOC for employment; point estimate = .008, 95% CI: − .001 to .039),
- Through autonomous motivation, outcome expectancy and VR engagement was not significant (working alliance → [autonomous motivation → outcome expectancy → VR engagement] → SOC for employment; point estimate = .008, 95% CI: − .002 to .028).

Discussion

In the United States, despite state VR agencies' efforts to provide effective services to help people with CID obtain and maintain employment, the outcome of rehabilitation services also depend on rehabilitation clients' active participation in the development and implementation of their rehabilitation plans. Clients' low motivation to engage in vocational services has been a concern for rehabilitation professionals. Working alliance is one of the most important common factors that underlie the success of all counseling and rehabilitation approaches and is a means to potentially increase VR clients' autonomous motivation and VR engagement [13, 48]. Davidson and Chan [49] showed that factors that constitute good working alliance between practitioners and patients accounts for twice as much of the variance in outcomes than any particular technique. Likewise, the importance of the relationship between the client and the counselor has also been recognized as a critical component to successful VR outcomes and client satisfaction [16, 24, 50]. However, despite research highlighting that working alliance as a powerful determinant of rehabilitation outcomes, little is known regarding the underlying change mechanisms for working alliance that ultimately lead to increased clients with CID's engagement in VR services, and ultimately, obtaining and retaining gainful employment.

In this study, we investigated if the relationship between working alliance and SOC for employment by examining the mediating effect of autonomous motivation, outcome expectancy and VR engagement. We hypothesized that working alliance would increase autonomous motivation, outcome expectancy and VR engagement, leading to higher SOC to obtain and retain employment. Consistent with prior research, the total effect between working alliance and SOC for employment was significant. However, the question of interest in this study was not limited to reaffirming the value of working alliance as an integral consideration in VR services, but rather to identify the underlying change mechanism by which working alliance impacts SOC for obtaining and retaining employment. This is theoretically important because understanding the mechanisms by which working alliance facilitates change will allow for meaningful and

appropriate intervention development and potentially contribute to increased medical and VR outcomes.

Our findings related to this question indicate that after controlling for the effect of autonomous motivation, outcome expectancy, and VR engagement, the direct effect between working alliance and SOC for employment was not statistically significant. The results support our hypothesis that autonomous motivation, outcome expectancy and VR engagement would mediate the relationship between working alliance and SOC for employment, providing potential insight into the mechanisms regarding how working alliance impacts VR outcomes. Specifically, the positive relationship between working alliance and SOC for employment can be explained by the impact of working alliance on autonomous motivation, outcome expectancy and VR engagement. In effect, a positive working alliance creates a pathway to motivate clients to develop autonomous motivation to work, increase clients' vocational outcome expectancy, and improving their engagement in VR services, leading to higher levels of SOC for employment. Examining this finding in isolation of the extant research would provide a useful model in promoting individual involvement and engagement in rehabilitation services. Likewise, as autonomous motivation to work increases so does outcome expectancy and VR engagement. That is, we identified that autonomous motivation was linked to outcome expectancy, and subsequently, that outcome expectancy is linked to VR engagement. However, the broader impact of this finding on the outcomes of rehabilitation services, namely employment and quality of employment, is realized when relating this finding to prior research. Specifically, as outcome expectancy, an assumed product of self-determination, increases so does the SOC for employment, which should lead to increased employment outcomes [41]. Further, as autonomous motivation increases, individuals experience increased work productivity and job performance [51]. Therefore, autonomous motivation, outcome expectancy and VR engagement can be conceptualized as intermediate outcomes of working alliance that have a direct impact on the SOC for employment [26, 52]. These results are consistent with Iwanaga et al.'s [41] findings that increasing autonomous motivation may be associated with an increased level of perceived positive outcome expectancy regarding work. Importantly, the results of this study extend Iwanaga et al.'s findings by providing some initial support that strengthening working alliance in VR service provision is a potentially effective intervention strategy to facilitate the development of autonomous motivation, outcome expectancy, and increase individual engagement in VR services.

Limitations

There are several limitations in this study. First, a convenience sample was used to collect data from persons with CID receiving services from state VR agencies. In addition, the participants completed the assessment instruments online, which may have limited the sample to individuals who were higher functioning, with a higher level of education attainment and have access to the Internet. A review of the responses on the functional impairment and educational attainment items indicate that the sample indeed comprised of this subset of individuals with CID. As a result, the findings of the current study may not generalize to the larger population of people with CID receiving services from state VR agencies. Further, self-report instruments were used to measure all variables in the present study, which increases susceptibility to response bias as well as social desirability bias [53]. The focus of the present study was to evaluate relationships among four key interrelated psychological constructs in a sample of people with CID who were still receiving VR services. The percentage of clients in the "in-employment status" was relatively small (Clients must be in this stage for 90 days before they could be closed as a successful closure). A longitudinal study using the SDT/SET model to predict real-life outcome of actual employment status at closure and beyond will provide a stronger evidence for the explanatory power of the SDT/SET model.

Implications and Future Research

The findings of this study reaffirm the literature regarding the importance of the working alliance on the outcomes of VR services and extend that same literature by identifying the client factors, specifically self-determination/autonomous motivation that leads to higher levels of SOC for employment. Demonstrating this relationship through theoretical models based on a solid measurement model is the first step in developing and evaluating interventions that can ultimately lead to increased capacity of state VR agencies to motivate clients to engage in rehabilitation services and achieve employment at closure. Although autonomous motivation, outcome expectancy and VR engagement were associated with SOC for employment, the findings suggest the primacy of working alliance in rehabilitation and counseling services. Given that the therapeutic relationship between clients and rehabilitation health professionals can take many forms depending on the nature of services provided [54], the results also support the emphasis of pre-service and in-service training directed at building a strong working alliance with individuals served. Prior research has found that one technique that may have the capacity to improve working alliance while fostering autonomous motivation and competence is motivational interviewing (MI) [25, 34]. Motivational interviewing is considered one of the most appropriate motivational interventions and designed to address clients' ambivalence about engaging in health behaviors [12, 34, 55]. Motivational interviewing is a style of counseling

and communication technique designed to assist people in recognizing, exploring, and resolving ambivalence about change, and consequently, increase their internal motivation to engage in, or change, a behavior. Recognizing the inherent value in MI, several state VR agencies including Minnesota, Washington, and Wisconsin have been providing MI training to their counselors. However, to demonstrate the specific benefits of MI on outcomes, future research should continue to evaluate the efficacy of this intervention on improving SDT/SET behaviors in order to identify the specific benefits, and thus, the appropriate utilization of this technique to foster working alliance, self-determination/autonomous motivation, VR engagement and client success. In addition, SDT/SET research has provided guidance for developing evidence-based interventions to improve intrinsic motivation, self-efficacy and outcome expectancy to perform target behaviors such as health promoting behavior. These motivational interventions designed to enhance clients' motivation to change can be adapted and validated for clients' in medical and vocational rehabilitation settings.

Given the initial findings of this study, extending this research with a more diverse group of individuals more typically served through state VR agencies is warranted. Specifically, extending this research with a group of lower functioning and less educated group of individuals with CID would appear to be important. Studies have found that working alliance is a powerful factor in rehabilitation outcomes even for lower functioning individuals. However, it would be important to determine if the cognitively mediated mechanisms of change identified in this study are equally robust mediators for individuals who have lower levels of cognitive functioning. In addition, since prior research has found working alliance to have a significant and positive impact on rehabilitation outcomes for low functioning individuals, there may be other mechanisms of change than those unidentified in the present study that may extend beyond the cognitive mediators. Identifying additional mechanisms of change for lower functioning individuals may lead to broader intervention development and application that may be potentially more generalizable to diverse rehabilitation settings. Furthermore, it would be important to determine if working alliance and its associated mechanisms of change have the same positive impact on all the phases of employment process ranging for vocational identity development to job maintenance.

Finally, the concept of stages of change is increasingly being supplanted by the concept of transitions [56]. Change is often defined as action that people experience even if they are not actively seeking or pursue the outcome of that action. Conversely, transition is the process of transformation of people's minds as they transition through changes. While a "change" can occur very quickly and may not involve much insight on the part of individuals, transition usually occurs more slowly and represents the cognitive restructuring that occurs around the perception of those changes. Since the emphasis of the present study was on motivation, future research exploring the use of transition to employment rather than stages of change for employment as an outcome variable may be warranted.

Conclusion

This present study clarified the relationship between working alliance and SOC for employment in a sample of people with CID receiving services from state VR agencies in the United States. It indicates that building a strong working alliance has the benefit of helping clients develop autonomous motivation to work, autonomous motivation, increase their vocational outcome expectancy, and increase their engagement in VR services, which in turn improve their SOC to obtain and retain employment. This study also showed that autonomous motivation to work also increases outcome expectancy and VR engagement. These findings can be used to inform the development and validation of effective intervention to help counselors and other rehabilitation health professionals develop better working relationship with their clients to increase their autonomous motivation to work, vocational self-efficacy belief and outcome expectancy, leading to successful job placement.

Data Availability The datasets generated during and/or analyzed during the current study are not publicly available due to that we obtained informed consents from our participants on the condition that we use the obtained data for this study purpose but are available from the corresponding author on reasonable request.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Research Involving Human and Animals Participants All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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