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Unraveling the factors influencing engagement in vocational rehabilitation services among transition-age Hispanic youth: An exploratory study

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Abstract.
BACKGROUND: Prior research has investigated the engagement process of vocational rehabilitation (VR) consumers yet limited understanding about transition-age Hispanic youth VR consumers remains.
OBJECTIVE: This exploratory cross-sectional study evaluated the factors predicting VR engagement among transition-age Hispanic youth with disabilities who have received pre-employment transition services (pre-ETS).
METHOD: Descriptive, bivariate correlation, and stepwise logistic regression analyses were conducted in this study. A total of four categories of independent variables (sociodemographic, contextual, theoretical, and pre-ETS related) were selected to investigate their relationship with VR engagement.
RESULTS: Findings revealed that education level, living with family, perceived social support from friends, perceived stigma from others, VR counselors' ability to speak Spanish, competence, vocational outcome expectancy, and number of pre-ETS received were among the significant predictors of VR engagement, with the final model explaining a total of 87.6% of the variance.
CONCLUSION: Findings of this study can help inform practices and policies to bridge the gap surrounding the service delivery and utilization of VR services among transition-age Hispanic youth with disabilities.

Keywords: Hispanic, transition-age youth, employment, vocational rehabilitation, engagement, disability

1. Introduction

Transition-age Hispanic youth with disabilities experience more employment disparities compared to White non-Hispanic youth with disabilities (Eilenberg et al., 2019). In 2021, it was estimated that 25.8% of Hispanic youth with disabilities were employed compared to 29.4% of non-Hispanic youth with disabilities (Erickson et al., 2022). Various research studies have also addressed the employment disparities between these two groups (e.g., Kaya et al., 2016; Sima et al., 2015). Castruita Rios and colleagues (2023) demonstrated that among

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transition-age Hispanic youth in vocational rehabilitation (VR) programs, only 35% of them obtained a job at the end of their VR program. Additionally, a concerning underutilization of individualized VR services has been observed among transition-age Hispanic youth with disabilities (Castruita Rios et al., 2023).

These documented employment disparities and underutilization of VR services among transition-age Hispanic youth with disabilities is concerning due to benefits of employment related to developing a sense of purpose and belongingness, as well as providing opportunities to build work-related skills (Leufstadius et al., 2009; Lindsay, 2011). Although transition-age youth experience challenges in obtaining a job (e.g., limited work skills; Carter et al., 2021), those of Hispanic heritage encounter additional barriers due to cultural differences. Examples of these include acculturation patterns, citizenship status, stigma, language barriers, and systemic barriers (Breeding et al., 2005; Povenmire-Kirk et al., 2010; Velcoff et al., 2010).

1.1. VR programs

VR programs play a key role in supporting the employment goals of transition-age youth with disabilities. The Workforce Innovation and Opportunity Act (WIOA) of 2014 mandated state VR programs allocate 15% of their funding towards the provision of pre-employment transition services (pre-ETS) to transition-age youth with disabilities, particularly those eligible or potentially eligible for VR services (U.S. Department of Labor, n.d.). There are a total of five pre-ETS services available and include the following: counseling on postsecondary education training opportunities, work-based learning experiences, job exploration counseling, instruction in self-advocacy, and workplace readiness training. However, despite it being a decade since the passing of the WIOA of 2014, racial/ethnic disparities in VR programs and employment outcomes have concerningly not changed much.

1.2. Effectiveness of VR services

VR services, individualized and pre-ETS, have been demonstrated to enhance the employment outcomes of transition-age youth with disabilities (e.g., Awsumb et al., 2020), including those of Hispanic heritage (Castruita Rios et al., 2023). However, state differences in service provision have been reported (e.g., Honeycutt et al., 2015; Taylor et al., 2022), possibly impacting the service utilization and employment outcomes of racial/ethnic minority groups such as transition-age Hispanic youth. Yin and colleagues (2021) reported racial/ethnic differences in the application, eligibility, service provision, and employment rates, with White consumers having higher rates than Hispanic consumers. Additionally, individual level (e.g., communication with counselor, support system) and system level (e.g., VR counselors' preparedness to work with transition-age youth) factors have also been attributed to these observed disparities in VR services among transition-age youth with disabilities (Awsumb et al., 2020).

1.3. Engagement in VR services

Engagement in VR services has been described as engagement in three areas: cognitive (e.g., understanding the need for VR services), affective (e.g., getting along with VR counselor), and behavior (e.g., showing up to appointments related to VR program; Dutta et al., 2017). Engagement in the rehabilitation process has been suggested to be critical in achieving successful rehabilitation outcomes, such as attainment of competitive integrated employment (Wagner et al., 2011). Moreover, higher levels of engagement in VR services have been observed to predict successful employment outcomes (Dutta et al., 2017), regardless of the individual's background (Southwick & Schultz, 2019). Furthermore, although there is limited research examining the engagement of transition-age Hispanic youth in VR programs, there are studies that have investigated the engagement of Hispanic individuals with disabilities ages 18 and older. Findings of these studies revealed various factors contributing to the low engagement of Hispanic individuals in disability-related services, including: (a) systemic racism and discrimination; (b) cultural mistrust; (c) lack of culturally appropriate rehabilitation services; (d) having limited understanding on rehabilitation services and processes; (e) language barriers; (f) acculturation patterns (i.e., association to U.S. culture); (g) technology (e.g., access to computer, accessible websites); and (h) legal status (Breeding et al., 2005; Hernández et al., 2006; Mueller Reed et al., 2005; Velcoff et al., 2010). Additionally, among the Latino culture the word "disability" is not always utilized, but rather terms such as "special" or "learn differently" are used. Thus, as suggested by Rivera and Cespedes (1983), differences in the perception and definition of disability

among agencies, providers, and Hispanic individuals can possibly impact their working alliance and participation in services.

1.4. Understanding the engagement process in VR services

Various research studies have investigated the engagement in VR services among individuals with disabilities (e.g., Dutta et al., 2017, 2020; Tansey et al., 2017). Specifically, the theoretical frameworks of Self-Determination Theory (SDT; Deci & Ryan, 2002; Ryan & Deci, 2000) and Social Cognitive Theory (SCT; Bandura, 2004) have been utilized as frameworks to better understand the engagement process of individuals with disabilities in VR services. The SDT provides a framework to comprehend human motivation by stating how three psychological needs (autonomy, competence, and relatedness) must be met for an individual to become internally motivated (Deci & Ryan, 2002, 2012). While the SCT provides a framework to understand the process whereby individuals obtain and maintain behavioral patterns, five components inform this process: knowledge, self-efficacy, outcome expectancy, goals, and facilitators and impediments (Bandura, 2004).

Furthermore, studies that have utilized the frameworks of SDT and SCT have revealed a significant association between constructs of both theories and engagement in VR services. Among VR consumers, the constructs of autonomy, competency, relatedness, and outcome expectancy were positively associated with VR engagement (Dutta et al., 2017; Tansey et al., 2017). Similarly, among transition-age African American youth with disabilities, working alliance (i.e., relatedness) was positively associated with VR engagement (Dutta et al., 2020). Thus, findings of these studies suggest that both SDT and SCT help understand the motivation of individuals with disabilities to engage in VR services. However, it is important to note that none of these studies were centered on transition-age Hispanic youth, resulting in a limited understanding pertaining their engagement process in VR services.

1.5. Rationale and purpose of study

While the examination and understanding of engagement of individuals with disabilities in VR services has been fairly studied, there remains limited understanding specifically towards transition-age Hispanic youth with disabilities. To the knowledge of the authors, this is the first study examining the engagement of transition-age Hispanic youth with disabilities in VR services. The purpose of this study was to investigate the relationship of four categories of independent variables (sociodemographic, contextual, theoretical, and pre-ETS related) in predicting the VR engagement of transition-age Hispanic youth with disabilities. The following research question guided this study:

What is the relationship between sociodemographic, contextual, theoretical, and pre-ETS services related factors and VR engagement of transition-age Hispanic youth with disabilities?

2. Methods

2.1. Procedure

Institutional review board approval was obtained from a midwestern university prior to beginning the recruitment and data collection process. Participants were recruited from state VR programs, Prolific (online platform for researchers to collect data), disability organizations and technical centers, centers for independent living, school districts, and social media platforms (e.g., Facebook disability and/or Latino community groups). The first author contacted state VR directors and directors and coordinators of the organizations and school districts and asked for the flyer to be shared with counselors and providers working with transition-age Hispanic youth. Participants had the opportunity to participate in the study by completing the Qualtrics survey online or by phone and had the option to respond the survey in English or Spanish. Participants who completed the survey received an electronic gift card of $10 USD.

2.1.1. Quality control of data

Additional security features were implemented to prevent and manage fraudulent responses (i.e., duplicates, bots). Security features within Qualtrics were implemented including embedded questions only visible to bots, CAPTCHA question, and a "RelevantID" feature helping detect bots (score of 30 or higher) and duplicates (score of 75 or higher; Qualtrics, n.d.). Additional steps were implemented such as reviewing the IP addresses of submissions and removing duplicates, as suggested by Goodrich and colleagues (2022). Responses that did not pass the security features were dropped.

2.2. Participants

Participants in this study had to meet the following criteria: (a) identify as Hispanic; (b) be between the ages of 18 and 22; and (c) either currently receiving pre-ETS at the time of the survey or had previously received pre-ETS prior to applying for adult services. Furthermore, because of the selected inclusion criteria, the sample in this present study was focused only on participants residing in the U.S.

2.3. Data analysis

A descriptive analysis was conducted to examine the characteristics of the sample of this study. Second, a correlation analysis was performed to examine the relationships between variables. Third, a psychometric overview was conducted for each measure used in this study to evaluate the reliability (Cronbach's alpha). Lastly, a stepwise regression analysis was conducted to identify the significant predictors of VR engagement among transition-age Hispanic youth. A stepwise regression analysis was utilized due to it serving as a useful technique for exploratory studies via its model-building analysis, helping eliminate variables that are unessential in helping inform future research (Tabachnick & Fidell, 2007).

2.4. Measures

A total of nine measures and a short questionnaire were utilized in this study. All measures were available to participants in English and Spanish. For measures that did not have a Spanish version available, the first author translated them and sought additional feedback from a second reviewer to ensure the items were translated correctly. The first author and second reviewer are both fluent in English and Spanish and have a background in rehabilitation counseling.

2.4.1. Multidimensional scale of perceived social support (MSPSS)

The *Multidimensional Scale of Perceived Social Support* (MSPSS; Zimet et al., 1988, 1990) was used to measure social support. This scale measures social support from three specific sources: family, friends, and special person. The scale is comprised of 12 items rated on a 7-point Likert-type scale (1 = *very strongly disagree* to 7 = *very strongly agree*). However, for this study, a 5-point Likert-type scale (1 = *strongly disagree* to 5 = *strongly agree*) was utilized. An English and Spanish version of the MSPSS scale was available. To ensure consistency between both versions, an item (item 13; *please identify who the* "*special person*" *is*) was added to the English version. In this study, the observed Cronbach's alpha for the MSPSS full scale was 0.89, followed by 0.74, 0.69, and 0.71 for the "special person," family, and friends subscales, respectively.

2.4.2. Self-stigma of seeking help

Self-stigma was measured via the *Self-Stigma of Seeking Help* (SSOSH; Vogel et al., 2006) scale. The scale is comprised of 10 items (e.g., "Seeking psychological help would make me less intelligent") and is rated on a 5-point Likert-type disagreement and agreement scale, with higher scores indicating a greater stigma on seeking psychological help. A Spanish version of the SSOSH scale was developed by the first author in consultation with a second reviewer. Minimal changes were made to this scale to capture participants' views in the context of the VR setting, such as replacing "psychological help" with "vocational rehabilitation services" (e.g., "Seeking *vocational rehabilitation services* would make me less intelligent"). In this study, the observed Cronbach's alpha was.70.

2.4.3. Perceptions of stigmatization by others of seeking help (PSOSH)

The *Perceptions of Stigmatization by Others of Seeking Help* (PSOSH; Vogel et al., 2009) was utilized to measure participants' concerns about being stigmatized by people close to them. The scale provides a prompt ("Imagine you had an academic or vocational issue that you could not solve on your own. If you sought counseling services for this issue, to what degree do you believe that the people you interact would ____".) and later asks respondents to rate five items (e.g., "React negatively to you") on a 5-point Likert type scale (1 = *not at all* to 5 = *a great deal*). Given this study was focused on VR settings, a small adaptation to the scale was made (e.g., the word "rehabilitation" was added before "counseling services"). Additionally, despite the scale adaptation by Cheng et al. (2013) providing more specific groups (e.g., family, friends, professors, or academic departments), "professors or academic departments" was changed to "vocational rehabilitation counselors" due to this study's focus on VR settings. The total number of items of the version of the scale used in this study was 15 items (5 items for each group). In this study the Cronbach's alpha was of.97.

2.4.4. Bidimensional acculturation scale (BAS)

The *Bidimensional Acculturation Scale* (BAS; Marín & Gamba, 1996) was utilized to measure participants' acculturation patterns. The BAS scale measures respondents' identification with non-Hispanic (i.e., U.S. mainstream culture) and Hispanic cultural domains particularly in three language related areas: language use (e.g., "How often do you speak in Spanish/English?"), linguistic proficiency (e.g., "How well do you read in Spanish/English?"), and electronic media (e.g., "How often do you listen to music in Spanish/English?"). The BAS scale is available in English and Spanish, is comprised of a total of 24 items (12 items for each area) and each item is rated on a 4-point Likert-type scale (1 = *never* to 4 = *often or very well*). The BAS scale provides two scores, one for each cultural domain (non-Hispanic, Hispanic), with scores ranging from 1 to 4. Participants scoring higher than 2.5 indicate a higher acculturation and those scoring below a 2.5 a low acculturation, while scoring higher than 2.5 in both cultural domains indicates "biculturalism" (Marín & Gamba, 1996). In the present study, the BAS scale had a Cronbach's alpha of 0.88 and 0.93 for the non-Hispanic and Hispanic cultural domain, respectively.

2.4.5. Working alliance inventory (WAI-S)

Participants' working alliance with their VR counselor was assessed via the *Working Alliance Inventory* (WAI-S; Horvath & Greenberg, 1989). The 12-item version of WAI-S utilized in Dutta et al. (2017) was utilized in this study due to its application within VR settings (e.g., "____ and I collaborate on setting goals for my vocational rehabilitation services"). However, for this study a 5-point Likert type scale (1 = *never* to 5 = *always*) was utilized. A Spanish version of the WAI-S scale was available (Andrade-Gonzalez & Fernandez-Liria, 2016); small edits were made to ensure compatibility with the Dutta et al. (2017) version. In this present study, the Cronbach's alpha was of 0.87.

2.4.6. Vocational outcome expectancy scale (VOES)

Participants' vocational outcome expectancy (VOE) was measured via the *Vocational Outcome Expectancy Scale* (VOES). The VOES was developed by the Rehabilitation Research and Training Center for Evidence Based Practice in VR (RRTC-EBP VR; Iwanaga et al., 2017).

This scale consists of 11 items and respondents are asked to rate their level of agreement (5-point Likert-type scale; 1 = *strongly disagree* to 5 = *strongly agree*), of each vocational outcomes statement that completed the following sentence, "Completing my vocational rehabilitation program will likely allow me to:". The items are comprised of negative ("experience increased responsibilities") and positive outcomes ("have a job with good pay and benefits"). A Spanish version of VOES was developed by the first author in consultation with a second reviewer. In this present study, the Cronbach's alpha was 0.73.

2.4.7. Vocational self-efficacy scale (VSES)

The *Vocational Self-Efficacy Scale* (VSES; Fitzgerald et al., 2016) was used to assess participants vocational self-efficacy. The VSES is an adaptation of the *Life Skills Inventory* (LSI; Chan et al., 2003) that evaluated the life essential skills for assertive community living and work. The adaptation of VSES resulted in a reduction of items from 24 to 15, with only items pertaining vocational self-efficacy being kept (e.g., "I know how to prepare for a job that is of interest to me"). This scale is comprised of 15-items and were rated on a 4-point Likert-type scale (1 = *strongly disagree* to 4 = *strongly agree*). A Spanish version of VOES was developed by the first author in consultation with a second reviewer. In this present study the Cronbach's alpha was of 0.81.

2.4.8. Vocational rehabilitation internal motivation scale (VRIMS)

The *Vocational Rehabilitation Internal Motivation Scale* (VRIMS) was utilized in this study to evaluate participants' internal motivation to engage in VR services. The VRIMS was developed by the RRTC-EBP VR (2014). The scale consists of 7 items, 4 items evaluating the internal motivation to work and 3 items the internal motivation to apply for VR services. Items are rated on a 5-point Likert-type scale (1 = *strongly disagree* to 5 = *strongly agree*). A Spanish version of VOES was developed by the first author in consultation with a second reviewer. In the present study the Cronbach's alpha was 0.55.

2.4.9. Vocational rehabilitation engagement scale (VRES)

The *Vocational Rehabilitation Engagement Scale* (VRES; Dutta et al., 2017) was utilized to measure participants' engagement in VR services. The VRES consists of 9 items, 3 items for each of the three areas: cognitive (e.g., "I understand and accept the need for vocational rehabilitation activities"), affective (e.g.,

"I get along with my rehabilitation counselor"), and behavior (e.g., "I show up for appointments related to my rehabilitation program"). Items are rated on a 5-point Likert-type scale (1 = *strongly agree* to 5 = *strongly agree*). Ratings of items are summed, with higher scores indicating a higher level of engagement in VR services. In this present study, the Cronbach's alpha was of 0.87.

2.4.10. Development of questionnaire

A brief questionnaire was developed to collect participants' sociodemographic information and responses to pre-ETS related questions (i.e., number of pre-ETS received, ratings of the perceived quality, relevance, and usefulness of pre-ETS received). Participants were asked to select all the pre-ETS they had received followed by rating the perceived quality, relevance, and usefulness of those pre-ETS. Participants were asked to rate their perceived quality of pre-ETS using a 5-point Likert-type scale (1 = *very poor* to 5 = *very good*), and the perceived relevance and usefulness (1 = *extremely irrelevant* to 5 = *extremely relevant*; 1 = *extremely not useful* to 5 = *extremely useful*).

2.5. Variables

A total of 32 independent variables and one dependent variable were examined in this study. Independent variables were categorized into four categories: sociodemographic, contextual, theoretical, and pre-ETS related factors. The sociodemographic category included the following 13 variables: gender, age, race, primary disability, secondary disability, years with disability, English native language, community residing in (i.e., urban, rural), highest education level, family's annual income, disability benefits, living with family, and generational status (e.g., first generation American). The contextual factors were comprised of 11 variables: acculturation (i.e., U.S. cultural domain, Hispanic cultural domains), perceived social support (e.g., friends, family, special person), self-stigma, perceived stigma of close individuals, and four counselor-client variables (i.e., disability, spoke Spanish, gender, Hispanic). The theoretical factors category, selected from the SDT and SCT, included four variables: autonomy (i.e., internal motivation), competence (i.e., self-efficacy), relatedness (i.e., working alliance), and VOE. The pre-ETS related factors included four variables: number of pre-ETS received, and ratings on the perceived quality, relevance, and usefulness of pre-ETS received. Lastly, the dependent variable in this study was participant's VR engagement.

3. Results

3.1. Descriptive statistics

A total of 140 participants were recruited (social media = 113; disability organizations = 14; VR = 10; Prolific = 3). Participants were most frequently White (60%), female (49%), had a mean age of 20 years old (SD = 1.14), English was their native language (68%), lived in an urban area (83%), had a high school diploma or equivalent (47%), had a family annual income between $50,000 and $59,000 (19%), were SSI recipients (40%) or SSDI recipients (40%), lived with family (95%), identified as a third-and-higher generation American (47%), and reported having their disability for an average of 8 years ($SD = 5.10$). Additionally, the majority of participants (over 70%) demonstrated having a high acculturation to Hispanic and U.S. culture, thus indicating they were a "bicultural" group (Marín & Gamba, 1996). See Table 1 for further details on the participants' sociodemographic characteristics.

As for disability types, majority of participants reported a primary disability of amputation or missing limbs (21%), followed by attention-deficit/hyperactive disorder (ADHD; 14%), anxiety disorder (14%), autism (12%), and blindness or low vision (7%). For secondary disability type, majority of participants reported anxiety disorder (18%), followed by multiple disabilities (13%), amputation or missing limbs (12%), autism (12%), ADHD (8%). See Table 2 for additional details.

3.1.1. Reported VR characteristics and pre-ETS services ratings

The majority of participants revealed that their VR counselor did not have a disability ($n = 76$; 54%), spoke Spanish ($n = 93$; 66%), were Hispanic ($n = 97$; 69%), and were the same gender as them ($n = 93$; 66%). Additionally, participants reported receiving three pre-ETS on average ($SD = 1.59$). Participants' ratings on the pre-ETS received indicated that on average pre-ETS were of *good* quality ($M = 4.05$, $SD = 0.63$), were *somewhat* relevant ($M = 4.15$, $SD = 0.60$), and *somewhat* useful ($M = 4.21$, $SD = 0.56$).

Table 1
Sociodemographic characteristics of participants ($n = 140$)

Variable	*n*	%
Gender		
Female	69	49%
Male	67	47%
Non-binary	2	1%
Transgender	2	1%
Race		
White	84	60%
Black or African American	30	21%
American Indian or Alaska Native	9	6%
Native Hawaiian or Pacific Islander	2	1%
Other	15	11%
English native language		
Yes	95	68%
No	45	32%
Type of community residing		
Urban	116	83%
Rural	24	17%
Highest level of education		
Less than high school	2	1%
Some high school experience	7	5%
High school diploma or equivalent	66	47%
Associate or some postsecondary education experience	37	24%
College degree	24	17%
Some graduate school	5	4%
Graduate degree (master's level or higher)	2	1%
Other	1	1%
Family annual income		
Less than $10,000	5	4%
$10,000 to $19,999	1	1%
$20,000 to $29,999	21	15%
$30,000 to $39,999	6	4%
$40,000 to $49,999	19	14%
$50,000 to $59,999	26	19%
$60,000 to $69,999	15	11%
$70,000 to $79,999	13	9%
$80,000 to $89,999	18	13%
$90,000 to $99,999	14	10%
More than $100,000	2	1%
Disability benefits		
SSI	56	40%
SSDI	56	40%
None	28	20%
Living with family		
Yes	133	95%
No	7	5%
Generational status		
First generation American	18	13%
Second generation American	56	40%
Third-and-higher generation American	66	47%

Note. SSI = Supplemental Security Income; SSDI = Social Security Disability Insurance; participant who responded "other" reported receiving dual credit college courses.

Table 2
Primary and secondary disabilities of participants ($n = 140$)

	n	%
Primary Disability		
Amputation or missing limbs	30	21
ADHD	20	14
Anxiety disorder	19	14
Autism	17	12
Blindness or low vision	10	7
Bipolar disorder	8	6
PTSD	7	5
Deaf or hard of hearing	6	4
Chronic pain	4	3
Fibromyalgia	3	2
Intellectual disability	3	2
Diabetes	2	1
Cancer	1	1
Celiac disease	1	1
Crohn's disease	1	1
HIV/AIDS	1	1
Major depression	1	1
Migraine headaches	1	1
Multiple Sclerosis	1	1
Schizophrenia	1	1
Spinal cord injury	1	1
Other	2	1
Secondary Disability		
Anxiety disorder	25	18
Amputation or missing limbs	17	12
Autism	17	12
ADHD	11	8
Bipolar disorder	11	8
Major depression	10	7
Chronic pain	7	5
Migraine headaches	5	4
PTSD	5	4
Blindness or low vision	4	3
Spinal cord injury	3	2
Deaf or hard of hearing	2	1
Celiac disease	1	1
Intellectual disability	1	1
Other	3	2
More than one	18	13

Note. ADHD = Attention-deficit/hyperactivity disorder. PTSD = Post-traumatic stress disorder. Participants who responded "other" for primary disability reported having either a developmental disability or spina bifida. Participants who responded "other" for secondary disability reported having either only one disability, a speech and language disorder, or Stickler syndrome.

3.2. Correlation analysis

A correlation analysis was conducted to examine the relationships between all the variables ($n = 33$) in this study. Correlations ranged from $r = –0.58$ to $r = 0.81$ between all the categories of independent variables (sociodemographic, contextual, theoretical, and pre-ETS related factors) and the dependent variable (VR engagement), see the Appendix for more details. Correlations between the dependent variable and independent variables ranged from $r = –0.38$ to $r = 0.72$. These correlations suggest a low to high association between the selected independent variables and VR engagement. See Table 3 for more details.

Table 3
Descriptive analysis and correlations between independent variables and vocational rehabilitation engagement

Independent Variable	*n*	M (SD)	VR Engagement (*r*)
Gender	140	0.56 (0.60)	0.07
Age	140	20.12 (1.14)	–0.18*
Race	140	1.94 (1.59)	0.07
Primary disability	140	5.81 (5.70)	0.26**
Secondary disability	140	8.84 (8.12)	0.11
Years with disability	140	7.76 (5.10)	0.14
English native language	140	0.68 (0.47)	–0.07
Community residing	140	0.83 (0.38)	0.11
Highest education level	140	3.70 (1.13)	0.32**
Family annual income	140	6.27 (2.50)	–0.06
Disability benefits	140	1.20 (0.75)	0.10
Living with family	140	0.95 (0.22)	–0.15
Generational status	140	2.34 (0.70)	–0.02
Hispanic cultural domains	139	2.75 (0.67)	0.59**
U.S. cultural domains	139	3.19 (0.50)	0.71**
Perceived social support from special person	140	3.84 (0.74)	0.72**
Perceived social support from family	140	3.85 (0.67)	0.64**
Perceived social support from friends	140	3.71 (0.72)	0.55**
Self-stigma	140	2.70 (0.60)	–0.38**
Perceptions of stigma by others	140	2.58 (1.08)	–0.22**
Disability match with VR counselor	140	0.51 (0.61)	–0.03
VR counselor spoke Spanish	140	0.78 (0.54)	–0.11
Gender match with VR counselor	140	0.69 (0.46)	–0.13
Ethnicity match with VR counselor	140	0.84 (0.56)	0.50**
Autonomy	140	3.69 (0.51)	0.64**
Competence	140	3.02 (0.41)	0.66**
Relatedness	140	3.64 (0.64)	0.61**
Vocational outcome expectancy	140	3.59 (0.52)	–0.07
Number of pre-ETS services received	137	3.08 (1.59)	0.60**
Quality of pre-ETS services	89	4.05 (0.63)	0.54**
Relevance of pre-ETS services	89	4.15 (0.60)	0.70**
Usefulness of pre-ETS services	90	4.21 (0.56)	0.07

Note. Descriptive statistics for VR engagement ($n = 140$; $M = 3.91$; $SD = 0.70$). Pre-ETS services = pre-employment transition services. Scale used to measure self-stigma was inverted. $^{*}p < 0.05$. $^{**}p < 0.01$.

3.3. Full model: Predictors of VR engagement

A stepwise regression analysis was conducted to examine the relationship between the four categories of independent variables (sociodemographic, contextual, theoretical, and pre-ETS related) and the dependent variable (VR engagement). The final model (model 4) explained a total of 87.8% of the variance (adjusted $R^2 = 0.878$) and revealed several variables were significantly associated with VR engagement. Model 1 included the sociodemographic variables and resulted in a total of 27.3% of the variance explained, suggesting this set of variables had some significant effect on VR engagement. Model 2 included sociodemographic and contextual variables, explaining 78.8% of the variance. Based on the observed increase in variance explained between model 1 and 2 ($\triangle R^2 = 0.459$), it suggests that contextual factors have an impact in VR engagement. Model 3 consisted of sociodemographic, contextual, and theoretical variables, resulting in 87.2% of the variance explained. Although the difference of percentage of variance explained between model 2 and 3 is small ($\triangle R^2 = 0.065$), it suggests that the selected theoretical variables play a role in VR engagement. Lastly, model 4 included sociodemographic, contextual, theoretical, and pre-ETS related variables. Model 4 explained a total of 87.8% of the variance explained (adjusted $R^2 = 0.878$, F (4, 45) $= 1.567$, F change $= 0.200$). The change in variance explained was small between model 3 and 4 ($\triangle R^2 = 0.010$) and not significant. The rationale for this is that model 3 explained a high percentage of the variance (87.5%) thus only leaving a small amount of variance unexplained, limiting how much exactly the preceding model is able to explain.

A total of eight variables were identified as statistically significant predictors of VR engagement in Model 4 (full model). Specifically, these were comprised of the following variables: highest education level ($B = 0.11$, $p < 0.05$), living with family

Table 4
Predictors of participants' engagement in vocational rehabilitation services

Variable	*B*	*SE*	*t*	*p*	95% CI	
					LL	UL
Sociodemographic						
Gender	0.05	0.05	0.93	*ns*	–0.06	0.16
Age	0.01	0.03	0.33	*ns*	0.07	–0.06
Race	–0.00	0.02	–0.15	*ns*	–0.05	0.05
Primary disability	0.02	0.01	1.95	*ns*	–0.00	0.04
Secondary disability	–0.00	0.01	–0.30	*ns*	–0.02	0.01
Years with disability	–0.01	0.01	–1.60	*ns*	–0.03	0.00
English native language	–0.10	0.12	–0.87	*ns*	–0.33	0.13
Community residing	–0.14	0.12	–1.20	*ns*	–0.37	0.09
Highest education level	–0.11	0.04	–2.59	*	–0.20	0.03
Family annual income	0.05	0.03	1.63	*ns*	–0.01	0.11
Disability benefits	–0.07	0.06	–1.15	*ns*	–0.19	0.05
Living with family	0.66	0.21	3.15	**	0.24	1.08
Generational status	–0.05	0.07	–0.68	*ns*	–0.19	0.10
Contextual Factors						
Hispanic cultural domains	0.06	0.10	0.63	*ns*	–0.14	0.26
U.S. cultural domains	0.04	0.11	0.36	*ns*	–0.19	0.27
Perceived social support from special person	0.18	0.10	1.78	*ns*	–0.02	0.39
Perceived social support from family	0.12	0.10	1.18	*ns*	–0.08	0.32
Perceived social support from friends	–0.24	0.09	–2.52	*	–0.42	–0.05
Self-stigma of seeking help	0.16	0.10	1.60	*ns*	–0.04	0.37
Perceived stigma of others seeking help	–0.18	0.06	–3.18	**	–0.30	–0.07
Disability match with VR counselor	–0.14	0.09	–1.62	*ns*	–0.32	0.04
VR counselor spoke Spanish	–0.29	0.13	–2.20	*	–0.56	–0.02
Gender match with VR counselor	–0.05	0.10	–0.48	*ns*	–0.26	0.16
Ethnicity match with VR counselor	0.32	0.16	2.00	*ns*	–0.00	0.65
SDT-SCT Factors						
Autonomy	0.13	0.12	1.07	*ns*	–0.12	0.38
Competence	0.36	0.15	2.35	*	0.05	0.67
Relatedness	0.17	0.09	1.84	*ns*	–0.02	0.35
Vocational outcome expectancy	0.26	0.12	2.22	*	0.02	0.50
Pre-ETS Related Factors						
Number of pre-ETS received	–0.09	0.04	–2.34	*	–0.16	–0.01
Quality of pre-ETS	–0.02	0.11	–0.15	*ns*	–0.24	0.20
Relevance of pre-ETS	0.01	0.08	0.13	*ns*	–0.15	0.17
Usefulness of pre-ETS	0.02	0.01	0.21	*ns*	–0.18	0.22

Note. Pre-ETS = pre-employment transition services. $^{*}p < 0.05$. $^{**}p < 0.01$. $^{***}p < 0.001$. *ns* = not significant. CI = confidence interval. LL = lower level. UL = upper level.

($B = 0.66$, $p < 0.10$), perceived social support from friends ($B = 0.24$, $p < 0.05$), perceived stigma of others ($B = 0.18$, $p < 0.10$), VR counselor speaking Spanish ($B = 0.29$, $p < 0.05$), competence ($B = 0.36$, $p < 0.05$), VOE ($B = 0.26$, $p < 0.05$), and number of pre-ETS services received ($B = 0.09$, $p < 0.05$). See Table 4 for more details.

4. Discussion

Although prior research has examined the factors associated with engagement in VR services among individuals with disabilities, there is limited research focused on transition-age Hispanic youth with disabilities. This study aimed to identify the factors predicting VR engagement among transition-age Hispanic youth with disabilities. Findings of this study identified several predictors of VR engagement, providing an overview of individual and counselor factors influencing engagement in VR services among transition-age Hispanic youth with disabilities.

4.1. Predictors of VR engagement

Our findings on the full model revealed several positive and negative predictors. Participants who lived with family, had higher competence, and a higher VOE were more likely to engage in VR services; whereas those who had a higher education level, higher perceived social support from friends,

a higher level of perceived stigma of others, had a counselor who spoke Spanish, and received more than one pre-ETS were less likely to engage in VR services. Although there is limited literature examining the association between living with family and engagement in service, prior literature has noted that a higher family cohesion was associated with a lower likelihood of using mental health services (Chang et al., 2013). Moreover, our findings on higher levels of competence and VOE associated with a higher VR engagement aligned with prior studies (e.g., Dutta et al., 2017, Tansey et al., 2017).

Contrary to our findings, Dutta and colleagues (2017) did not observe any relationship between education level and VR engagement. Moreover, our findings on social support from friends do not align with prior studies suggesting a positive relationship between support from friends and participation in services (Sanchez et al., 2016). Although we did not gather additional information pertaining the type of support received, a possible explanation could be that participants' friends may not relate with having a disability. Kita and colleagues (2020) observed that among youth girls in concussion recovery, they reported at times feeling misunderstood by peers due to them not having a disability and not always understanding their diagnosis. Thus, participants' friends could have similarly not had a disability and understood the purpose of participating in VR services.

Consistent with the literature, higher levels of perceived stigma of others is associated with a lower likelihood of engaging in services, such as withdrawing themselves from interacting with professionals (Francis et al., 2020). Additionally, having a common language in counselor-client relationships has been associated with better outcomes (Flaskerud, 1991) and increased working alliance and effectiveness of sessions (Dolgin et al., 1987). Considering that the majority of our sample reported English was their native language, it could result that for the majority of participants having a "common language" with their counselor meant speaking in English during sessions. Thus, for this sample having a counselor that spoke Spanish did not necessarily result in providing a "common language" in sessions and consequently not positively impact their VR engagement.

Our finding suggesting a negative relationship between the number of pre-ETS received and VR engagement was surprising. Primarily considering the provision of pre-ETS is intended to support their employment outcomes while indirectly their ongoing engagement in VR services. Given the limited examination of these variables, additional research is warranted to further comprehend this observed relationship. Researchers should investigate possible factors (e.g., youth's understanding of services, quality of services) that could help explain this observed relationship, along with if this relationship is also observed among transition-age youth from other racial/ethnic groups.

Our overall findings can be interpreted as individual and counselor factors influencing VR engagement among transition-age Hispanic youth. First, individual factors predicting VR engagement included: education level, living with family, perceived social support from friends, and perceived stigma by others. VR counselors should take these factors into consideration when working with transition-age Hispanic youth with disabilities given its influence on their engagement in services. Second, counselor factors predicting VR engagement included: language spoken by VR counselor, competence, VOE, and number of pre-ETS provided. Although VR counselors' ability to speak Spanish was a negative predictor of VR engagement and considering our sample disclosed a preference for English, it can still be concluded that having a "common language" during sessions is important. Thus, it is imperative for VR programs to have Spanish translators available in cases where Hispanic youth may express a preference for speaking Spanish and a Spanish speaking VR counselor is not available. Additionally, given the significant impact competence and VOE had on VR engagement, VR counselors should implement SDT and SCT interventions aimed at enhancing these factors. An example of a strategy that can increase individual's competence include providing positive feedback while working with Hispanic youth in setting attainable and realistic goals (Iwanaga et al., 2017).

4.2. Implications

As an effort to reduce the observed disparities in VR service provision and utilization among transition-age Hispanic youth, the authors have the following recommendations: (a) development and implementation of culturally appropriate training and interventions, and (b) improving outreach efforts towards this group. Researchers have consistently called for culturally sensitive training for service providers working with Hispanic individuals to ensure services are provided in consideration of Latino culture (e.g., Breeding et al., 2005; Velcoff et al., 2010), yet there is limited information

pertaining to the curriculum of these trainings and the frequency these trainings occur across state VR programs. Hispanic individuals with disabilities have previously disclosed negative experiences with VR counselors, such as lack of responsiveness, being excluded from process, and experiencing discriminatory and prejudiced attitudes by service providers (Francis et al., 2020; Hernandez et al., 2006; Velcoff et al., 2010). Furthermore, ensuring service providers are culturally competent to work with transition-age Hispanic youth is vital to the counselor-client relationship, the rehabilitation process, and ultimately the ongoing engagement of this group in VR programs.

There is also limited research to date on the existing outreach efforts utilized by state VR programs towards recruitment of transition-age Hispanic youth. A recent study revealed that training in outreach efforts towards Hispanic VR consumers was the fifth most important training need identified by personnel from state VR programs and community-based rehabilitation agencies (Tansey et al., 2023). Hence, the need for reevaluating and possibly expanding outreach efforts is evident. Velcoff and colleagues (2010) emphasized the need for culturally responsive outreach efforts with consideration of acculturation differences among Hispanic individuals. Considering Hispanic individuals may experience cultural mistrust from service providers, outreach efforts should be expanded through other sources that may be perceived as more trustworthy to this group. For example, Shedlin and colleagues (2011) discovered that religious institutions and social networks (e.g., relatives and friends from their native countries) were successful avenues in recruiting individuals from this group, while Lee and colleagues (2023) recommended state VR programs outreach efforts focus on augmenting the advocacy, community education, and participation with the Latino community to support and build trusting relationships. Moreover, state VR programs can start to expand their outreach efforts and build positive relationships by sharing information about VR programs via radio stations, community centers, and religious institutions.

Lastly, considering the age range of transition-age youth can be as early as 14 years old, development of outreach programs at the middle school level are also necessary. Implementing VR outreach programs for transition-age Hispanic youth at the middle school level can provide families and youth the opportunity to learn earlier about the transition process and provide them with the opportunity to familiarize with the components in transition planning (e.g., developing an Individualized Education Plan Available services).

Furthermore, policy should continue to emphasize the need for developing goals and strategies to meet the needs of underserved groups such as those of transition-age Hispanic youth with disabilities. As mentioned, development and implementation of culturally sensitive training for service providers along with a reevaluation and expansion of outreach efforts can help enhance the quality of service provision and the engagement of transition-age Hispanic youth. Specifically, increased collaboration between educational agencies and employment service providers can help facilitate the implementation of outreach programs at the school level, which can in turn increase engagement in services at a younger age and increase the likelihood of successful transition outcomes.

4.3. Limitations

There were several limitations to this study that may impact the generalizability of its findings. First, the inclusion criteria of the sample, the findings may not be representative of all transition-age Hispanic youth with disabilities, because we focused on a particular age range and our participants were already associated with a VR program. Additionally, considering the sociodemographic characteristics of our sample, it does not fully encompass individuals for whom English may not be their first language, are first-generation, are not living with family, and may have a different disability. Participants were not asked about the length of time they had been receiving pre-ETS, which could have impacted their responses particularly in the perceived quality, relevance, and usefulness of pre-ETS, thus findings of this study should be interpreted cautiously. Second, because one of the recruitment methods was via social media and financial compensation was provided, it increases the risk for fraudulent responses. Although multiple measures were taken to sustain the quality and validity of the responses, there remains a small risk of bots breaching the set safety measures. Thus, results should be interpreted cautiously. Lastly, transition-age Hispanic youth were examined as pan-ethnic racial groups. The Hispanic community is quite diverse, with differences existing in in culture, migration histories, and language. Thus, we recognize that the findings of this study may not be reflective of all transition-age Hispanic youth with disabilities.

5. Conclusion

This study aimed to identify the predictors of VR engagement among transition-age Hispanic youth with disabilities. Multiple predictors of VR engagement among transition-age Hispanic youth were identified, which consisted of: age, English being their native language, family's annual income, living with family, social support, self-stigma, competence, VOE, perceived quality and usefulness of pre-ETS, and number of pre-ETS received. Findings of this study contribute to the literature on VR engagement among transition-age youth and provide suggestions for policy makers and service providers.

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None to report.

Conflict of interest

The authors declare that they have no conflict of interest.

Ethics statement

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Informed consent

All participants completed a consent form prior to participating in the study.

Supplementary materials

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