Language, Education and Culture Research
ISSN 2766-3302 (Print) ISSN 2766-3310 (Online)
Vol. 3, No. 1, 2023
www.scholink.org/ojs/index.php/lecr

Original Paper

Factors that Influence the Sociological Construct of *Adulthood* in Adults with Moderate Intellectual Disabilities (ID): An ID Case Study

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Received: April 18, 2023 Accepted: May 17, 2023 Online Published: June 2, 2023

doi:10.22158/lecr.v3n1p51 URL: http://dx.doi.org/10.22158/lecr.v3n1p51

Abstract

The most common criteria used to evaluate successful transition into adulthood for young adults have included obtaining employment and establishing autonomous non-relative social support networks (correlate to community involvement). Hence, employment and community involvement are critical in the transition to adulthood for all young adults, including those with intellectual disabilities (ID). However, with respect to those with ID, the construct of Adulthood is multi-faceted and murky. Hence, this exploratory study seeks to determine factors (measured by the Transition Planning Inventory-2) that impact the sociological construct of Adulthood in young adults with ID and to model pictorially the relationship between them. Results indicate for adults with ID, vocational purpose, community involvement, and wellness explain 47% of the variance in the sociological construct of Adulthood. Factor analysis reveals that vocational purpose is characterized by employment and self determination; community involvement by leisure activity, community participation, and interpersonal relationships; and wellness by health and daily living.

Keywords

adult transition, intellectual disability, vocation, community, wellness

1. Introduction

The transition to adulthood is stressful for families of developing youth (Henninger & Taylor, 2014; Lucas-Thompson, 2013; Burger & Samuel, 2016; Eliason, Mortimer, & Vuolo, 2015; Krahn, Howard, & Galambos, 2015). The transition includes both psychological and social maturation; constructs that are

problematic among adolescents with Intellectual Disabilities (ID) (Frankli, Beyer, Brotkin, Maslow, Pollock, & Docherty, 2019; Malapeia & Thupayagale -Tshweneagae, 2020; and Malapeia, Thupaygle-tshweneagae, & Marshalls, 2020). Hence, families of adolescents with Intellectual Disabilities (ID) experience even greater challenges in the transition to adulthood (Curle, Bouhali, Zhu, Marshall, Murray, Parada, Stainton, Wall, Wu, & Young, 2021; Henninger, Taylor, & Lounds, 2014; Leonard, et al., 2016); Nucifora, Walker, & Eivers, 2022). Furthermore, the very definition of adulthood is not clearly defined with young people with ID. The very metrics that are usually employed -- when both physical and intellectual maturity is attained, leading to social and economic autonomy -- cannot be used when referring to the ID (Davenport & Zolnikov, 2022; Salt, Melville, Jahoda, 2019; Taubner, Tideman, & Nyman, 2022). Nor can the legal age of 18 be appropriately utilized as a proxy for adulthood in people with ID.

For the ID, objective role transitions have become hallmarks identifying successful transition into adulthood even amongst persons with ID themselves (Nucifora, Walker, & Eivers, 2022; Salt, Melville, & Jahoda, 2019). The most common criteria used to evaluate successful transition into adulthood have included obtaining employment and establishing autonomous non-relative social support networks (Marion, Paulsen, & Goyette, 2017). Ties to community and involvement within communities have been correlates of how a person establishes non-relative forms of social support (Finn, Holmes, & Johnson, 2014; Young et al., 2017). Since social support has been linked to increased ability to transition successfully into adulthood (Lui, Chung, Wallace, & Aneshensel, 2013) examining community involvement that can extend a social network is a vital predictor of transition success.

By these standards, employment and social support/community involvement are critical in the transition to adulthood for all adults; this is especially true for those with intellectual disabilities (ID). The ability to live a meaningful adult life, included in society, is of utmost importance for individuals with ID and is unattainable without society accepting the philosophy of inclusion.

A primary purpose of IDEA (2004) is to prepare students with disabilities for life after school including employment, independent living, and adulthood. IDEA specifically addresses the transition from school into adulthood and employment settings. However, the public supports for adults with ID drastically declines when individuals phase out of the education system, and the ability to live independently and thrive in adulthood differs vastly depending on the familial and community resources and support extended (Association of Regional Center Agencies, 2003; Prouty, Smith, & Lakin, 2001; Brown, Macarthur, Higgins, & Chouliara, 2019). Consequently, there is significant social validity in researching the social construct of *Adulthood* with adults with intellectual disabilities.

Squarely aligned to research findings, this paper investigates the social construct of *Adulthood* and the factors that impact vocational purpose, social involvement, and wellness for adults with intellectual disabilities. This research addresses the following questions:

- What are the potential factors that impact the sociological construct of *Adulthood* for adults with moderate intellectual disabilities?

● What model represents the relationship between the construct of adulthood and its potential factors?

2. Method

This study examined the independent living skills of young adults with moderate intellectual disabilities (ID) who lived semi-independently in a university residence hall in terms of their success in transitioning to adulthood. Prior to this research, Human Subjects' approval was obtained as well as consent from each participant for this study. *2.1 2.1 Participants and Setting*

We conducted research with the young adults who lived in the Community Inclusion House, which is a unique residence hall in a small university in the Midwest region of the United States. All roommates shared a bathroom and common living areas, such as a kitchen, a TV room and laundry machines. Each roommate had his/her own bedroom. Six young adults with M-ID shared this small residential setting with roommates without disabilities. There were four rooms in each of the six pods; roommates without disabilities occupied three of these rooms while one room housed an adult with ID. The nondisabled roommates were full-time graduate students. Because of this type of living arrangement, the roommate without disabilities had intimate knowledge of the independent living skills demonstrated by adults with ID.

Purposive sampling was used to select participants who had primary knowledge of the young adult with ID's personalities as well as direct knowledge of their independent living skills (Fraenkel & Wallen, 1993). The selected participants (n=12) were six young adults with ID (ages 23-30), each with his/her roommate without disabilities (ages 21-26). One hundred percent of those recruited participated.

Two parallel forms are enclosed in the *Transition Planning Inventory*-2 (TPI) instrument. One form was self-rating of transition related independent skills for the individual with a disability. The other form required the nondisabled person to rate the individual with a disability on the same transition related independent skills. The TPI uses a Likert scale with the rating ranging from a zero to five, with zero being DK (i.e., "don't know") or NA (i.e., "not applicable") to a strong rating of five.

2.2 Procedures

A packet containing a formal invitation to participate, a consent form, and a self-addressed, stamped return envelope was mailed to the all roommates with ID as well as the six roommates without disabilities. The young adults with ID were their own guardians and able to indicate consent to participate in the study; but for full disclosure, the guardians were also notified and consent was given. The packet of information was mailed out again for those who did not initially respond. These repeated mailings resulted in a 100% response rate from the six roommates with ID and the six roommates without disabilities.

Upon receiving consent, the T*ransition Planning Inventory*-2 (TPI) was mailed to each nondisabled roommate. Upon completion of the survey, the participants mailed the completed TPI back to the researchers in a self-addressed stamped envelope. All of the individuals who signed the consent form returned a completed TPI (n = 6). For the individuals with ID, three research assistants orally

administered the TPI. These research assistants received over three hours of training from the principal investigators on how to orally administer the TPI. For fidelity of implementation, the three research assistants were all present as the TPI was individually administered. In detail, one research assistant administered the TPI while the other two research assistants watched the procedure. Furthermore, these research assistants were required to come to consensus on these TPI scores. Because of this procedure, inter-rater reliability was computed as 100 percent. All participants (both disabled and nondisabled) were asked not to place their names on the TPI and an identifying number was placed on each survey. This number system allowed for anonymity, as well as eliminated any potential risk or repercussions for all participants.

2.3 Data Analysis

This study used the two forms (self-rating and peer/roommate rating) contained in the TPI instrument where the ratings ranged from a zero to five, with zero being DK (i.e., "don't know") or NA (i.e., not applicable) to a strong rating of five. A Bootstrapped Kappa Coefficient was calculated to determine if there was a significant difference between the self-assessment score and the roommate's score; the Kappa coefficient was chosen because both scorers scored the same person. There was no appreciable difference between the two sets of scorers; their scores ranged from moderate to very strong agreement, with an overall score of 85%.

The TPI questions were reclassified to correspond with the sociological constructs of *Adulthood*, characterized by two major direct effects: Vocational Purpose and Community Involvement and one supplemental effect of Wellness. Wellness both undergirds (or has an interaction effect on) the other two constructs, and directly impacts *Adulthood* on its own. The two major constructs are each measured by 15 TPI questions; Wellness is measured by 12 TPI questions. A description of the constructs and number of associated TPI questions are shown in Table 1 below:

Table 1. Breakdown of TPI Questions for the overarching Construct of Adulthood

Latent construct		
Vocational Purpose		
Employment	Job-related paid or volunteer	5
Self Determination (Self Assessment)	Appropriately self-assess; accurate appraisal of abilities relative to employment	5
Further Education	Training and academic access	5
Community Involvement		
Leisure Activity	Off-work pursuits	3
Community Participation	Active citizenry; social competence; utilizes community services and resources	6
Interpersonal relationships	Establishes and maintains professional and	6

	personal relationships	
Wellness		
Health	Managing physical & mental health	6
Daily Living	Personal hygiene & everyday tasks	6

Note. The overarching construct of Adulthood is not shown in this table; the three latent constructs (Vocational Purpose, Community Involvement, and Wellness) characterize Adulthood

A structural equation path diagram follows (Figure 1 below); this is the hypothesized model based on the sociological construct of *Adulthood*. This diagram illustrates the eight observed variables (rectangles) and three latent variables (ovals) in two ways: (A) the measurement portion of the model relates the observed variables to its construct (latent) variables. The arrows point from the explanatory (causal) variable to the response (effect) variable. (B) The structural portion of the model shows the relationship among the three latent constructs and the overarching construct of *Adulthood*.

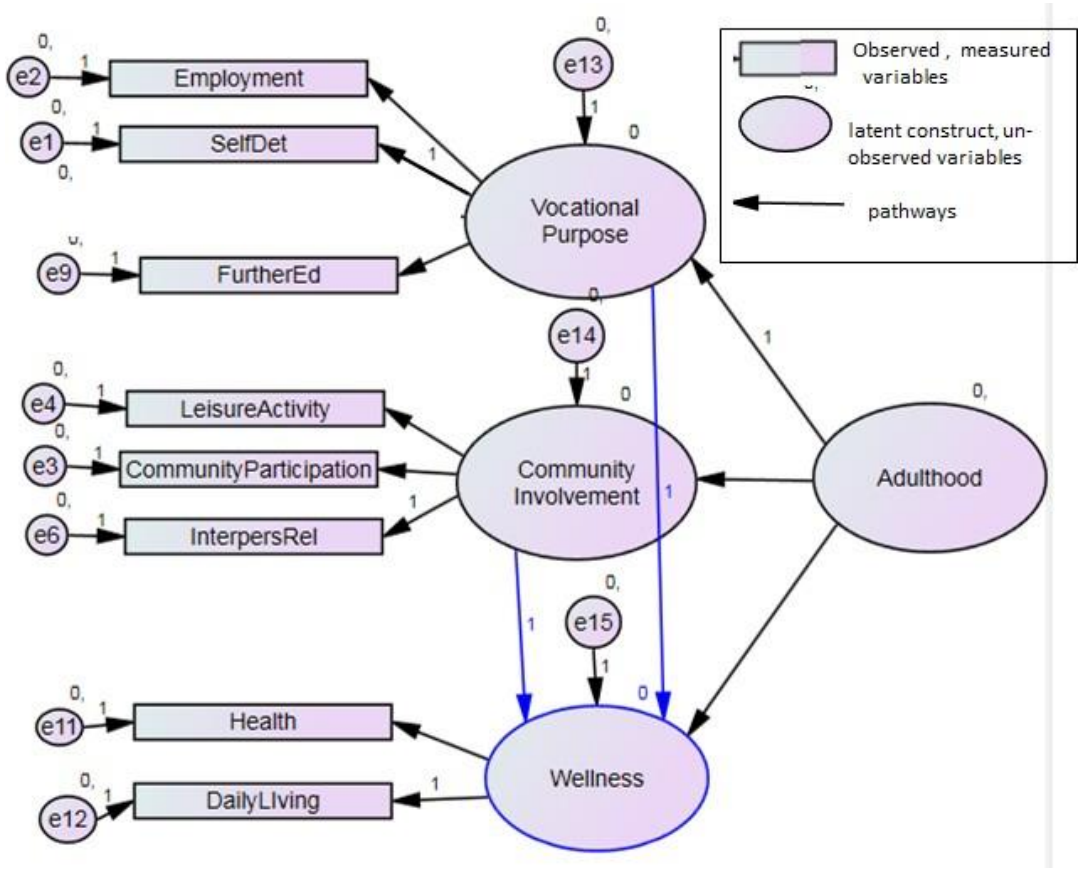


Figure 1. Hypothesized Model for Adulthood: Measurement and Structural Model

To compare magnitudes of each construct, effect sizes (standardized Beta and R^2) are reported (Cahan & Eyal, 2011; Landis & Koch, 1977). The squared partial correlation (R^2) determines the percent of

variance explained for each of the predictor/observable variable characteristics. All assumptions (i.e., linearity, normality, and homoscedastic) were met, except for sample size, which was mediated by bootstrapping (n = 1000) prior to inputting into AMOS. There are some legitimate concerns regarding utilizing SEM with small samples sizes - even bootstrapped, generally due to normality issues, non-convergence problems, and underestimating the magnitude of indirect effect sizes (Kline, 2016; Sheather, 2009). However, these challenges were not experienced or moderated herein. All of our SEM models converged and minimum was achieved, indicating that the variance and covariance were estimated without error (Bian, 2012; Byrne, 2016; Wolf, Harrington, Clark, & Miller, 2015). Nevertheless, due to the small sample the results should be used to depict trends, pointing towards potential factors that impact the social construct of *Adulthood* as evidenced by these adults with moderate ID.

Construct validity of the *Adulthood* construct based upon the TPI items (vocational purpose, community involvement, and wellness) was confirmed (α = 05, .875). Content validity was evaluated by comparing the TPI questions to that of other transition assessments, such as the *Enderle-Severson Transition Rating Scale* and the *Arc's Self-Determination Scale*.

Descriptive statistics (e.g., means and standard deviations) were reported for each of the *Adulthood* sub-constructs (vocational purpose, employment, and wellness) as well as for the observable factors defining each. These are outlined below; the factors are italicized:

- Vocational Purpose: *Employment, Self Determination, Further Education*
- Community Involvement: *Leisure Activity, Community Participation, Interpersonal Relationships*
- Wellness: Health, Daily Living

Bootstrapped or Randomized (Chance Model) Tests of Significance were run to determine which descriptive statistics levels of the measured or observed variables

within a construct were significant. These tests included an Independent t-test (for two means, i.e., wellness sub-construct) and an ANOVA (for multiple means (i.e., vocational purpose and community involvement constructs). In each case, the independent variable is the construct, with levels; and the dependent variable is the TPI Score. An ANOVA was also run to determine which latent variables most impacted *Adulthood*. The independent variable was the sub-constructs for *Adulthood* (vocational purpose, community involvement, and self-determination) and the dependent variable was the overall *Adulthood* score.

A Structural Equation model was run to determine the factors that most impact the social construct of *Adulthood* and to determine the best pathway (a priori) to model the interaction between endogenous (dependent) and exogenous (independent) variables. The hypothesized path model was constructed, and adjusted as standardized estimates were loaded and analyzed. The five commonly reported model fit summary statistics (Kline, 2016) are reported as show in Table 2 below. Each of the fit index's recognized cut-off for goodness of fit are also stated.

Table 2. Common SEM Fit Statistics and Accepted Cut-offs for Good Fit

SEM Indices	Description	Acceptable cut- off
Model relative Chi-square $\chi 2$/df (CMIN/DF)	Assesses the overall goodness of fit; less sensitive to sample size and determines if model minimum is achieved	Not significant p-value (> .05)
Normed Fit Index NFI	Fit index for smaller sample size. The percent determines the extent to which the model's fit is improved in relation to the null (e.g., 80 = 80% improvement)	>.80 -.95
Comparative Fit Index CFI	Good index for smaller sample size, comparing the observed and predicted covariance matrices.	>90
Root Mean Square Error of Approximation RMSEA	Non-centrality parameter that approximates model error. IT is the most common fit measure, but underestimates fit for small sample size	Close to zero
P of Close Fit (close fitting model) PCLOSE	One-sided p-value that for RMSEA for small sample size	Not significant p-value (> .05)

3. Results

To ascertain results, we surveyed the adults with moderate ID as well as their roommates using the appropriately designated TPI form. Descriptive results indicate that the adults with ID demonstrated a strong sense of *Adulthood* in many sub-constructs relating to vocational purpose, community involvement, and wellness. The adults with ID scored highest in the major area of community involvement (81%) and the supplemented area of wellness (77%); these were not significantly different ($p > .05$). However, they scored significantly lower in vocational purpose (64%, $p = .02$), which is a large part of the sociological characteristic of *Adulthood*. Nevertheless, each of these factors was significant and so explained a large part of the variance sociological construct of *Adulthood*.

Within the sub-construct of vocational purpose, the adults with ID performed (observably) best in self-determination (87%) and significantly poorer in the area of further education (19%). Within the sub-construct of community involvement, the adults with ID performed equally well (88%) in both the areas of interpersonal relationships and leisure activity. The area needing most improvement is community

participation (69%). Within the sub-construct of wellness, there was no statistical difference between the behaviors that encapsulate (Health, 74%; Daily Living 79%, p = .24). Table 3 provides detailed descriptive statistics and indicates with an asterisk (*) the significant pairwise factors within a construct (e.g., E: SD*, means that there was a significant difference between the factors of employment and self-determination). If no asterisk follows the pairwise comparison, the factors were not significant (e.g., LA: IR, means that there was no significant difference between perceived behaviors in leisure activity and interpersonal relationships). These means and standard deviations reflect the combined scores of the adults with ID and his/her roommate.

Table 3. Descriptive Statistics and Significance within Latent Constructs (n=1000)

	Bootstrap Mean	Bootstrap Std Dev	Factor Significance within Constructs*
Vocational Purpose	**3.20**	**0.10**	
Employment (E)	3.89	0.27	E : SD*
			E : FE*
Self Determination (SD)	4.33	0.17	S : FE*
Further Education (FE)	0.933	0.20	
Community Involvement	**4.07**	**0.22**	
Leisure Activity (LA)	4.39	0.21	LA : CP*
			LA : IR
Community Participation (CP)	3.43	0.41	CP : IR*
Interpersonal Relationships (IR)	4.40	0.15	
Wellness	**3.83**	**0.23**	
Health	3.69	0.29	H : DL
Daily Living	3.97	0.25	

Note. These means are based upon a 5-point Likert Scale Significance, α= .05

3.1 SEM Models

Three model iterations were developed in order to determine the best model to depict the sociological construct *Adulthood*. Table 4 below summarizes each model iteration's fit indices and the rationale for all changes made. For reference, the acceptable cut-offs for good fit are in italics under the heading. Fit indices that were met are indicated with a superscript up arrow ($^{\uparrow}$); indices not met are indicated with a superscript down arrow ($^{\downarrow}$). The accepted, final model, then illustrates the most impactful factors that characterize the social construct of *Adulthood* for the adults with moderate ID in our study.

Table 4. SEM Models: SEM Fit Statistics and Acceptable Score

	CMIN/DF	NFI	CFI	RMSEA	PCLOSE
	(>.05 - not sig)	*(>.80-.85)*	*(>.90)*	*close to zero*	*(>.05-not sig)*
Model 1	22.64, df=17, p=.16↑	.70↓	.86↓	.05↑	.45↑

Changes made: Within the construct of Vocational Purpose, Further Education was not significant; thus, it was removed. There was weak relationship between the construct Wellness and Adulthood. The relationship between Wellness to Vocational Purpose and Community involvement was also low. We revisited this in Model 2.

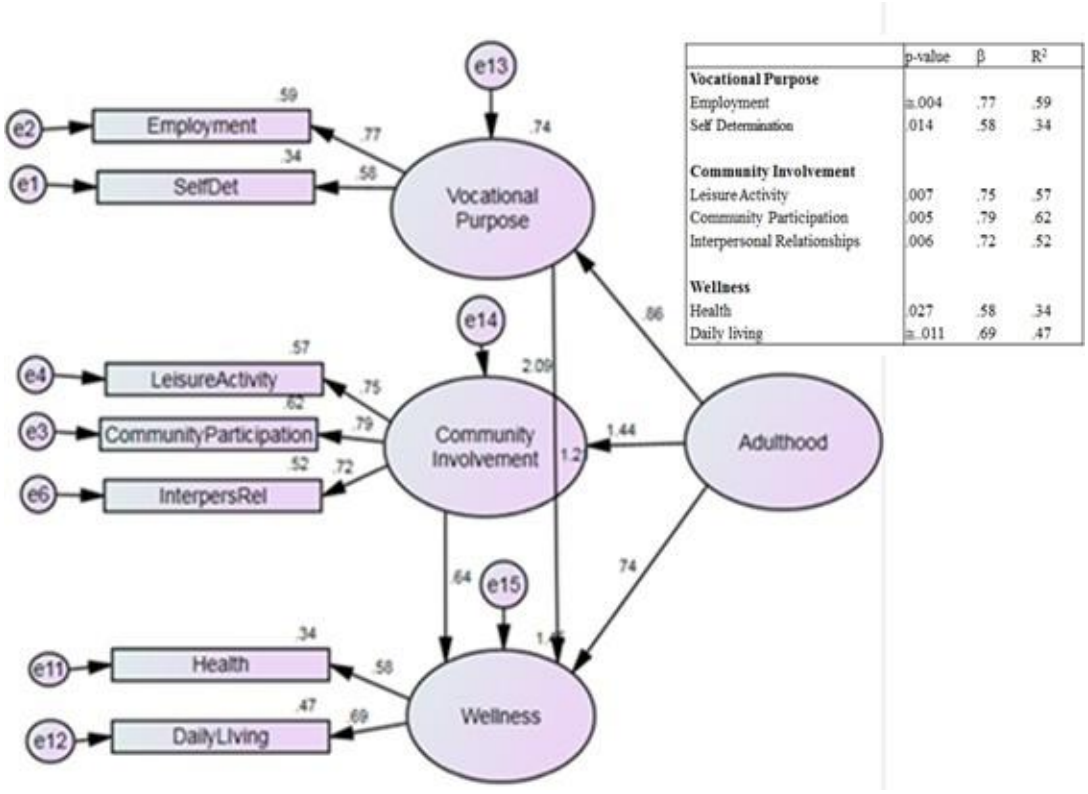
Model 2	CMIN/DF	NFI	CFI	RMSEA	PCLOSE
	13.43 df=11, p=.27↑	.79↓	.93↑	.05↑	.45↑

Changes made: By removing Further Education, the CFI became acceptable, meaning this model was acceptable. However, the impact of the factors employment and self-determination on Vocational Purpose decreased somewhat. The relationship between the latent construct of wellness and Adulthood increased significantly; but the relationship between Vocational Purpose and Community Involvement remained stable. Still, to investigate, we decreased Wellness to a secondary position, not directly linked to Adulthood. All factors were significant

Model 3	CMIN/DF	NFI	CFI	RMSEA	PCLOSE
	21.48 df=13, p=.06↓	.67↓	.67↓	.07↑	.24↑

3.2 Approved, Final Model #2

The final model (shown below in Figure 2) confirms that vocational purpose, community involvement, and wellness are sub-constructs that describe *Adulthood*; the coefficient of determination (R^2) reflected for each factor within the construct are all between 34% and 62%; this is very good for behavioral science research (See Figure 2). On average, this model explains approximately 49% of the variance within.



	p-value	β	R^2
Vocational Purpose			
Employment	<.004	.77	.59
Self Determination	.014	.58	.34
Community Involvement			
Leisure Activity	.007	.75	.57
Community Participation	.005	.79	.62
Interpersonal Relationships	.006	.72	.52
Wellness			
Health	.027	.58	.34
Daily living	<.011	.69	.47

Figure 2. The SEM Path Model for Adulthood and the Standardized Estimates of the Model

This model validates that vocational purpose is a valid sub-construct for *Adulthood*, and is characterized by both employment and self-determination. The greatest factor for success is Employment, which explains 59% of Vocational purpose; for every one standard deviation rise in employment, adults with moderate ID should increase in their vocational purpose by a little more than 3/4s of a point (β=.77). For every one standard deviation increase in self-determination, vocational purpose should increase by more than half (½) a point.

Community involvement is also a valid sub-construct for *Adulthood*, and is characterized by three factors, listed here by greatest impact: community participation, leisure activity, and interpersonal relationships. For every one standard deviation increase in community participation, the adult with ID should increase almost 4/5ths of a point (.79 of a point (β = .79). Similarly, leisure activity should increase 3/4ths of a point (β = .75); and interpersonal relationships by .72. These participants were stronger in community involvement than any other construct for *Adulthood*.

Wellness was shown to have a dual roll; the skill set undergirds both vocational purpose and it directly relates to the construct of *Adulthood*. The greatest factor impacting wellness is daily living. It explains 47% of its variance and for every one standard deviation improvement in daily living skills, wellness will improve a little more than 2/3rds of a point (β = .39).

4. Discussion

This research identified three key sub-constructs of *Adulthood*: vocational purpose, community involvement, and wellness. For the purpose of this study, vocational purpose was defined as paid or unpaid job-related activities or employment. Employment and self-determination are both factors of vocational purpose and significantly relate to the construct of *Adulthood*. Employment skills are often taught to individuals with ID in the high school setting during the transition process, yet employment data indicates that only 25% of individuals with ID and other types of developmental disabilities are employed in the American workforce (Ticha, Hewitt, Nord, & Larson, 2013). Additionally, self-determination relates to autonomy, choice, and the ability to formulate personal goals and values (Brown, Hatton, & Emerson, 2013). These three aspects greatly impact vocational purpose as they provide substantial freedoms to individuals with ID and emphasize the importance of individual control as a basic human right (Brown, Hatton, & Emerson, 2013). Furthermore, other theories like the Person-environment fit (P-E fit) theory illustrate how vocation and purpose can generate fulfillment. P-E fit highlights the degree to which individual and environmental characteristics match culminating in both employee retention and fulfillment. Since vocational purpose is a strong predictor of fulfillment during *Adulthood* for individuals with ID, further research should address how to help such individuals gain meaningful employment opportunities. (Bakker & Demerouti, 2014; Bakker, Tims, & Derks, 2012).

Community involvement is a significant sub-construct related to *Adulthood*. The results from this study indicate that the participants had the strongest scores related to community involvement. Research indicates that community participation and interpersonal relationships are major domains related to quality of life for individuals with ID (Brown, Hatton, & Emerson, 2013).

Wellness is a unique predictor that impacts an individual's ability to participate in community activities and complete vocational tasks. Wellness is defined as an individual's ability to care for their health and conduct daily living tasks. Individuals with ID often need explicit modeling and instruction regarding how to complete daily living and health tasks such as obtaining housing, using various modes of transportation, managing money, and practicing hygiene skills (Finn, Holmes, & Horton, 2016).

5. Limitations and Conclusion

5.1 Limitations

The results from this study provide meaningful information regarding the factors that impact fulfillment in *Adulthood* for individuals with ID. We suggest that individuals with ID require similar factors (i.e., vocational purpose and community involvement) as members of the broader community. However, the current study relies on a small sample size. Bootstrapping was used to mitigate the sample size, yet we are still cautious when generalizing these results to the broader population of adults with ID.

5.2 Conclusions

The purpose of this current study was to determine the construct of *Adulthood* as it relates to individuals with ID. The push for inclusion within our public schools has been widely accepted in western society,

yet there is still a great need to include adults with disabilities as thriving members of our society. Research indicates that many adults with ID live with support and resources provided by family members, residential care aids, and other support workers. The participants in this study came from higher socio-economic backgrounds and received support from family members and mentors in the community housing. Further research should address the adulthood of individuals with ID who have fewer social networks and support or come from lower socio-economic backgrounds.

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