

# Factors affecting the acquisition and retention of employment among individuals with intellectual disabilities

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This study analyzed factors affecting the acquisition and retention of employment among individuals with intellectual disabilities (ID). These factors were verified according to job type and were classified into general characteristics, family-related factors, psychological factors, and abilities. Data from 398 individuals with ID were analyzed using chi-square tests, independent *t*-tests, and regression analyses using the second wave of the first year Panel Survey of Employment for the Disabled in Korea. We found significant differences in sex, education level, receipt of basic living security assistance, transportation use, household income level, and family support between employed and unemployed participants. Additionally, the employed (vs. unemployed) ID group had significantly higher scores for all variables related to psychological factors and abilities. Factors affecting employment among individuals with ID included age, education level, receipt of basic living security assistance, family support, and vocational ability. Older age, higher education level, absence of basic living security assistance, greater family support, and higher vocational ability were associated with a higher probability of current employment. Transportation use and parents' education were associated with a high probability of non-manufacturing-type jobs. Being married, absence of basic living security assistance, greater householder income level, family support, and manufacturing industry work were associated with increased job retention. Consequently, modifying the benefit system and developing family support systems may promote employment acquisition and retention among people with ID. Efforts are also needed to expand the job types available to individuals with ID.

**Keywords:** Intellectual disabilities; employment; job maintaining; job type

## Introduction

Jobs provide opportunities for economic independence and social decision-making, which can improve individuals' quality of life, health, and ability to maintain control over one's life (Beyer *et al.* 2010, Li 1998). Individuals with intellectual disabilities (ID) can learn new skills and increase their self-esteem through their work (Burge *et al.* 2007, Cramm *et al.* 2009, Donnelly *et al.* 2010, Irvine and Lupart 2008, Salkever 2000). Evidence of the advantages of employment among individuals with ID is robust (Akkerman *et al.* 2018, Dixon and Reddacliff 2001, Eggleton *et al.* 1999, Ellenkamp *et al.* 2016, Grant 2008, Jahoda *et al.* 2008, Lysaght *et al.* 2012, Lysaght *et al.* 2012). There is also a positive correlation between competitive employment and quality of life, well-being, and autonomy among individuals with ID (Jahoda *et al.* 2008).

Low employment rates among individuals with ID are still commonly reported. They are 3–4 times less likely to be employed compared to their non-disabled peers, and there is still a higher rate of their participation in sheltered work or in segregated settings compared to those with other disabilities (Verdonschot *et al.* 2009). In South Korea, the employment rate for individuals with disabilities is 36.5%, while that for individuals with ID is 22.9% (Park *et al.* 2017). Data from a large population-based disability-focused survey of Australians showed that women and men with intellectual impairments, psychological impairments, and acquired brain injuries were the most disadvantaged among individuals with disabilities. Another study showed that among individuals with ID, the prevalence of low education was 74.3%, low income was 29%, and 77.1% had no job-related income (Kavanagh *et al.* 2015). According to the American Community Survey, the employment rate among people aged 22–30 years with disabilities was 35%, compared to a 75%

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employment rate among those without disabilities (Qian *et al.* 2018, Sulewski *et al.* 2013).

Unfortunately, the employment rate for individuals with ID is low; however, many individuals with ID also choose to leave their workplace. Failure to maintain a job is reportedly a bigger problem than employment in this population (Moran *et al.* 2001). In South Korea, the average job retention period for all workers with disabilities is 84 months; for people with ID, it is 47 months (Kim *et al.* 2017). The reasons for the difficulty in maintaining a job among individuals with ID in South Korea include employment instability such as irregular employment; job-related difficulties; physical, communication, and peer relationship difficulties; and poor working conditions (Kim *et al.* 2017). One study (1986) found that 67% of individuals with ID quit their jobs within the first six months. Another study (2007) reported that 26 of 60 individuals with ID who were receiving employment services were employed at the time of their initial study interviews; however, only 13 were still employed 9 months later. Ellenkamp *et al.* (2016) noted that, despite the legal system, which improves the chances of employment for individuals with disabilities, the employment rate of people with ID ranges 9–40%. Cheng *et al.* (2018) reported that it is necessary to establish specific strategies at the individual and organizational levels to effectively support and enhance the acquisition of employment and job retention among individuals with ID.

Therefore, it is necessary to systematically identify the factors that affect these two aspects of employment in order to design effective support programs for individuals with ID. Specifically, factors affecting employment acquisition and retention among both employed and unemployed individuals with ID should be identified to develop interventions in the transition from school to work and to develop on-the-job support services.

Previous studies mainly focused on only one or two factors such as social, psychological, and vocational factors. A comprehensive evaluation of multiple factors is thus needed. Additionally, each job has diverse functions and characteristics; thus, employment and retention factors can vary depending on the job type. However, no studies have examined job type among individuals with ID. Thus, the current study comprehensively identified the factors related to employment and job retention among individuals with ID and examined whether the factors that affected employment and retention differed per job type. Factors were classified as general characteristics, family-related factors, psychological factors, and ability.

### **General characteristics**

General characteristics, including sex, age, and education level, have frequently been the subject of research

concerning employment and job retention among individuals with ID (Bush and Tassé 2017, Ward *et al.* 1993, Wehman *et al.* 2014). Previous studies suggested that older age is associated with longer job retention among individuals with ID (Barry and Boland 2004, Lee 2004). Higher education also significantly enhances job success potential (Peterson and Jones 1984). Further, those who live with a spouse are more likely to keep their jobs than those who are unmarried (Lee and Kim 2013, Park 2013). Concerning basic living security benefits, a negative relation with employment was reported. Moreover, several studies showed that not receiving basic living security benefits had a positive impact on the employment of people with ID (Beyer and Kilsby 1997, Byun and Lee 2005, Choi and Shin 2018, Martorell *et al.* 2008, Park and Kim 2017, Tremblay *et al.* 2011). In addition, studies found that among people with ID, using public transportation had a positive effect on employment (Lee and Kim 2013, Moore *et al.* 2002).

### **Family-related factors**

Researchers have emphasized the role of family members in assisting individuals with ID with the transition from school to work, providing career-related advice, assisting with job searching, facilitating the formation of aspirations, and providing practical and moral support to promote employment retention (Eisenman 2003, Timmons *et al.* 2011). In addition, those who are working or looking for work perceived greater support from their parents as compared to their counterparts (Holwerda *et al.* 2013).

Parents' education level and household income have also been studied as potential factors affecting the employment of individuals with ID; however, the results are controversial. One study reported that a higher education level among parents had a positive impact on the employment of individuals with ID (Joong and Park 2004); however, another study revealed no effect (Kang and Jun 2009). Further, higher household income may either positively (Byun and Lee 2005, Joong and Park 2004, Moore *et al.* 2002) or negatively (Kang and Jun 2009) impact the employment of individuals with ID.

### **Psychological factors**

Psychological factors such as motivation and self-esteem have been verified in both reviews and qualitative studies as essential for securing employment for individuals with ID (Eisenman 2003, Foley *et al.* 2012, Timmons *et al.* 2011). These factors can be understood in the context of self-determination. The Causal Agency Theory explains how people develop the actions and beliefs necessary to engage in self-caused, autonomous action in response to basic psychological needs and autonomous motivation as well as contextual and

environmental challenges (Shogren *et al.* 2017). According to self-determination theory, self-efficacy and autonomy toward career decision-making act as an expert for an important direct effect on career (Guay *et al.* 2003). Developing interventions and definitional frameworks to promote self-determination enhances outcomes related to community participation and employment (Shogren *et al.* 2017). Among high-school students with ID, a controlled group study revealed that promoting self-determination was associated with a significant positive employment outcome after graduation (Wehmeyer *et al.* 2012).

Positive acceptance of one's disability has traditionally been described as a key variable in rehabilitation (Livneh and Antonak 2005) and psychosocial adjustment (Attawong and Kovindha 2005). Previous studies showed that people with ID who accept their disability have a higher possibility of employment (Choi 2005, Lee and Kim 2013, Park 2013) compared to those who do not. Motivation is often mentioned as influential in employment outcomes (Foley *et al.* 2012, Timmons *et al.* 2011). Low self-esteem among individuals with disabilities is positively correlated with employment acquisition (Eisenman 2003).

### Ability

Researchers have found that cognitive, communication, and vocational abilities among individuals with ID are critical factors in employment (Andrew and Rose 2010, Holwerda *et al.* 2013, Rose *et al.* 2005, Sitlington *et al.* 2010). One study reported that cognitive and communication abilities increase the job performance of individuals with ID, which positively affect their employment (Su *et al.* 2008). A positive relationship between cognitive abilities and employment has also been reported (Hensel *et al.* 2007, Lee and Han 2014, Vornholt *et al.* 2013). Researchers have noted that confidence and ability also increase the job motivation or people with ID (Andrew and Rose 2010). It has been further noted that communication skills affect their employment outcomes (Beyer and Kilsby 1997, Rose *et al.* 2005). McConkey (2001) emphasized that people with ID who have a low level of communication skills or have difficulty understanding the situation have difficulty getting a job. Others showed that the vocational abilities of people with ID are the main variables affecting employment (Andrew and Rose 2010, Lee and Han 2014, Ward *et al.* 1993). Li (1998) reported that people with above-average job skills have more employment opportunities than do those with below-average job skills among individuals with ID.

### Job type

A few studies reported that employment and job retention might vary per job type. Pierce *et al.* (2003) found that jobs were more likely to be held for more than 3

years when employment lasted at least three consecutive years. These included occupations such as food service work (27.9%), manufacturing (17.7%), Disability Board positions (14.3%), grocery work (10.3%), and retail work (5.3%). On the other hand, Reid and Bray (1997) reported that there was no difference in the duration of employment in different job sectors including social/personal service, construction, manufacturing, commercial, retail, and public sectors. Evidence concerning the influence of specific job type is insufficient to determine its effects on employment acquisition and retention.

### Study aim

We investigated the factors associated with employment acquisition and retention among individuals with ID from a multi-faceted perspective, and we provide specific data on whether these factors varied per job type. The specific research questions were as follows:

1. Do the general characteristics, family-related factors, psychological factors, and abilities of individuals with ID differ depending on the presence or absence of employment and job type?
2. What general characteristics, psychological factors, family-related factors, and abilities affect current employment, job type, and job retention among individuals with ID?

## Materials and methods

### Participants

We used data from the second wave of first year Panel Survey of Employment for the Disabled (PSED) in Korea. This is a representative panel survey that identifies the employment status, characteristics, and economic activity of persons with disabilities. The survey includes recent data, which were obtained for our study purpose, including information about disability, income, daily activities, and household information.

Data were collected from 23 May to 26 August 2016 and released in 2018. The survey was conducted using Tablet PC-Assisted Personal Interviewing. The time and location of the survey was based on participants' wishes. Questions were read aloud to respondents by a study investigator who had experience with the PSED and was trained prior to study commencement (12 hours over two days; comprising an outline of the questionnaire, using the tablet PC, protection of personal information, and tips for responding to participants). After the training, the contents were tested and supplemented.

During data collection, caregivers could respond on behalf of participants who could not respond themselves. This was done to increase the accuracy of the data since some individuals found it difficult to respond directly. Responding caregivers had a close grasp of the daily activities and financial status of participants.

There was no time limit to respond; however, most interviews took about one hour.

For the sample, the list of persons registered with the Ministry of Health and Welfare was set as the population. The registration of individuals with disabilities requires the diagnosis of the disability by a doctor, who can register the type of disability according to their diagnosis. Therefore, participants in this study were limited to those who were diagnosed with an ID by a doctor. The judgment was based on the intelligence quotient obtained through personal intelligence tests such as the Wechsler Intelligence Scale or other adaptive behavior scales.

A two-phase sampling method was adopted. In this method, the number of extracted regions was adjusted and an appropriate number of samples for each type of disability, disability grade, and age were extracted. In the first phase, a one-step colony extraction method was used to extract the regions, which were stratified based on type of disability, disability grade, and age. The stratification was extracted at a level that would satisfy the target error. The total number of respondents was 4577; of these, 398 were individuals with ID: 232 forms were submitted directly by individuals with ID while 166 were submitted by individuals and their caregivers together.

This study used secondary data; however, all participants initially provided informed consent. The response rate was 100% because the data were from the second wave of first-year panel survey. In panel surveys, unavoidable sample substitution occurs owing to non-response, rejection, and various other reasons. To reduce the non-sample error due to sample substitution, five alternative samples corresponding to each original sample were further extracted and secured. Respondents were provided with a predetermined reward (gift certificate equivalent to US \$26). In addition, after the survey, information on employment and welfare for individual with disabilities, newsletters, birthday coupons, and holiday gifts were provided for the ongoing management of the panel.

### **Dependent variables**

The dependent variables were current employment, job type, and job retention. In PSED data, the definition of employment was working at least one hour in the last week. The types of employment were wage work, self-employment, and unpaid family care. Current employment was coded as '1' and unemployment was coded as '0'. Then, respondents were asked about their type of employment, company and wage levels, and so on.

There were 92 wage workers, three self-employed persons, and eight receiving unpaid family care. Among wage workers, 62 persons worked full-time and 30 worked part-time. Job type was determined according to the Korean Standard Industrial Classification. Fifty

worked in manufacturing; two in water supply, waste management, materials recovery; one in construction; four in wholesale and retail trade, one in transportation and storage; one in accommodation and food service activities; nine in business facilities management; one in public administration, defense, and compulsory social security; 10 in education, one in human health and social work activities, three in arts-, sports-, and recreation-related services; five in membership organizations, repair, and other personal services; and two did not specify. Because the most common job was working in manufacturing, manufacturing was coded as '1' and other job types were coded as '0'.

Job retention referred to having a job for at least one month. Job retention was coded as the month of the survey year minus the year and month of employment. For example, 16 working days was rounded up to having worked one month. The number of years was converted into months.

### **Independent variables**

Independent variables included general characteristics, psychological factors, family-related factors, and ability. The scale including family support for employment, cognitive ability, and vocation ability was developed through expert advice. During the questionnaire-design process, a professional advisory committee including specialists in related fields such as social welfare, vocation rehabilitation, economics, and statistics. Experts were consulted several times to devise the questionnaire (Kim *et al.* 2017). Translated measures of 'acceptance of disability' and 'self-esteem' were used. Acceptance of disability in the PSED comprised nine items from the Disability Acceptance Scale (Kaiser *et al.* 1987) and three items from the disability overcome factor (Kang *et al.* 2008). Self-esteem was measured using the Rosenberg Self-esteem Scale (Rosenberg 1965). The Employee motivation scale used was the modified version of the General Self-Efficacy Scale (Jerusalem and Schwarzer 1992) by Lee *et al.* (1994).

### **General characteristics**

Men were coded as '1' and women were coded as '0'. Being aged 15–20 years was coded as '1' and being aged > 50 years was coded as '4'. A below elementary school education was coded as '1', middle-school graduate was coded as '2', high-school graduate was coded as '3', and graduated college or higher was coded '4'. Living with a spouse was coded as '1'; others were coded as '0'. Receiving basic living security benefits was coded as '1'; others were coded as '0'. Using public transportation without and with difficulty were coded as '1' and '2', respectively.

### Psychological factors

Acceptance of disability was measured on a 5-point Likert scale as follows: *strongly disagree* = 1, *disagree* = 2, *moderate* = 3, *agree* = 4, and *strongly agree* = 5. The specific items were (1) 'I cannot make friends because of my disability'; (2) 'I think of the world as wider because of my disability'; (3) 'I do not suffer because of my disability'; (4) 'I am disabled; but, I am satisfied with my life'; (5) 'How I live my life is more important than the fact that I have a disability'; (6) 'Honesty is more important than the disability itself'; (7) 'In life, there are many things that are more important than appearance'; (8) 'There are many things in my life that are interesting enough to make me forget that I am a disabled person'; (9) 'Although I have a disability, I am not unfulfilled in my life'; (10) 'I am uncomfortable with my disability; but, I can do anything I set my mind to'; (11) 'I am upset when things seem impossible because of my disability'; and (12) 'Disability has had the greatest influence on my life'. The mean value of the 12 items was used as a measure of participants' acceptance of their disability. Cronbach's  $\alpha$  was 0.862 in this study.

Ten items were used to measure self-esteem: five positive items (nos. 1, 2, 4, 6, and 7) and five negative items (nos. 3, 5, 8, 9, and 10). Negative items were rescored before the analysis. Responses were made using a 4-point Likert scale: 1 = *strongly disagree* to 4 = *strongly agree*. Cronbach's  $\alpha$  was 0.750 in this study.

Employee motivation was based on the mean of 10 items: (1) 'If I try hard, I will be able to do it'; (2) 'It is easy for me to focus on my goals'; (3) 'I am not embarrassed even if I am in trouble because I believe in my abilities'; (4) 'I can solve most of my problems if I make the necessary efforts'; (5) 'I will be able to find a solution even if I am in trouble'; (6) 'I believe that I will do things effectively even if I did not expect to be able to'; (7) 'I know how to deal with unexpected circumstances because of my abilities'; (8) 'I can usually find solutions when there is a problem'; (9) 'I will find a way to do it the way I want to, even if someone disagree with me'; and (10) 'No matter what happens to me, I will be able to do it'. Cronbach's  $\alpha$  was .968 in this study.

### Family-related factors

Parents' education level was coded into three categories: below middle-school graduate, high-school graduate, and above college graduate. If the education level of both mothers and fathers was investigated, the higher level was used for analyses. Household income level comprised the total annual household income including earned and non-earned income in 2015.

Family support for employment was measured by a single item, which was measured on a 5-point Likert

scale: *very low* to *very high*. The question referred to the amount of family support an individual received regarding their employment.

### Ability

Communication ability comprised five categories regarding the capacity to communicate: 1 = *absolutely impossible*; 2 = *simple communication is possible, but with help*; 3 = *simple communication is possible on their own*; 4 = *primarily communicates without assistance*; and 5 = *fully communicable*. The item for assessing communication ability was same as in a survey of the disabled, which is conducted every 3 years in South Korea.

Cognitive ability comprised three categories related to senses of time, place, and person, and was categorized as follows: 1 = *cognizant of all three*; 2 = *partial cognizance of all three*; 3 = *no recognition of any of the three*.

Vocational ability was based on the average of 15 items. Cronbach's  $\alpha$  was 0.947. The scale comprised the following ratings: *very low* = 1, *low* = 2, *normal* = 3, *high* = 4, and *very high* = 5. The specific items included abilities regarding power or physical strength, movement, standing, hand movement, computer applications, Internet applications, cooperation with coworkers or superiors, customer response, technical skills, mathematical computing, utilization of mechanical equipment, foreign language, time management, concentration and attention, and adaptability to new situations and locations.

### Statistical analyses

Chi-square and independent *t*-tests were used to test the group differences for categorical variables. The normality of data was examined through skewness and kurtosis. When skewness is greater than absolute value of 3 and kurtosis exceeds 8 or 10, there is an extreme problem (Kline 2015). As shown in Table 1, the normality of data was verified. A binary logistic regression analysis was completed to identify the factors affecting employment and job type among individuals with ID. A multivariate regression analysis was conducted to verify the factors affecting job retention. Enter method was used to input the independent variables. The mean value was used for the variables measured by several items.

Missing data existed in the PSED study, ranging from 0% to 7.5% across each variable. Expectation-maximization method (Little and Rubin 1987) was used because the list-wise deletion can possibly distort the accuracy of estimates (Von Hippel 2004). Specifically, this method comprised two steps. First, missing data were replaced as conditional expectations, which were calculated using observed data and coefficient estimation. Second, conditional expectation values were modified by maximizing the loglikelihood.

**Table 1. Correlation, mean, standard deviation and normality of variables.**

Variables	Mean	SD	Skewness	Kurtosis	1	2	3	4	5	6	7
1. Acceptance of disability	2.81	.728	.012	.149	–						
2. Self-esteem	2.51	.557	–.174	–.780	.439**	–					
3. Family support	3.27	1.393	–.326	–.236	.368**	.378**	–				
4. Employee motivation	1.81	.734	.567	–.154	.255**	.240**	.358**	–			
5. Communication ability	3.11	1.182	–.026	–.946	.300**	.276**	.315**	.592**	–		
6. Cognitive ability	2.56	.594	–.985	–.029	.336**	.426**	.616**	.535**	.435**	–	
7. Vocational ability	2.51	1.047	–.119	–.180	.473**	.433**	.432**	.413**	.399**	.534**	–
8. Job retention	37.30	49.735	–.232	–.207	.205**	.237**	.409**	.262**	.208**	.502**	.262**

Note.

\*\* $p < .01$ .

For the verifying multicollinearity between variables, inter-correlations were completed using Pearson's correlation coefficients. As shown Table 1, multicollinearity was not detected; i.e. the correlation coefficients did not exceed 0.80 (Jobson 1991).

## Results

### *Differences in the general characteristics, family-related factors, psychological factors, and abilities of individuals based on the presence or absence of employment and job type*

Table 2 shows the differences in variables per participants' current employment and job type. The rate of employment was higher in men than in women. A relatively high rate of employment was observed among high school graduates and those with a college education or higher. There was a relatively high rate of unemployment among those with less than an elementary school education and only middle-school graduates. Among family-related factors, household income and family support significantly differed per participants' current employment. Those who earned < 1200 won in household income and had greater family support were significantly more likely to be employed as compared to their counterparts ( $t = 74.113, p < .001$ ).

Regarding psychological factors, acceptance of disability ( $t = 15.987, p < .001$ ), self-esteem ( $t = 21.910, p < .001$ ), and employment motivation ( $t = 27.365, p < .001$ ) were higher in the employed group than in the unemployed group. Communication ability ( $t = 29.155, p < .001$ ) and cognitive ability ( $t = 17.961, p < .001$ ) were higher in the employed group than in the unemployed group. The employed group also had higher vocational abilities ( $t = 34.785, p < .001$ ) than did the unemployed group. Only cognitive level significantly differed with job type ( $t = 4.412, p < .05$ ).

### *General characteristics, psychological factors, family-related factors, and abilities that affected current employment, job type, and job retention among individuals with ID*

Table 3 shows the results of the binary logistic and multiple regression analyses that verified the variables affecting current employment, job type, and job

retention. Age, education level, receipt of basic living security benefits, vocational ability, and family support significantly affected participants' current employment. Men and older-aged individuals had a higher probability of current employment than women and younger individuals ( $p < .05$ ). Additionally, higher levels of education increased the possibility of employment ( $p < .001$ ). Basic living security benefits were associated with unemployment ( $p < .001$ ). Increasing family support increased the possibility of current employment ( $p < .005$ ). The probability of current employment was also increased with high vocational ability ( $p < .001$ ).

Regarding job type, when individuals were able to use public transportation, the probability of continuing employment in other types of jobs was high ( $p < .05$ ). Higher vocational ability was related to a lower probability of current manufacturing employment ( $p < .05$ ). A regression analysis was performed by dividing the factors affecting job retention in individuals with ID into general characteristics, psychological factors, and ability factors. The results explained 44.2% of the variance ( $R^2 = 0.442, F = 2.866, p < .001$ ), which was significant. The adjusted  $R^2$  was .287, which showed the percentage of variation explained by the number of the independent variables. Consequently, greater family support, higher household income, and employment in the manufacturing industry were associated with longer job retention. Among the general characteristics, length of job retention increased among individuals that were not receiving basic living security benefits and those who were married ( $p < .05$ ).

## Discussion

This study aimed to analyze the characteristics of individuals with ID, whether these characteristics differ according to job type, and to provide information that will improve their current employment and employment retention.

### *Summary of principal findings*

The comprehensive binary logistic regression analysis showed that age, education level, receipt of basic living security benefits, vocational ability, and supports of family enhanced the potential for employment. There were no group differences according to age; however,

Table 2. The differences of variables according to current employment and type of job.

Factors	Variables	Employed		Unemployed		X <sup>2</sup>	p	Manufacturing		Other job type		X <sup>2</sup>	p
		n	%	n	%			n	%	n	%		
General	Sex												
	Male	78	19.6	175	44.0	8.873	.003	39	38.6	37	36.6	.403	.526
	Female	25	6.30	120	30.2			11	10.9	14	13.9		
	Age												
	15-29	58	14.6	145	36.4	5.576	.134	32	31.7	26	25.7	1.802	.406
	30-39	25	6.30	80	20.1			10	9.9	13	12.9		
	40-49	15	3.80	34	8.5			8	7.9	12	11.9		
	>50	5	1.30	36	9.0			-	-	-	-		
	Education level												
	Below elementary school	7	1.80	72	18.1	32.137	.000	-	-	-	-		
Middle school graduate	14	3.50	79	19.8			7	6.9	14	13.9	5.353	.069	
High school graduate	72	18.1	132	33.2			40	39.6	30	29.7			
Above college	10	2.50	12	3.0			3	3.0	7	6.9			
Marital status													
Married	14	3.50	27	6.8	1.629	.202	46	45.5	41	40.6	.849	.091	
Non-married	89	22.4	268	67.3			4	4.0	10	9.9			
Basic living security recipient													
Yes	15	3.80	135	34.2	32.423	.000	44	43.6	42	41.6	.637	.425	
No	88	22.3	157	39.7			6	5.9	9	8.9			
Transportation ability													
Possibility	44	11.1	184	46.2	12.053	.001	33	32.7	24	23.8	3.684	.050	
Difficulty	59	14.8	111	27.9			17	16.8	27	26.7			
Family related													
Education level of parents													
Below middle school graduate	40	10.4	153	39.9	5.869	.053	22	23.2	18	18.9	3.181	.204	
High school graduate	41	10.7	84	21.9			22	23.2	19	20.0			
Above college	16	4.20	49	12.8			4	4.2	10	10.5			
Household income level <sup>a</sup>													
Below 1200	22	5.50	123	30.9	15.695	.000	10	9.9	11	10.9	.525	.769	
1200-2400	29	7.30	77	19.3			13	12.9	16	15.8			
Above 2400	52	13.1	95	23.9			27	26.7	24	23.8			
	M	SD	M	SD	t	p	M	SD	M	SD	t	p	
Psychological	Family support	4.22	.891	2.93	1.384	74.113	.000	4.28	.826	4.16	.965	.381	.539
	Acceptance of disability	3.06	.685	2.72	.724	15.987	.000	3.04	.673	3.08	.710	.073	.787
	Self-esteem	2.73	.490	2.43	.558	21.910	.000	2.75	.438	2.71	.540	.121	.729
Ability	Employee motivation	2.14	.746	1.70	.697	27.365	.000	2.16	.608	2.13	.866	.047	.829
	Communication ability	3.63	1.066	2.93	1.167	29.155	.000	3.48	1.074	3.78	1.026	2.121	.148
	Cognitive ability	2.77	.447	2.48	.622	17.961	.000	2.68	.513	2.86	.348	4.412	.038
	Vocational ability	3.40	.601	2.20	.991	34.785	.000	3.48	.545	3.31	.648	1.878	.174

Note:

<sup>a</sup>The unit is South Korean 10,000 won (USD 1 = KRW 1,126.50).

**Table 3. Variables affecting employment, type of job, and job retention.**

Category	Employment (n = 398)				Type of job (n = 101)				Job retention (n = 101)				
	B	SE	OR (95% CI)	p	B	SE	OR (95% CI)	p	B	SE	$\beta$	t	p
General characteristics													
Sex	.522	.340	1.686 (.866-3.281)	.124	.350	.586	1.419 (.450-4.478)	.551	.013	8.924	.001	.001	.999
Age	.058	.019	1.060(1.022-1.100)	.002	-.026	.032	.974(.914-1.038)	.419	.318	.478	.096	.665	.509
Education level	.953	.220	2.593(1.685-3.990)	.000	.269	.384	1.309(.616-2.780)	.484	2.893	5.558	.074	.521	.605
Marital status	1.127	.598	3.088(.957-9.964)	.059	-.993	.885	.371(.065-2.098)	.262	39.870	17.719	.291	2.250	.028
Basic living security recipient	-1.355	.394	.258(.119-.558)	.001	-1.477	.790	.228(.049-1.074)	.062	-20.097	8.946	-.284	-2.246	.029
Use of transportation	-.087	.326	.917(.484-1.736)	.790	-1.439	.536	.237(.083-.678)	.007	-9.836	8.478	-.144	-1.160	.251
Psychological factor													
Acceptance of disability	.175	.283	1.191(.685-2.073)	.536	-.118	.403	.888(.403-1.956)	.769	-.224	5.867	-.005	-.038	.970
Self-esteem	-.170	.351	.844(.424-1.680)	.628	.015	.557	1.015(.341-3.025)	.979	6.802	8.797	.118	.773	.443
Employee motivation	-.281	.286	.755(.431-1.321)	.325	-.036	.421	.874 (.383-1.944)	.749	-9.843	6.369	-.242	-1.545	.128
Abilities													
Communication ability	.012	.177	1.012(.716-1.432)	.946	-.488	.267	.614(.364-1.037)	.068	5.645	4.130	.171	1.367	.177
Cognitive ability	.101	.361	1.106(.545-2.244)	.780	-.961	.643	.363(.108-1.350)	.135	-15.667	9.002	-.206	-1.740	.087
Vocational ability	1.371	.253	3.939(2.400-6.465)	.000	.825	.466	2.282(.916-5.687)	.077	.788	7.307	.016	.108	.915
Family related factor													
Education level of parents	-.036	.238	.965(.605-1.539)	.881	-1.128	.433	.324(.138-.756)	.009	2.515	7.431	.044	.338	.736
Householder income level	.086	.091	1.090(.912-1.304)	.344	-.025	.168	.976(.702-1.356)	.884	2.869	1.986	.173	1.445	.154
Family support	.520	.165	1.682(1.218-2.322)	.002	.012	.297	1.012(.566-1.810)	.969	8.815	3.880	.291	2.272	.027
Type of job									20.940	7.748	.306	2.703	.009
F										2.866			.000
R <sup>2</sup>										.442			
Adjusted R <sup>2</sup>										.287			



age was related to the possibility of employment. Because we controlled for other variables, the significant variable that affected current employment was age. Regarding the effect of age on employment, contrasting results still exist. Qian *et al.* (2018) reported that age was not a significant predictor of paid employment status in community employment among technical college students with ID. However, Bush and Tassé (2017) reported that age was a significant predictor of employment status. A decrease by one age category (10 years) was associated with an increase in the odds of community employment.

Education level differed between the currently employed and unemployed groups, and it was also an independent predictor of current employment. In South Korea, the proportion of high school graduates was high owing to the implementation of high school compulsory education. The results of this study showed that education level had a significant effect on employment among individuals with ID. The results of the logistic regression analysis showed that the employment rate increased by 2.593 times as a level of education increased. The rate of employment increase per level of independent variable was the highest for vocational ability, followed by education level. Kaya (2018) analyzed the Rehabilitation Service Administration database and found that youths with ID with a higher level of education are more likely to obtain competitive employment than were those with a lower level of education. Education promotes personal achievement and a sustainable income (Tilak 2002). Students with ID can achieve academic and societal success based on higher expectations and appropriate support during higher education (Grigal *et al.* 2010). Educated individuals with ID can increase their vocational abilities related to career choice, knowledge of employment and skills, and improved academic abilities, which includes functional communication and self-determination skills (Park 2013).

Among the personal factors, receipt of basic living security benefits was reported to be an effective factor that could determine work outcomes among individuals with ID. In South Korea, receipt of basic living security benefits negatively affected the potential for achieving and retaining employment. In a study of 159 adolescents with disabilities, which was based on 2014 survey data of the economic activity of the disabled, non-recipients had a high probability of employment than did recipients (Park and Kim 2017). Income and property must be below a certain legal standard to maintain qualifications for receipt of benefits in South Korea; therefore, when income is generated from employment, the amount of the benefits will decrease, and there is a possibility of becoming ineligible for benefits altogether.

Family support had noteworthy effects on current employment. Beyer *et al.* (2008) reported a higher

percentage of employment among those with more (vs. less) supportive families and higher rates in the transition to employment among young people with learning disabilities. Choi (2005) reported that greater family support was associated with higher employment rates among individuals with ID. Reid and Bray (1997) reported that the higher the level of formal and informal family support, the more positive the effects were on employment and job retention. Family members can support individuals with ID by helping them understand the importance of employment. A study reported that factors, such as moral support, practical assistance, role models of appropriate work ethic, protection from difficulties and exploitation, and family cohesion contribute to maintaining competitive employment of individuals with ID. (Dixon and Reddacliff 2001). Individuals with ID can talk to their family about their difficulties at work, and family members can help resolve their difficulties as well as provide better healthcare, confidence, social adaptation, and work adaptation, thereby encouraging them to do better (Lee and Choi 2010).

Training to improve work performance and self-advocacy are associated with obtaining a job (Li 2004). In a study of sheltered workshop workers with ID, Li (1998) reported that employment opportunities were higher among those with average or above average occupational skills. The results also showed that greater vocational abilities were associated with a 3.943-fold probability of current employment. Considering the importance of vocational skill in successful employment (Southward and Kyzar 2017), vocational service and training should be developed for unemployed individuals with ID.

The use of transportation and parents' education level exerted significant effects on job type-decreasing the likelihood of current employment in manufacturing sector jobs. Conversely, vocational ability increased the likelihood of current employment in the manufacturing sector. Moore *et al.* (2002) found that the rate of employment increased when traffic was not a factor, and individual modes of transportation were used by employees with mild or moderate ID. Because there was insufficient evidence analyzed as to whether the effects of transportation use on employment differed per job type, the reason for the relationship between cognitive ability and job type is difficult to explain. In South Korea, if employees work in manufacturing, they are more likely to provide their own transportation or live in dormitories compared to individuals with ID employed in other service industries. This might explain our results. Joong and Park (2004) found that having parents with a higher education level made it more likely to be employed as an individual with ID. However, there is a limit to the explanation owing to insufficient evidence on parents' education level and the job type of individuals with ID. Further studies

should be performed to verify the predictors affecting employment according to job type.

Psychological variables such as self-esteem, employment motivation, and acceptability of disability were significantly higher in the employed group than in the unemployed group. However, these variables were not significantly associated with employment or job retention. In previous studies, employment motivation and self-concept concerning job acquisition were related to receiving basic benefits. Kaya (2018) found that receiving supplemental security income/social security disability benefits decreased employment motivation and resulted in lower employment levels. It has also been reported that young people with ID receiving benefits at a young age can have a negative impact on self-concept and promote the belief that they cannot work (Kaya *et al.* 2016). Work plays a key role in the personal lives and is associated with enhanced psychological well-being among individuals with ID (Lysaght *et al.* 2009). Although the association of psychological variables such as self-determination and employment outcome has been reported, there is still insufficient information (Martorell *et al.* 2008).

Concerning job retention, married individuals with ID who retain their jobs tend to not receive basic living benefits, receive greater family support, and work manufacturing jobs as compared to their counterparts. In a previous study, it was reported that basic living security recipient status negatively affected job retention. In an analysis of 438 persons with developmental disabilities, Choi and Shin (2018) reported that the possibility of employment was lower among basic living security benefit recipients. Byun and Lee (2005) also reported that the duration of job retention was longer among those who were not recipients of basic living security benefits compared to those who were recipients. These results are consistent with the report of Tremblay *et al.* (2011), who noted that government public assistance programs such as supplementary security income (SSI) and supplementary security and disability income (SSDI) were highly associated with employment. Beyer and Kilsby (1997) argued that SSI and SSDI were negative factors in the motivation for obtaining employment.

In the same context as benefit receipt, high household income was positively related to job retention. Employment rates for youth with disabilities increased with the level of household income (Wehman *et al.* 2015). In a national longitudinal report, young adults with disabilities whose parents earned less than \$25,000 were more likely to be fired from their most recent job than those from households with an income of more than \$50,000 (Newman *et al.* 2011).

Regarding the effects of family support, Choi and Shin (2018) reported that, the greater the family support, the higher the probability of employment. Jeon (2013) reported that family support increased job

retention and stability. The current results are in line with previous studies that claimed that family support was an important factor for future employment success among individuals with ID (Dempsey *et al.* 2009, Kim 2016, Kim *et al.* 2011).

### Limitations

First, we did not identify variables specific to various occupations. The number of workers with ID in industries other than manufacturing was too small to analyze or to divide into specific job types. This was also a limitation in previous studies. Ellenkamp *et al.* (2016) reported that many individuals with ID worked in unskilled or entry-level jobs, with an emphasis on jobs in shops, offices, the food industry, janitorial services, and manufacturing areas. This suggests that it is necessary to expand the employment of individuals with ID.

Second, in the panel data used in this study, cognitive ability was only measured by a single item. Therefore, the effect of cognitive ability on the employment of individuals with ID should be interpreted with caution. The information available for this study was limited to what was provided by the panel data; however, the panel data were representative of the sample. In future studies, it is necessary to obtain detailed information about the variables that significantly influence employment and job retention among individuals with ID.

Third, family support was measured as a single item related to the level of family support. We did not obtain specific information about the type of support provided, which could be used to develop effective rehabilitation services for family support. Future studies are needed to understand what kind of family support is provided and to examine how this affects the employment and job retention of individuals with ID.

### Implications for research

Further research is necessary to determine what characteristics significantly affect the current employment of individuals with ID. In addition, the relationship between current employment and family support differed across age and the effect of vocational ability differed across job type.

The effect of education should be investigated in future studies. Given the contribution of post-secondary education to future employment, interest in post-secondary education among individuals with ID should be cultivated. The quality of employment among individuals with ID who received post-secondary education services was higher than that among individuals with ID who did not (Migliore *et al.* 2009). However, the distribution of education levels in our study population revealed a low rate of individuals with more than a college education, and a high rate of individuals with a high-school education. Although these results suggest

that education level could be a significant predictor of employment, more information is necessary.

Causal relationships should be investigated in further studies. Regression analyses were performed in this study; however, these are based on correlations; therefore, causal relationship cannot be inferred. Systematic intervention trials should be completed considering variables that display significant relationship. In addition, the data in this study were from the second wave of the first-year PSED. A longitudinal study including a third-year survey may reveal more specific and causal relationships between the noted factors and employment.

### **Implications for practice**

First, it is necessary to provide support for employment among individuals with ID. To raise the education level of individuals with ID, educational support such as special education classes, integrated education, and systematic support linked to the employment market after graduation should be provided. Supporting families may be useful because the family acts as an advocate for individuals with ID, particularly as they face challenges in the workplace. It may be helpful to foster a cooperative relationship between the employer or vocational rehabilitation service provider and the family. To improve the vocational abilities of individuals with ID, it is necessary to conduct appropriate vocational training sessions based on evaluations of current vocational ability levels during the school years, with a focus on transitional education and entry into the employment market. Although there are various influences on employment among individuals with ID, vocational ability is a critical factor because employment can be procured and maintained based on vocational abilities.

Second, support for employment of individuals with ID is needed depending on the job type. After analyzing the factors influencing employment by job type, individuals with ID in manufacturing jobs showed relatively higher vocational abilities than did those in non-manufacturing jobs. Therefore, vocational ability improvement training is needed as a support for individuals with ID who desire to work in the manufacturing industry and require training to improve their skills (Hwang *et al.* 2017). In manufacturing, it is helpful to improve vocational abilities through repetitive training and experience, and to provide simple work standards through job and task analyses. Individuals with ID in non-manufacturing jobs showed relatively greater use of public transportation than did those in the manufacturing industry. Therefore, it is necessary to encourage individuals with ID who desire to work in non-manufacturing jobs to improve their ability to use public transportation by providing training related to time management, written cognitive skills, and financial management.

Third, it is necessary to provide support for job retention among individuals with ID. Receipt of basic living benefits, family support, and job type significantly influenced job retention; therefore, it is necessary to prepare a plan to guarantee their right of entitlement, even if these individuals receive earned income because of employment. In addition, family support positively affected both job procurement and job retention. Therefore, it is necessary to find ways to secure family support or improve family support when needed. Strategies based on the employment stage may be applied. Job coaches and other professionals may use strategies such as orienting the family, sharing information with family at an early stage of employment, conducting regular meetings, counselling, and maintaining a relationship with the family (Jung *et al.* 2016). Those working in the manufacturing industry had longer job retention than did those working in other industries. This may be because manufacturing jobs are relatively easy to find in South Korea. Therefore, simplifying job processes and tasks in non-manufacturing jobs may promote job retention.

Fourth, policy has been revised considering the negative association between the receipt of basic living security benefits and employment. People who receive basic living security benefits tend to avoid work because the actual income increase is not high, and their benefits would be affected (Lee and Kim 2013). Therefore, it is necessary to revise the labor inducement system. Work incentive planning is recommended to make it possible for job seekers to pursue better-paying jobs through discounting disability and work-related expenses from taxable income (Condon and Callahan 2008, Delin *et al.* 2012).

### **Conclusion**

This study showed that age, education level, receipt of basic living benefits, family support, and vocational ability were significantly related to obtaining employment. Concerning the receipt of basic living security benefits, changes to Korea's policy are needed. Basic living security benefits negatively affected employment because of the existing conflict between earned income and benefit eligibility. There are systematic limitations that preclude benefit entitlement and receipt of medical care protections if income is generated through employment. Therefore, laws related to the receipt of basic living benefits should be amended to promote employment among basic living benefit recipients.

The factors influencing job retention among individuals with ID included marital status, the receipt of basic living security benefits, household income level, family support, and job type. Individuals who did not receive basic living security benefits tended to have higher job retention since they received no national financial support. Therefore, income from work is means to support

their living expenses. Family support is another major factor that influences employment among individuals with ID. Finally, in Korea, many individuals with ID are employed in the manufacturing sector. These job characteristics might affect employment retention among individuals with ID. Additional research into the employment of individuals with ID is needed to verify specific information per various job types.

## Compliance with Ethical Standards

**Funding:** Not applicable.

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

**Ethical approval:** All procedures performed were in accordance with the ethical standards with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed consent:** This study used secondary data; however, all participants originally provided informed consent.

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