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ORIGINAL ARTICLE

Development of the Disability Awareness Program (DAP) scale;
Centering on the Content Validity Verification

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ABSTRACT

Although disability awareness program is implemented in the medical, welfare, and education fields, the effectiveness of disability awareness programs has not been clarified. If a disability awareness program outcome evaluation scale that can be used across fields is developed, it is possible to quantitatively clearly indicate what program content was implemented and what effect was obtained. This study verifies the content validity in order to develop the Disability Awareness Program (DAP) scale. In this study, in order to develop the DAP scale; Prepared a scale (draft) and construction concepts was examined by experts and students (the Content Validity Verification). As a result, a scale of 3 areas and 15 items was developed. The scale consists of three areas: "Awareness of basic human rights", "Awareness of disability", and "Awareness of diversity" and the items include the elements of "Disability Rights Convention", "the International Classification of Functioning, Disability and Health ", and "diversity".

I. Introduction

Social issues related to Autism Spectrum Disorder and Attention deficit hyperactivity disorder are now of worldwide concern. Hert-Picciotto & Delwiche (2009) reveals that the incidence of autism rose 7- to 8-fold by A cohort study in California from the early 1990s through 2009s and mentions that major public health and educational concern (Hert-Picciotto & Delwiche, 2009). In order to solve these problems, a disability awareness program (DAP) is implemented. DAP is to increase knowledge and acceptance of disability (Ison, Mclntyre & Rothery et al., 2010). Moreover, Some of the studies on DAP have been conducted, and certain effects such as behavioral changes can be expected with respect to interventions (Chae, Park & Shin, 2019; Hayward, Fragala-Pinkhan & Scheneider et al., 2019). Although DAP is implemented in the medical, welfare, and education fields, the effectiveness of disability awareness programs has not been clarified.

DAP is conducted in various fields, but the implementation standards are not clear. Even if DAP is implemented, it cannot be said that it is really deepening the understanding of disability because it is conducted without standards. DAP has been implemented, but the scale of DAP itself has not been developed. If a DAP scale has created, the effectiveness of future disability understanding programs can be measured. In Japan, according to a survey conducted by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in 2012, approximately 6.5% of students in ordinary classrooms may have Developmental disorders (MEXT, 2012). MEXT (2012) survey was conducted by observing teachers rather than medical experts, but the results revealed the need to respond to children with Developmental disorders in normal classrooms. DAP especially for students at the teacher training stage is necessary in Japan.

It is necessary to clarify the outcome of the DAP, to examine the components of the scale, and to carry out scientific verification. Content validity is a subjective but systematic evaluation of how well the content of a scale represents the measurement task at hand. The researcher or others examines whether the scale items adequately cover the entire domain of the construct being measured (Malhotra, Nunan & Birks, 2017). Given its subjective nature, content validity alone is not a sufficient measure of the validity of a scale, yet it aids in a common-sense interpretation of the scale scores (Malhotra, Nunan & Birks, 2017). The study that has been conducted so far on disability awareness is intervention research. However, since the concept itself has not been established, it is necessary to reconsider the concept of disability awareness. It is created as one evaluation scale by clarifying the concept of disability awareness.

Moreover, Consideration of the components should be discussed thoroughly with researchers conducting relevant studies and revised in order to strengthen the theoretical background. In addition, questions must be clarified, and words must be carefully selected based on the opinions of the people who use the scale (DeCoster, 2000).

This study verifies the content validity in order to develop the Disability Awareness Program (DAP) scale.

II. Methods

Process 1. Construct concepts and prepare a scale (draft).

We examine related prior studies and theoretically examine the evaluator of the disability awareness program result evaluation scale and the contents of the scale. By doing so, the DAP scale (draft) was created.

Process 2. Verification of content validity I (Survey for Experts)

Several considerations, such as clarity of questions and word selection, must be considered when creating a highly effective and reliable scale (DeCoster, 2000). Expert judgement confirms the appropriateness and representativeness of the content (Shimizu, 2005).

Construction concepts is examined by 6 academic personnel, and scale items are modified (in June 2019, Han and Kohara, Teruya, Shimojo, Yano and Kwon, with face-to-face interview). After the developers of the scale explained the theoretical background and structure of the scale to them, the interview survey, in June 2019. On the structure of the scale and the contents and terms of each item was held.

Process 3. Verification of content validity II (Survey for Students)

Construction concept is examined by 30 students who wish to obtain teacher license, and scale items are modified (in July 2019, 30 students, with face-to-face interview). After the developers of the scale explained the theoretical background and structure of the scale to them, the interview survey, in July 2019. On the structure of the scale and the contents and terms of each item was held.

III. Results

1. Composition of the scale

Effects of disability awareness program interventions are expected to be primarily knowledge and awareness changes (Tokuda & Mizuno, 2005). A change in consciousness is the first change in a disability awareness program (MEXT, 2017).

It is important to change teachers' awareness of disability, which leads to changes in the behavior of children (MEXT, 2017).

- **"Awareness of basic human rights" area**

Studies by Chae, Park & Shin (2019) have shown that contact-based interventions, use of materials, role-play, and human rights interventions are significantly more effective at improving attitudes toward disability than disability awareness. Shibata (2013) also states that disability understanding needs to be based on human understanding, as a representative example, and desirable to take up themes such as freedom and equality, quality of life, and human rights and rights. From these previous studies, changes in "Awareness of human rights" were set as one of area. The items were based on the Convention on the Rights of Persons with Disabilities, which provides for the human rights of persons with disabilities.

- **"Awareness of disability" area**

To understand disabilities, it is important to understand the difficulties of people with disabilities participating in society. Proper use of the environmental factors within the International Classification of Functioning, Disability and Health (ICF) will ensure appropriate policies, systems and services for health care and support, provide measurable indicators for health status and sustainable development and underpin the recognition that disability is a human rights issue (Hurst, 2003). Understanding ICF helps people with disabilities to understand social difficulties from the perspective. From these previous studies, changes in "Awareness of disability" were set as one of area. Items were prepared based on the contents of the ICF.

- **"Awareness of diversity" area**

In recent years, research has been carried out in which disability is regarded as one of diversity. In particular, the employment field, disability is regarded as one of diversity, and approaches are taken from the viewpoint of diversity control (Nafukho, Roessler & Kacirek, 2010). 67% of U.S. organizations report implementation of diversity training (Kulik & Roberson, 2008: Kalinoski, Steele-Johnson &Peyton et al., 2013). While much attention has been paid to issues of gender, race/ethnicity, and sexual orientation in the workplace, diversity training has more limited focus on persons with disabilities (Bezrukova, Jehn & Spell, 2012).

From these previous studies, changes in "Awareness of diversity" were set as one of area. Items were prepared for the purpose of grasping disability as one of diversity by organization and individual.

Through this process, we have completed the DAP scale (draft). the DAP scale (draft) consisted of three areas awareness of basic human rights, awareness of disability, and awareness of diversity and 13 items.

2. The Content Validity Verification I (Survey for Experts)

In this study, opinions were surveyed 6 academic personnel involved in teacher training, because the purpose of the survey was to develop an evaluation scale for used by students belonging to the teacher training course.

There were 2 men (33.3%) and 4 women (66.7%). There were 3 teachers who obtain an elementary school teacher's license (50.0%), 2 teachers who obtain a high school teacher's license (33.3%), and 4 teachers who obtain a special need school teacher's license (66.7%). Table 1 shows the opinions by expert and revisions for scale item.

Regarding "the Awareness of basic human rights" area, 1 opinion extracted. Expert opinion is "Since the place where persons with disabilities live is not society but the local community, the words should be changed to local community.". "The Article 19: Living independently and being included in the community" of the Convention on the Rights of Persons with Disabilities states that the rights should be guaranteed in the "community". The word used in the scale has been modified to "community" instead of "social".

Regarding "Awareness of disability" area, 3 opinion extracted. All 3 opinions were of that "definitions should be added in order to correctly reflect the concept of ICF in the scale.". According to the definition of ICF, the definition was added as an annotation for each.

Regarding " Awareness of diversity " area, 2 opinion extracted. One was the opinion, "From the research background, the consciousness change on whether the disability is regarded as one of human diversity should also be measured". We added a question that "Q12. Do you think that disability is one of human diversity?".

The other was the opinion "Since organizations and groups are different from society, questions should be separated.". So, we separated a question.

Regarding " Evaluation methods ", 1 opinion extracted. Expert opinion is that " It is difficult to change consciousness about some item. It is better to weight Q5, Q10, Q11, Q14, and Q15.". We changed score method that Q5, Q10, Q11, Q14, and Q15 are calculated as 1=2 points, 2=4 points, 3=6 points, 4=8 points, and 5=10 points.

3. The Content Validity Verification II (Survey for Students)

Using the modified to scale, opinions ware surveyed 31 students who wished to acquire teacher training license. There were 11 men (35.5%) and 20 women (64.5%). 22 students wanted to obtain an elementary school teacher's license (91.0%), 9 students wanted to obtain a high school teacher's license (29.0%), and 5 students wanted to obtain a special need school teacher's license (16.1%). Table 2 shows the opinions by students wishing to obtain teacher training licenses and revisions for scale item.

Regarding "the Awareness of basic human rights" area, 1 opinion extracted. Student opinion is " If I think that people with disabilities can lead independent lives if they can borrow help: how do I evaluate Q1?". If it is a "help" within the scope of social services, it should be regarded as an independent life because receiving social services is a right

itself. So, explanation was added.

Regarding "Awareness of disability" area, 1 opinion extracted. Student opinion is " Does the "environment" include social services?". Added an annotation that "Environment means the social environment such as social systems and social services (medical care, education, etc.)."

Regarding " Awareness of diversity " area, 1 opinion extracted. Student opinion is " I have never been involved with someone with a disability. I don't know how to rate Q13.". The explanation was added as follows: If you have difficulty answering, please choose "3…Neither agree nor disagree ".

<Table 1> Results of discussions by experts on the terminology and content of questions

	Expert opinions	Before revision	After revision
Awareness of basic human rights area	Since the place where persons with disabilities live is not society but the local community, the words should be changed to "local community".	「Q1. "Do you think it is difficult for people with disabilities to lead independent lives in <u>society?</u>"	「Q1. "Do you think it is difficult for people with disabilities to lead independent lives in their <u>local communities?</u>"
Awareness of disability area	In order to correctly reflect the concept of ICF, the definitions of "body function and structure" in the scale should be stated.	the DAP scale does not mention this.	Add an annotation that "*Body function are functions such as movement of hands and feet, visual and auditory functions, and visceral functions. Body structures are structures such as parts of the hands and feet and parts of the heart (valves) ".
	In order to correctly reflect the concept of ICF, the definition of "activity" in the scale should be stated.	the DAP scale does not mention this.	Add an annotation that "*Activities refer to activities necessary for daily living activities (walking, etc.), housework, occupational activities, and leisure activities."
	In order to correctly reflect the concept of ICF, the definition of "participation" in the scale should be stated.	the DAP scale does not mention this.	Add an annotation that "*Participation means playing a role at home, in the workplace, and in the local community."
Awareness of diversity area	From the research background, the consciousness change on whether the disability is regarded as one of human diversity should also be measured.	the DAP scale does not mention this.	Add a question that "Q12. Do you think that disability is one of human diversity?"
	Since organizations and groups are different from society, questions should be separated.	Do you think that a person with disabilities belongs to an organization, group, or society is one factor in development?	Separate a question "Q14. Do you think that the presence of persons with disabilities in an organization or group is a factor in development for the organization or group?" and "Q15. Do you think that the participation of people with disabilities in society is a necessary element of social progress?"
Evaluation methods	"It is difficult to change consciousness about some item. It is better to weight Q5, Q10, Q11, Q14, and Q15.".	All items were calculated as 1 = 1 point, 2 = 2 points, 3 = 3 points, 4 = 4 points, and 5 = 5 points.	Q 5, Q10, Q11, Q14, and Q15 are calculated as 1=2 points, 2=4 points, 3=6 points, 4=8 points, and 5=10 points.

<Table 2> Results of discussions on the terms and content of questions

	Students Opinion	Before revision	After revision
Awareness of basic human rights area	If I think that people with disabilities can lead independent lives if they can borrow help: how do I evaluate Q1?	Non-applicable	The explanation was added as follows: If the "help" you think of is "social welfare," think that you should think live an independent life. Because "Social welfare" is something everyone receives.
Awareness of disability area	Does the "environment" include social services?	"*Environment means the physical environment of facilities and equipment, and the social environment such as the human environment related to people's attitudes."	Add an annotation that line "*Environment means the physical environment of facilities and equipment, the human environment related to people's attitudes, the social environment such as social systems and social services (medical care, education, etc.).".
Awareness of diversity	I have never been involved with someone with a disability. I don't know how to rate Q13.	Non-applicable	The explanation was added as follows: If you have difficulty answering, please choose "3…Neither agree nor disagree ".

From the above process, the DAP scale has been revised to 15 items, 3 areas of "Awareness of basic human rights", "Awareness of disability" and "Awareness of diversity".

IV. Discussion

In this study, in order to develop the DAP scale, we verified the content validity. Constituent concepts is area of the DAP scale (draft). It was examined and modified construction concepts of DAP scale by experts and student. In Process 1, it was clarified that it is necessary to awareness change that "Awareness of basic human rights", "Awareness of disability", and "Awareness of diversity" as the outcome of the disability awareness program. In Process 2 and Process 3, There were suggestions from experts and students regarding the concept of the DAP scale. Opinions included adding annotations to reflect the ICF concept and adding definitions for social services. The DAP scale was revised based on those suggestions. Suggestions for scale were added, such as adding annotations, selecting words, and adding items. Based on the research background, we adopted some reasonable proposals, changed the DAP scale, and completed it. As a result, a scale of 3 areas and 15 items was developed. The scale consists of three areas: "Awareness of basic human rights", "Awareness of disability", and "Awareness of diversity" and the items include the elements of "Disability Rights Convention", "ICF", and "diversity".

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the Disability Awareness Program (DAP) scale

·   For each of Q1-Q15 items, select the number (1-5) of the item that is deemed most appropriate.
·   The evaluation numbers are 1= "Strongly disagree", "2= "Disagree", "3= "Neither agree nor disagree", "4= "Agree a little", and 5= " Strongly agree ".

Total score （①+②+③）　　　　/100

		Strongly disagree	Disagree	Neither agree nor disagree	Agree a little	Strongly agree
Awareness of basic human rights						
Q1	Do you think it is difficult for people with disabilities to lead independent lives in local communities?	1	2	3	4	5
Q2	Do you think it is difficult for persons with disabilities to perform decision-making?	1	2	3	4	5
Q3	Do you think it is difficult for children with disabilities to learn in regular classes?	1	2	3	4	5
Q4	Do you think it is difficult for people with disabilities to work?	1	2	3	4	5
Q5	Do you think it is difficult for people with disabilities to engage in political and public activities?	1	2	3	4	5

① Total number of "Awareness of basic human rights"　　　　/30

Awareness of disability						
Q6	Do you think that a health condition affects disability?	1	2	3	4	5
Q7	Do you think that the environment surrounding individuals * has an impact on disability? * The environment refers to the physical environment of facilities and equipment, the human environment related to people's attitudes, and the social environment such as social systems and social services (medical care, education, etc.).	1	2	3	4	5
Q8	Do you think that the gender, age, values, and lifestyle of individuals influence the disability?	1	2	3	4	5
Q9	Do you think that physical and Body function and structure * in individuals contribute to disability? * Body function are functions such as movement of hands and feet, visual and auditory functions, and visceral functions. Body structures are structures such as parts of the hands and feet and parts of the heart (valves).	1	2	3	4	5
Q10	Do you think that the limitation of activities* in individuals is a factor of disability? * Activities are activities for daily living activities (walking, etc.), housework, occupational activities, and leisure activities.	1	2	3	4	5
Q11	Do you think that the constraints on participation* in individuals are a factor of disability? * Participation means playing a role at home, in the workplace, and in the local community.	1	2	3	4	5

② Total number of "Awareness of disability"　　　　/40

Awareness of diversity						
Q12	Do you think disability is one of human diversity?	1	2	3	4	5
Q13	Do you think that getting involved with people with disabilities will lead to growth for you?	1	2	3	4	5
Q14	Do you think that the presence of persons with disabilities in an organization or group is a factor in the development of the organization or group?	1	2	3	4	5
Q15	Do you think that the participation of people with disabilities in society is a necessary factor in the progress of society?	1	2	3	4	5

③ Total number of "Awareness of diversity"　　　　/30

Scoring method
【1】. Calculate to 1 = 1point, 2 = 2points, 3 = 3points, 4 = 4points, and 5 = 5points except for items not applicable to 【2】 and 【3】.
【2】. The area of "Awareness of basic human rights" (Q1-Q5) are reversed items. Calculate 1 = 5points, 2 = 4points, 3 = 3points, 4 = 2points, and 5 = 1point.
【3】. The five items Q5, Q10, Q11, Q14, and Q15 are weighted items. Calculate as 1 = 2points, 2 = 4points, 3 = 6points, 4 = 8points, and 5 = 10points.

For example;
if you give 1 point to Q5,
According to 【2】, Calculate 1 = 5points; According to 【3】, Calculate 5 points = 10 points. Finally, if you give 1 point to Q5, it will be calculated as 10 points.

To our knowledge, this study is the first measure to evaluate disability awareness programs. The scientific completion of the DAP scale was possible to lead to the implementation of effective disability awareness programs. Content validity alone is not a sufficient measure of the validity of a scale (Malhotra, Nunan & Birks, 2017). Since the content validity is based on the subjective opinions of the respondents, it is necessary to verify the reliability and the validity of the constituent concepts by using scale and collecting longitudinal data (Hair, Black & Babin et al, 2009). By verifying content validity, it became a clarification of these questions and words and the concept of disability awareness. The DAP that have been held so far have included doing lessons about disability, building relationships with people with disabilities, and experiencing handicap using eye mask (Takahashi, Mimura & Nakaie, 2016). By evaluating these efforts with DAP, more effective programs can be extracted. It is necessary to more clearly evaluate DAP by using a scale.

There are several limitations of this study. That is a verification of reliability and construct validity. The most used method is Cronbach's Alpha, which measures reliability and internal consistency (Sarmento & Costa, 2019). A commonly accepted rule for describing internal consistency using minimum Cronbach's alpha is 0.7 or higher (Cronbach,1951). Moreover, two common techniques used in scale development studies to verify the validity are Confirmatory Factor Analysis (CFA) and Exploratory Factor Analysis (EFA) (Orcan, 2018). CFA is a technique used to estimate the measurement model. It seeks to confirm whether the number of factors (or constructs) and the loadings of observed (indicator) variables on them conform to what is expected on the basis of theory. Indicator variables are selected on the basis of theory, and CFA is used to see if they load as predicted on the expected number of factors (Malhotra, Nunan & Birks, 2017).

In conclusion, by verifying the reliability and validity of the construct, the DAP scale developed in this study will be completed as a scientific study.

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