

Evaluation of Impressions toward People with Intellectual and Developmental Disabilities using the Semantic Differential Method

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Abstract

We examined impressions towards people with disabilities by using a semantic differential (SD) method. Participants (N = 105, 40 men and 65 women) rated video scenes featuring a person with intellectual and developmental disabilities, on 20 adjective-pair scales, for 10 minutes. In addition, they completed questionnaire, investigating degree of recognition of various disabilities. Using principal factor analysis, we extracted 3 factors: Evaluation, Activity, and Potency. Furthermore, we compared factor scores between male and female and between participants with high and low degrees of recognition of disabilities in each factors. We found sex differences only in Evaluation. Moreover, we found individual differences in the degrees of recognition of disabilities in Evaluation and Potency, but not in Activity. These results showed the factor structure within attitude formation towards people with disabilities and indicated that sex differences and individual differences in the degree of recognition of various disabilities affected attitude formation.

Key Words: Impressions toward disabilities, Understanding disabilities, Semantic differential (SD) method

1. Introduction

The current social conditions surrounding people with disabilities have changed. For example, establishing an inclusive education system within all schools is an international trend, in which students from a wide range of diverse backgrounds and abilities learn with their peers in regular schools (Loreman, Earle, Sharma, & Forlin, 2007). In order to promote these trends, it is necessary to accelerate the growth of understanding of disabilities in the public. However, it is a fact that there is discrimination against people with disabilities. This may be a potent factor that disturbs understanding of disabilities. To enhance understanding of disabilities, we need to identify background factors affecting attitude formation towards people with disabilities in the public. Many previous studies have examined perspectives on disabilities. Previous studies have used various experimental methods, such as the Picture-Ranking method (Richardson, 1971; Richardson, Goodman, Hasdorf, & Dornbusch, 1961; Richardson & Royce, 1968), the Sociometric method (Begab, 1970), and the Interview method (Conant & Budoff, 1983). Among these, questionnaire methods have been adopted in many previous studies, such as the ATDP (Attitudes Toward Disabled Persons Scale: Yunker, Block, & Young, 1986) and the SD (semantic differential) method (Osgood, Suci, & Tannenbaum, 1957).

Specifically, the SD method has been used in many previous studies because it provides a direct experimental method to measure impressions toward concept of disabilities (e.g., Antonak & Linvneh, 1991; Panek & Smith, 2005). The SD method is a generally used experimental technique for measurement of impressions and can reveal affectively-related variables relating to impressions. In the SD method, participants rate affective response in terms of direction and magnitude by using bipolar adjective pairs with Likert scales, such as “likable-dislikable,” “good-bad,” and “familiar-unfamiliar.” Osgood et al. (1957) facilitated the SD method as an experimental technique and found three semantic categories (factors), such as *Evaluation*, *Activity*, and *Potency* that are generally extracted in the SD method. Since it is easy to calculate scores in the SD method, researchers can examine impressions quantitatively (Heise, 1970). Thus, the SD method is useful to measure impressions toward people with disabilities.

Previous studies have examined public impressions toward people with disabilities, especially regarding intellectual disability (e.g., Ahlborn, Panek, & Jungers, 2008; Dhillon & Chaudhuri, 1990; Jaffe, 1966; Nosse & Gavin, 1991; Panek & Jungers, 2008; Panek & Smith, 2005; Rees Spreen, & Harnadek, 1991; and see also the review by Scior, 2011) and speech disorder (e.g., Lass, Ruscello, Bradshaw, & Blankenship, 1991; Lass, Ruscello, Stout, & Hoffman, 1991; Ma & Yu, 2013; Ruscello, Lass, & odbesek, 1988). For example, Panek and Jungers (2008) examined the effects of age, gender, and causality on impressions of people with intellectual disability by using the SD method. They showed that intellectual disability due to genetic factors (e.g., Down syndrome) was evaluated more positively than intellectual disability that was self-inflicted (e.g., brain damage due to drinking cleaning fluid). Additionally, they showed sex differences, in that female positively rated SD scale compared with male in the *Evaluation* (e.g., Worthless-Valuable: females significantly rated people with disabilities as valuable compared with males) and *Potency* (e.g., Weak-Strong: females significantly rated people with disabilities as strong compared with males) factors. Their study indicated the usefulness of the SD method in which we examine public impressions towards people with intellectual disability.

Our present study aimed to explore potent factors affecting public impressions toward a person with intellectual and developmental disabilities by using the SD method. We examined two unique points; the first point is the experimental stimuli. Previous studies (Ahlborn et al., 2008; Panek & Jungers, 2008) examined public impressions toward people with intellectual and developmental disabilities by using technical terms of disabilities and imaginary situation as experimental stimuli and showed the effects of *Evaluation*, *Activity*, and *Potency* factors on public impressions towards disabilities, meaning that these previous studies measured impressions toward concept of disabilities. We sought to reveal these impressions by using video scenes as experimental stimuli composed of real life persons with intellectual and developmental disabilities. It is natural to assume that socio-affective intensity (or reality) is stronger for video scenes than for language stimuli, such as technical terms, in relation to intellectual and developmental disabilities. A second point to consider relates to the individual difference factors that affect formation of impressions. Previous studies (Ahlborn et al., 2008; Panek & Jungers, 2008) revealed that age and sex differences affected ratings of *Evaluation*, *Activity*, and *Potency* factors, and indicated that these individual differences may be an important factor in shaping public impressions. Consider the study of impressions (e.g., Zajonc, 2001) that shows the relationship between ratings of familiarity and preference: as familiarity rises, preference rises. It is important to consider whether people have correct knowledge for the disabilities. Our present study examined the effects of the degree of recognition of various disabilities (familiarity with disabilities) as an individual difference factor on the formation of public impressions.

2. Method

2.1. Participants

Participants were 105 university students (40 men and 65 women). Ages ranged from 19 to 23 years ($M = 20.30$ years; $SD = 1.02$). All participants provided informed consent before participating.

2.2. Instruments

2.2.1. Questionnaire investigating the degree of recognition of various disabilities. We measured the degree of recognition of various disabilities by using a questionnaire in which participants rated 24 technical terms in relation to various disabilities and special needs education, such as physically disabled, attention deficit hyperactivity disorder, learning disability, and the Services and Supports for Persons with Disabilities Act, on a 4-point scale (1 = *very well* to 4 = *not at all*). Lower scores showed a better understanding of the terminology.

2.2.2. Video scenes. We presented 3 video scenes in relation to intellectual and developmental disabilities. For example, we adopted a documentary DVD in which a Japanese person with intellectual and developmental disabilities showed high abilities in relation to writing activities although he cannot talk with others. This showed an everyday life scene for a person with intellectual and developmental disabilities (Higashida, 2015).

2.2.3. Adjective Pairs. Twenty adjective pairs (see Table 1) were selected on the basis of our preliminary investigation and that of previous studies (Ahlborn et al., 2008; Ma & Yu, 2013; Panek & Smith, 2005).

2.3. Procedure.

All participants completed a questionnaire investigating degree of recognition of various disabilities and the SD experiment in a group.

In the SD experiment, after the participants watched video scenes for about 10 minutes on a large screen, they rated at his/her own pace their affective impressions on 20 adjectives using 5-point scales (e.g., 1 = *likable* to 5 = *dislikable*) printed on paper. All participants repeated this trial 3 times (3 scenes). The presentation order of the videos was counterbalanced across participants. Time required for the SD experiment was about 40 minutes.

3. Results

3.1. The results of factor analysis

Table 1 shows the factor loadings after promax rotation. We conducted factor analysis on the combined data of 3 scenes. The factor analysis extracted 3 factors using the principal factor method with promax rotation. The first factor accounted for 41.46% of the total variance, which includes “likable-dislikable,” “comfortable-uncomfortable,” and “pleasant-unpleasant” scales. The second factor accounted for 8.52% of the total variance, including “active-passive” and “extrovert-introvert” scales. The third factor accounted for 6.02% of the total variance, including “tidy-untidy” and “honest-dishonest” scales. These factors could be regarded as *Evaluation*, *Activity*, and *Potency*, respectively, according to the terminology of Osgood et al. (1957) and considering previous studies (Ahlborn et al., 2008; Ma & Yu, 2013; Panek & Smith, 2005). Further, we calculated Cronbach’s α for all scales to confirm the reliability of each factor. The α -value for the first factor (*Evaluation*) was .92, for the second factor (*Activity*) was .89, and for the third factor (*Potency*) was .74.

Table 1: Factor loadings after promax rotation

adjective pairs (<i>Japanese</i>)	I	II	III
likable-dislikable (<i>sukina-kiraina</i>)	.969	-.143	.034
comfortable-uncomfortable (<i>kanjinoyoi-kanjinowarui</i>)	.880	-.079	.038
pleasant-unpleasant (<i>kimochinoyoi-kimochinowarui</i>)	.835	.037	.027
pleasure-displeasure (<i>kai-fukai</i>)	.764	.106	.071
good-poor (<i>yoi-warui</i>)	.758	-.011	.138
familiar-unfamiliar (<i>shitashimiyasui-shitashiminikui</i>)	.712	.025	-.050
interesting-uninteresting (<i>omoshiroi-tsumaranai</i>)	.544	.119	-.089
free-not free (<i>jiyuuna-fujiyuuna</i>)	.436	.178	-.070
active-passive (<i>kappatsuna-kappatsudenai</i>)	-.131	.926	-.064
extrovert-introvert (<i>gaikoutekina-naikoutekina</i>)	-.089	.744	.061
confident-not confident (<i>jishinnoaru-jishinnonai</i>)	-.057	.662	.125
bright-dark (<i>akarui-kurai</i>)	.205	.623	-.148
lively-not lively (<i>ikiikishita-seikinonai</i>)	.209	.619	-.024
positive-negative (<i>sekkyokutekina-syoukyokutekina</i>)	-.013	.615	.175
happy-unhappy (<i>koufukuna-fukouna</i>)	.265	.511	.073
enjoyable-unenjoyable (<i>tanoshii-kurushii</i>)	.350	.477	-.174
tidy-untidy (<i>kichintoshita-darashinai</i>)	-.079	.132	.782
honest-dishonest (<i>majimena-fumajimena</i>)	-.013	.026	.750
quiet-noisy (<i>shizukana-urusai</i>)	.182	-.127	.528
Eigen value	7.88	1.62	1.14
Contribution of each factor (%)	41.46	8.52	6.02
Cumulative contribution (%)	41.46	49.98	56.00

Note: Cronbach’s α for scales based on Factor I (*Evaluation*) = .92, Factor II (*Activity*) = .89, and Factor III (*Potency*) = .74

3.2. Sex difference in each factor score

We examined the sex difference in each factor score. We conducted *t*-tests with participant sex as the between-participants factor on each of the *Evaluation*, *Activity*, and *Potency* scales using factor scores. The analysis revealed sex differences only in *Evaluation* [$t(103) = 2.26, p < .05, d = .65$], but not in *Activity* and *Potency* [*Activity*: $t(103) = 0.92, p = .36, d = .28$; *Potency*: $t(103) = 1.41, p = .16, d = .45$].

3.3. Individual differences in the degree of recognition of various disabilities on each factor score

We examined the relationship between individual differences in degrees of recognition of disabilities and each factor score. We divided all participants into two groups, high versus low degrees of recognition of disabilities, based on the median score of the questionnaires (median = 60): a high group ($n = 49$) in which the participants understood the terminology of disabilities, and a low group ($n = 52$) in which the participants did not fully understand the terminology, while removing people whose score was equal to the median ($n = 4$). We conducted t -tests with the degrees of recognition of disabilities (2; high versus low groups) as the between-participants factor on each of *Evaluation*, *Activity*, and *Potency*, using factor scores.

For *Evaluation* and *Activity*, we found significant differences between the high and low groups [*Evaluation*: $t(99) = -2.24$, $p < .05$, $d = .65$; *Activity*: $t(99) = -2.69$, $p < .01$, $d = .87$], showing that the high group had a lower factor score than the low group. However, for *Potency*, we found no significant difference [$t(99) = -1.18$, $p = .24$, $d = .36$].

To confirm the relationship between individual differences in degrees of recognition of disabilities and each factor score, treating the degrees of recognition of disabilities as a continuous variable, we conducted simple regression analysis on each factor. We found significant effects of degrees of recognition of disabilities on *Evaluation* and *Activity* [*Evaluation*: $R^2_{adj} = .05$, $p < .05$; *Activity*: $R^2_{adj} = .05$, $p < .05$], but not on *Potency* [$R^2_{adj} = .02$, $p = .06$].

4. Discussion

Our present study, using the SD method, explored factors affecting impressions toward people with intellectual and developmental disabilities by using video scenes as experimental stimuli. Furthermore, we examined sex differences in each factor score and the relationship between the degree of recognition of disabilities and each factor score.

Using factor analysis, we extracted three factors: *Evaluation*, *Activity*, and *Potency*. As Osgood et al. (1957) indicated, three factors are generally extracted, even if researcher uses various stimuli. These results confirm those of the present study. Although previous studies (e.g., Ahlborn et al., 2008; Dhillon & Chaudhuri, 1990; Jaffe, 1966; Nosse & Gavin, 1991; Panek & Jungers, 2008; Panek & Smith, 2005; Rees et al., 1991) examined impressions of disability in terms of the SD method, for some reason they did not conduct factor analysis; for example, Panek and Jungers (2008) conducted an SD experiment in which, based on previous studies using this method (Ahlborn et al., 2008; Antonak & Livneh, 2000; Osgood et al., 1957), they prepared adjective-pairs included in the three factors. Since they did not conduct factor analysis, it was questionable whether these adjective-pairs really represented the characteristics of each factor. We conducted factor analysis and confirmed that almost all these adjective-pairs used in Panek and Jungers (2008) are included in each factor.

We revealed sex differences, corresponding to the results of Panek and Jungers (2008). Although we found sex differences only in *Evaluation*, Panek and Jungers (2008) also found them in *Evaluation* and *Potency*. We consider some possible reasons why we found sex differences only in *Evaluation*, in contrast to the previous study: few adjective-pairs were included in *Potency*, the contribution of *Potency* was very low (6.02), and the reliability of *Potency* was relatively low compared with the other factors (see Table 1).

Furthermore, we examined the effects of the degrees of recognition of disabilities on the evaluations in the SD experiment. Consider the previous study (Zajonc, 2001) that examined impressions in terms of the relationship between ratings of familiarity and preference. The results showed that preference for stimuli increased depending on familiarity. Thus, familiarity might be an important factor to enhance preference. On the basis of these findings, we considered whether people have corrected, knowledge of disabilities, (familiarity) might affect formation of impressions toward people with disabilities. We found significant effects of degree of recognition of disabilities on the factor scores for *Evaluation* and *Potency*, but not for *Activity*. The participants with high degrees of recognition of disabilities showed more positive evaluations than participants with low degrees of recognition of disabilities in *Evaluation* and *Potency*. Thus, we assume that correct and sufficient knowledge of disabilities affects formation of positive impressions toward disabilities.

We demonstrated the usefulness of the SD method for research on the formation of impressions toward intellectual and developmental disabilities, because researchers can examine impressions quantitatively using the SD method, as indicated by Heise (1970).

Specifically, we used video scenes as experimental stimuli, in contrast to previous studies (e.g., Ahlborn et al., 2008; Panek & Jungers, 2008) that used technical terms of disabilities and imaginary situations as experimental stimuli. We proposed that we should use experimental stimuli with high socio-affective intensity reflecting the daily life of people with intellectual and developmental disabilities. We suspected that socio-affective intensity for technical terms of disabilities and imaginary situations might be low, and we proposed that video scenes might be relatively high in socio-affective intensity and thus we used them as experimental stimuli. It may be necessary to select or create experimental stimuli that correctly reflect the everyday life of people with disabilities. The present study has several limitations. We adopted 3 video scenes, and intellectual and developmental disabilities in our experimental design. In order to examine differences in attitude formation regarding various other disabilities, such as visual and hearing impairments, communication disorder, and physical disability, future research should use wider variety of disabilities as experimental stimuli. Considering this, we could conduct factor analysis and reveal the factors underlying attitude formation in relation to various disabilities.

5. Conclusion

In our present study, we extracted three factors (*Evaluation*, *Activity*, and *Potency*) by using factor analysis in a SD experiment in which the participants watched and evaluated video scenes depicting the daily life of people with intellectual and developmental disabilities. On the basis of the factor scores, we found sex differences in *Evaluation* that showed more positive evaluations by females compared to males. Furthermore, we revealed individual differences in the degrees of recognition of disabilities in *Evaluation* and *Potency*. The participants with high degrees of recognition of disabilities showed more positive evaluations than participants with low degrees of recognition of disabilities. These results provided evidence that three factors may affect attitude formation regarding people with disabilities, and that there are sexes differences and individual differences in the degree of recognition of disabilities.

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