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Additional Evidence for the Validity of the

Employer Attitudes toward Blind Employees Scale

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Abstract

Negative employer attitudes have traditionally been considered one of the major barriers to employment faced by people who are blind or visually impaired. Recent research suggests this continues to be a problem, yet little research has directly measured employer attitudes toward this population. Data was collected from a large sample of hiring managers (*N*=382) to provide evidence for the validity of a recently-developed instrument, the Employer Attitudes toward Blind Employees Scale. Confirmatory factor analysis was used to evaluate the instrument, providing evidence for its reliability and validity. Social desirability bias was not found to be a significant problem with the instrument. Self-reported likelihood to hire a person who is blind or visually impaired in the future had a strong association with attitude scores, providing evidence for the scale's predictive validity.

Additional Evidence for the Validity of the

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Blindness/visual impairment is a low incidence disability among working age adults (prevalence rate of 1.1%) and one that is associated with low labor force participation (Bureau of Labor Statistics, 2015). Employment rates for people who are blind or visually impaired are significantly lower than rates for people without disabilities (30.3% versus 71.7%), and unemployment rates are substantially higher (12.4% versus 6.0%; Bureau of Labor Statistics, 2015). A much-cited reason for this is negative employer attitudes towards people who are blind or visually impaired. Several studies have supported the idea that this population experiences attitudinal barriers from employers (Fuqua, Rathbun, & Gade, 1984; Gilbride, Stensrud, Ehlers, Evans, & Peterson, 2000; Inglis, 2006; Williams, 1972). Other studies have documented that both people who are blind or visually impaired and the rehabilitation professionals who work with them consider negative employer attitudes to be a substantial barrier to employment (Coffey, Coufopoulos, & Kinghom, 2014; Crudden & McBroom, 1999; Crudden, Williams, McBroom, & Moore, 2002; Kirchner, Johnson, & Harkins, 1997; Salomone & Paige, 1984). This continues to be a problem, as a large majority of vocational rehabilitation (VR) agency personnel in one recent study reported that the greatest challenge to developing relationships with businesses is the negative attitudes employers have toward people who are blind or visually impaired (McDonnall, 2014a).

Negative employer attitudes are considered a barrier to employment for people with all types of disabilities, and a significant amount of research attention has been given to the measurement of attitudes towards people with disabilities. Scales measuring attitudes towards people with disabilities began appearing in the literature in the late 1950s (Antonak & Livneh,

1988), with scales created specifically to measure attitudes of employers towards hiring people with disabilities appearing later (e.g., Diksa & Rogers, 1996; Milllington, Leierer, & Abadie, 2000). Both types of scales (i.e., those measuring general attitudes and those measuring attitudes towards hiring people with disabilities) have been used in employer attitude studies. Multiple literature reviews synthesizing the results of these employer attitudes studies have been published (e.g., Burke et al., 2013; Greenwood & Johnson, 1987; Hernandez, Keys, & Balcazar, 2000; Ju, Roberts, & Zhang, 2013; Unger, 2002) and new employer attitude studies continue to appear in the literature (e.g., Andersson, Luthra, Hurtig, & Tideman, 2015; Nota, Santilli, Ginevra, & Soresi, 2014; Paez & Arendt, 2014).

Hernandez et al. (2000) provided one of the early comprehensive reviews of the literature on employer attitudes towards people with disabilities. They reviewed 37 studies that were completed between 1987 and 1999. Some studies were disability-specific (e.g., intellectual disabilities, psychiatric disabilities, epilepsy) and some covered disabilities in general. They indicated that eight of the studies documented positive attitudes of employers and 11 documented negative employer attitudes. Major conclusions were that (a) positive attitudes were more likely when global attitudes towards people with disabilities were measured, and more negative attitudes were found when specific attitudes (e.g., willingness to hire) towards workers with disabilities were measured, (b) prior positive contact with people with disabilities was associated with more favorable attitudes, (c) there are differences in attitudes based on type of disability, with workers with physical disabilities viewed more favorably than those with intellectual or psychiatric disabilities, and (d) expressed willingness to hire people with disabilities exceeded actual hiring practices.

Ju et al. (2013) conducted a more recent review of the literature to update the Hernandez

et al. and Unger studies, which included 15 studies published between 1999 and 2012. The authors concluded that employers are increasingly demonstrating more favorable attitudes and indicating a willingness to hire people with disabilities. In general, the authors noted fewer concerns expressed by employers about hiring people with disabilities in the more recent studies. Differences were still noted in attitudes towards hiring people with different types of disabilities, although specific differences varied by study, and positive previous experiences with people with disabilities were again associated with willingness to hire and retain employees with disabilities. Both Ju et al. (2013) and Burke et al. (2013) recommended that future employer attitude studies utilize more sophisticated designs, including intervention research to investigate the ability of educational efforts to improve employer attitudes.

Although a large body of literature exists on employer attitudes towards people with disabilities, very little research has been conducted with employers that addresses or measures their attitudes towards people who are blind or visually impaired. Only one study was located that specifically measured employer attitudes towards employing individuals who are blind or visually impaired, an unpublished thesis conducted in New Zealand (Inglis, 2006). The study utilized a modified version of the Attitudes Towards Disabled Persons scale (Yuker, Block, & Campbell, 1960) to measure employers' global attitudes toward people who are blind or visually impaired and questions used in the Gilbride et al. (2000) study to assess employers' opinions on how difficult it would be to employ people with specific disabilities in the jobs for which they most frequently hire. In keeping with the results from the literature reviews, employers in New Zealand expressed mostly favorable attitudes towards people who are blind or visually impaired in general, but regarded blind people as one of the least suitable for positions most often available in their companies. On average, employers considered employing people who are blind

in the jobs they most often hire for to be between difficult and impossible (two of the response categories), and to be significantly more difficult to employ than people with other disabilities, with the exception of persons with moderate to severe intellectual disabilities.

In order to address the problem of negative employer attitudes toward workers who are blind or visually impaired in a scientific way (e.g., an intervention study), accurate measurement of employer attitudes is critical. Although several validated instruments exist to measure general attitudes towards people with disabilities (e.g., Antonak, 1982; Yuker et al., 1960), very few that focus specifically on employers have evidence for reliability and validity and none are specific to people who are blind or visually impaired (Hernandez et al., 2000). The more specific an attitude is, the more likely it will be related to behavior (Ajzen, 1988). Therefore, specific criteria should be used when developing attitude instruments in order to more accurately predict behavior (Ajzen & Fishbein, 1980). In this case, the specific criteria are contextual (employment situation) and disability-specific (people who are blind or visually impaired rather than people with disabilities in general). Research supports the importance of including specific disabilities and contexts when measuring attitudes towards people with disabilities (Grand, Bernier, & Strohmer, 1982; Strohmer, Grand, & Purcell, 1984).

Based on this void in the literature and need to accurately measure attitudes, the author developed an instrument specifically to measure attitudes of employers towards people who are blind or visually impaired as employees (McDonnall, 2014b). A formal instrument development process was undertaken, which is outlined in detail in the referenced article. A brief summary of the initial development process is provided in the method section.

The purpose of the present study was to provide additional evidence for the reliability and validity of this instrument, now referred to as the Employer Attitudes toward Blind Employees

Scale. The goal was to obtain a larger sample in order to conduct a confirmatory factor analysis and provide support for the proposed latent factor structure, validity, and reliability of the instrument. A larger sample also provided an opportunity to test some additional items for possible inclusion on the scale, in addition to or in replacement of original items, based on their psychometric properties.

Method

Instruments and Measures

The first step in the original development process was evaluating the possibility of modifying an existing measure of attitudes of employers towards people with disabilities or general attitudes towards people who are blind or visually impaired. A number of these instruments were obtained and reviewed (Bell & Silverman, 2011; Courington et al., 1983; Cowen et al., 1958; Whiteman & Lukoff, 1964), but none were deemed appropriate for modification. Items were developed based on a literature review of employers' concerns about hiring or employing people with disabilities and people with blindness or low vision (Domzal, Houtenville, & Sharma, 2008; Johnson, Greenwood, & Schriner, 1988; Kaye, Jans, & Jones, 2011; Wolffe & Candela, 2002). Nine experts in the areas of (a) employment of persons with blindness or visual impairments, (b) measurement of attitudes, and (c) business management reviewed the initial attitude items, the introductory text, and the participant instructions, and provided suggestions for additional items. A pilot test ($N = 85$) with the initial 27 items was conducted for the purpose of evaluating the instrument and reducing the number of items. A revised instrument consisting of 15 items was administered to people in hiring positions, and 158 usable responses were obtained. Based on psychometric analyses (utilizing coefficient alpha, item-total correlations, and the results of an exploratory factor analysis), 11 items were retained

on the revised version of the instrument.

The original 11 items from the Employer Attitudes toward Blind Employees Scale (EABES; McDonnall, 2014b) were retained for this administration, and 6 items were added to evaluate their appropriateness for inclusion on the instrument. Two of the additional items were reworded to represent the same general idea as items included in the last administration that were not kept (e.g., use of a guide dog in the workplace), two items measured a new idea (e.g., supervising a legally blind employee would require more work), and two items represented a similar idea as an original item, included to compare their psychometric properties (e.g., availability of jobs a legally blind person could perform).

Items conceptually fell under two factors or subscales: (a) productivity or ability of blind/visually impaired people as employees and (b) challenges to employing blind/visually impaired people. Items were worded as statements to which the respondents were asked to express their level of agreement. Both positively and negatively worded items were included. A seven-point Likert scale was used, ranging from *Strongly Agree* to *Strongly Disagree*. Individual items had scores ranging from 0 to 6, with higher scores indicative of a more positive attitude. The term "people who are blind or significantly visually impaired" was used to describe the population of interest to the study in the survey introduction. The term "legally blind" was used for brevity, beginning with the attitude items.

Because socially desirable response bias may affect attitude measurement, a social desirability scale was included in the survey to measure the relationship between scores on the EABES and social desirability. A short-form 10-item version of the Marlowe-Crowne Social Desirability Scale (MCSDS) that has been shown to have adequate psychometric properties and a strong correlation with the full MCSDS was used (Fischer & Fick, 1993; Strahan & Gerbasi,

1972). Four unrelated items were interspersed within the 10 MCSDS items to distract from the

purpose of the MCSDS. Additional items were included in the survey to gather information

about (a) respondent demographics, (b) company size, (c) position title, (d) communication with

vocational rehabilitation (VR) agency personnel, (e) previous hiring experience with people who

are blind, and (f) likelihood of hiring a blind person in the future. A measure of knowledge about

how blind people perform five basic job tasks was also included but was not utilized for this

report.

Sample Identification and Data Collection Procedure

Hiring managers (i.e., people employed by a company that make hiring decisions for that

company) were the target population for this study. SurveyMonkey (SM) Audience was used to

identify the sample. This is a fee-based service provided by SM to identify participants that meet

specific requirements for online surveys. SM has identified a large number of people who have

agreed to complete surveys, with a small donation given to a charity for their participation. A

stratified sample (based on company size) of managers, executives, and human resources

personnel who were thought to likely have hiring authority was identified by SM Audience. A

screening question was used to determine if the individuals identified did have hiring authority,

and those who did were invited to complete the survey. Data was collected online through the

author's SM account. SM Audience sent the invitation to participate to 2,476 people who were

employed in one of the job categories previously mentioned. A sample size of at least 400 was

targeted.

Data Analysis

Data analysis procedures began with standard techniques for psychometric analyses,

including calculation of Cronbach's alpha and evaluating standard deviations, range of

responses, and item-total correlations for each item. Confirmatory factor analysis utilizing structural equation modeling was conducted on the remaining items, with several models tested. Multiple fit indices representing the three major types of fit were utilized, with the following criteria established to signify good fit: (a) SRMR < .08, (b) RMSEA < .06, and (c) CFI > .95 (Brown, 2006; Hu & Bentler, 1999). Once the final set of items (the best fitting model) was identified, descriptive statistics were utilized to describe properties of the instrument. To assess predictive validity of the instrument, a one-way ANOVA was used to determine the relationship between attitude score and likelihood to hire a blind person in the future.

Results

Participants

We received 845 responses to the online survey invitation (a 34.1% response rate[1]), of which 605 were eligible to participate (i.e., employed in hiring positions). The online survey was completed by 579 of these respondents. Data was carefully screened to ensure respondents took adequate time to complete the survey (more than 5 minutes was required), answered the screener question correctly (i.e., a question that asks the person to select a specific response), and did not provide nonsensical answers to any write-in items. Respondents who did not meet these requirements were dropped from the analyses to ensure integrity of the data. This screening resulted in a usable sample of 382 participants with no missing data on the attitude items. The majority of participants were female, between the ages of 35 and 54, held a Bachelor's or graduate degree, and had an annual income of $75,000 or more. Additional information about participant demographics, job titles, and company size are presented in Table 1.

Initial Item Assessment

Item quality and scale reliability were initially assessed with coefficient alpha, item-total

correlations, standard deviations, and item range of responses. All items had adequate variability

and the entire range of responses was utilized for each item. Items were next assessed with

Cronbach alpha internal consistency estimates based on the subscale they were predicted to load

on (productivity or challenges). Three new items had low correlations with the other items on the

challenges scale and were eliminated from further analyses. Six items were retained on the

productivity scale (alpha = .92) and eight items were retained on the challenges scale (alpha =

.87) for the confirmatory factor analysis.

Confirmatory Factor Analysis

SAS® 9.4, and specifically PROC CALIS, was used to conduct the confirmatory factor

analysis (CFA). PROC CALIS analyzed the variance-covariance matrix utilizing maximum

likelihood as the estimation method. All models allowed the two factors to correlate, as

theoretically they are expected to have a relationship, but measurement error was assumed to be

uncorrelated. A CFA was first conducted on the original 11 items from the EABAS. The fit was

not adequate; Lagrange multipliers (modification indices) indicated that allowing one item (Q10:

People who are legally blind would have a hard time doing the jobs we have here) to load on

both factors would significantly improve model fit. Because this item could conceptually be

considered both a productivity issue and a challenge to hiring, the CFA was conducted again

with the item allowed to load on both factors. The fit of this model was good, with fit indices

within acceptable ranges (see Table 2).

Next, a CFA model was run with 10 original items (Q10 removed) and the three new

items. The new items consisted of an alternate item for Q10, an alternate item for a current

challenge item, and a challenge item representing a new idea. The fit was not acceptable, and

two items with large Lagrange multipliers for factor loadings were removed and the model was

re-run. This model, which included one new item on the productivity scale (alternate for Q10) and only the original items on the challenges scale, provided a good fit to the data. The fit of this model was compared to the fit of the model that allowed Q10 to load on both scales. The fit of the model with the new item included and Q10 removed was slightly better when comparing AIC values and did not require variable cross-loading; therefore, this model was retained (see Table 2 for goodness of fit indices). See Figure 1 for factor loadings of this final model, and Table 3 for the list of items retained in the final model. All factor loadings were statistically significant, providing support for convergent validity of the constructs, and there was a moderate correlation ($r = .58$) between the latent factors. Average variance extracted estimates for the latent factors were high: 57% for challenges and 74% for productivity. Because these variance extracted estimates are well above the squared correlation between the factors, discriminate validity of the constructs is supported (Fornell & Larcker, 1981).

Revised Instrument

The revised instrument includes five items on the productivity subscale (four original and one new) and the six original items on the challenges subscale. Internal consistency reliability estimates for the revised subscales were $\alpha = .92$ (productivity) and $\alpha = .84$ (challenges). Composite reliabilities indexes for the two factors were identical to their Cronbach alpha estimates. The productivity factor and the challenges factor are considered components of attitudes towards persons who are blind or visually impaired as employees, and therefore the scores on the subscales are combined for an overall attitude score. The potential range for the scale was 0 to 66, with higher scores indicating a more positive attitude towards people who are blind or visually impaired as employees. The actual scores obtained on the scale covered the entire range (0 to 66), with a mean of 35.52 (SD = 13.49). The median was 35 and the mode was

38, resulting in a distribution that was slightly negatively skewed (S = -0.17) and slightly flat (K = - 0.39), but approximated a normal distribution (Shapiro-Wilk W = 0.99, p = .02). The overall mean equates to approximately the neutral point (*Neither agree nor disagree*) on the Likert agreement scale. Use of the neutral response to individual items varied from a low of 7.9% to a high of 32.2%, demonstrating that most respondents expressed an opinion on the items, with the overall mean indicating that their global attitudes were in the neutral range regarding people who are blind or visually impaired as employees.

Social Desirability Scale

To evaluate the extent to which socially desirable responding was an issue with this instrument, the correlation between the attitude score and a short form of the most widely used social desirability scale, the Marlowe-Crowne Social Desirability Scale (MCSDS), was calculated. The correlation between these measures was .10 (p = .047), which is considered a very small effect. This correlation indicates that the two measures share .01 of their variance, which can be considered a negligible amount. This provides support that the attitude measure, as collected in this study in an online format, is not particularly susceptible to socially desirable response bias.

Criterion (Predictive) Validity

To assess the instrument's predictive validity, a one-way ANOVA was conducted with the likelihood to hire item ("How likely would you be to hire a qualified legally blind person for the next open position you have?") serving as the independent variable. People who reported being more likely to hire a legally blind person were expected to have higher scores on the attitude measure. The results of the statistical analysis provided strong support for this hypothesis: $F(3,375) = 120.08$, $p < .0001$, $R^2 = .49$. Means and standard deviations for each

response category are provided in Table 4. Tukey's HSD test documented that each response category group mean was statistically significantly different from all others at $p < .01$, with Cohen's d effect sizes ranging from 0.54 ("Very likely" compared to "Somewhat likely") to 2.79 ("Not at all likely" compared to "Very likely").

Discussion

An exploratory factor analysis provided initial evidence for the validity of the original 11-item version of the Employer Attitudes toward Blind Employees Scale (EABES) (McDonnall, 2014b). The present study provided an additional test of the EABES with a new sample of hiring managers, utilizing CFA. Results suggested that a slightly revised version of the EABAS fit the data better than the original measure. Although the original EABES exhibited marginal fit, allowing one productivity item to load on the challenges factor clearly improved model fit. A potential replacement item was available, and the model with this replacement item, compared to the model with the cross-loading item, provided a slightly better model fit. These CFA results support the hypothesized internal structure of the measure, provide strong support for the reliability of the factors, and provide evidence for its discriminant and convergent validity.

This study provides support that socially desirable response bias is not a substantial problem for this instrument, when administered online. The implementation method (e.g., online, telephone interview, in person, interactive voice recognition software over the phone) may be associated with the tendency to respond in a socially desirable manner, and an online implementation method is considered to be the best way to diminish this effect (Kreuter, Presser, & Tourangeau, 2008). The fact that the instrument measures specific attitudes (i.e., toward people who are blind or visually impaired *as employees*) is also thought to contribute to the lack

of a response bias, as compared to a more general measure of attitudes towards people who are blind or visually impaired.

Predictive validity is provided by the relationship between scores on the measure and self-reported likelihood of hiring a blind or visually impaired employee in the future. There was a strong relationship between the variables, with those who reported a greater likelihood of hiring someone who is blind or visually impaired having higher attitude scores. Although measurement of actual hiring behavior would provide even stronger evidence, given the low incidence of blindness and visual impairment and the low labor force participation rates of this population, it would be difficult to implement that measure in practice. This represents one limitation of the study; another potential limitation is that the sample was limited to people who are participants in SM Audience. The sample was further limited to those who decided to participate, and the sample who elected to take the survey may have more experience with or interest in hiring people with disabilities. All of these factors may result in a non-representative sample, but for the purposes of testing the factor structure of this instrument, the sample is considered appropriate.

In summary, this study provides ample evidence for the validity and reliability of the revised EABES. Additional research with new samples of hiring managers is needed to continue to provide evidence for the scale's validity. The scale in its current form is appropriate for use in research projects, including intervention studies with the goal of changing employer attitudes. Given the ongoing problem of negative employer attitudes towards people who are blind or visually impaired, such interventions will be important to improve employment outcomes for this population. This instrument will serve as a valuable and necessary tool in scientifically addressing this problem.

Note

[1] Once the targeted number of responses in each company size category was obtained (most within a few days), potential respondents no longer had the opportunity to participate. This truncates the response rate from what it may have been if participants were provided more time to provide a response.

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Table 1: Sample Demographics and Company Size

Variable	Frequency	Percent
Gender (Female)[a]	222	58.6
Age[a]		
18 to 34	87	23.0
35 to 44	109	28.8
45 to 54	105	27.7
55 or older	78	20.6
Education level[a]		
High school or less	33	8.7
Some college/2-year degree	104	27.4
Bachelor's degree	156	41.2
Graduate degree	86	22.7
Income level[a]		
Less than $25,000	12	3.2
$25,000 to $49,999	58	15.3
$50,000 to $74,999	88	23.2
$75,000 to $99,999	88	23.2
$100,000 or more	133	35.1
Region[a]		
Northeast	73	19.3
Midwest	87	23.0
South	139	36.7

West	80	21.1
Job title[b]		
Managers/Supervisors	240	62.8
Directors/Chief executives	60	15.7
Human resources personnel	40	10.5
Owners	30	7.9
Other	12	3.1
Company size (number of employees)[b]		
1 to 14	19	5.0
15 to 99	128	33.5
100 to 499	80	20.9
500 to 1,999	85	22.3
2,000 or more	70	18.3

[a]N=379; [b]N=382

Table 2: Goodness of Fit Indices for Confirmatory Factor Analysis Models

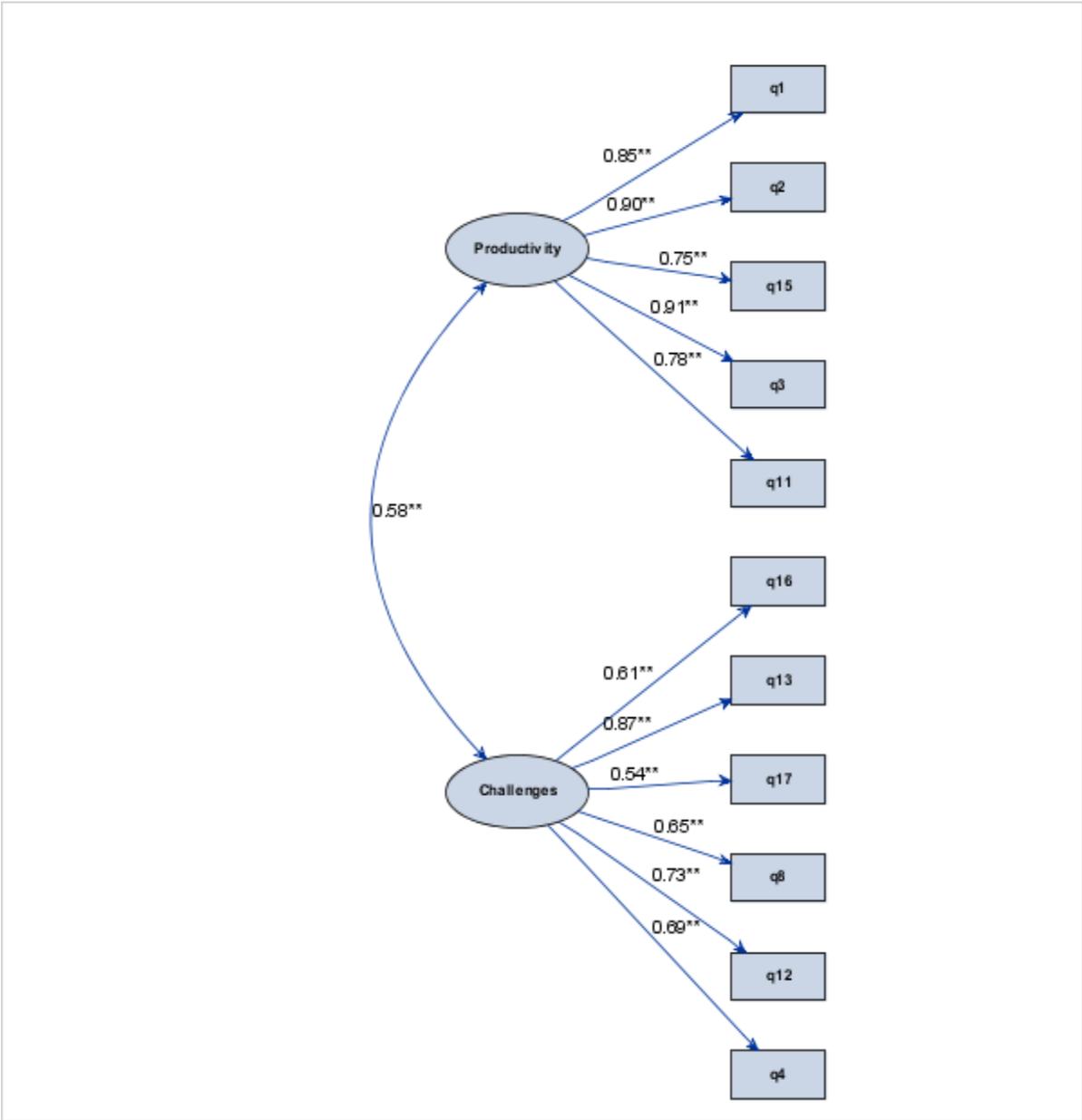| Model	χ^2/df	CFI	SRMR	RMSEA (90% CI)	AIC
Original items	196.57/43	.933	.073	.097 (.083, .111)	242.57
Allowing Q10 to cross-load	104.49/42	.973	.047	.063 (.048, .078)	152.49
Revised final model (Q10 removed, Q1 added)	99.95/43	.976	.047	.059 (.044, .074)	145.95

Table 3: Final Model Items of the Employer Attitudes toward Blind Employees Scale

Item	Scale	Item
1	Prod	I can think of jobs at my company that a legally blind person could perform.
2	Prod	People who are legally blind would be able to perform work of the same quantity as sighted people at my company.
3	Prod	People who are legally blind would be able to perform work of the same quality as sighted people at my company.
4	Chall	Hiring a person who is legally blind would be too costly for my company, considering accommodations or other extra expenses.
8	Chall	Because most employees know very little about blindness or visual impairment, it would be challenging to have a person who is legally blind work here.
11	Prod	People who are legally blind could provide service to our customers just as well as people who are sighted can.
12	Chall	Employees would need to provide more help to a coworker who is legally blind than to their sighted coworkers.
13	Chall	It would be hard to justify hiring someone who is legally blind if we had other qualified applicants.
15	Prod	A person who is legally blind would be able to successfully supervise others at my workplace.
16	Chall	Our customers might feel uncomfortable having a person who is legally blind help them.
17	Chall	I would be apprehensive about terminating someone who is legally blind due to potential legal issues.

Table 4: Attitude Means and Standard Deviations by Likelihood to Hire Response

Likelihood response	N	Mean	SD
Not at all likely	25	15.00	9.57
Not very likely	100	24.72	8.72
Somewhat likely	172	39.91	8.88
Very likely	82	45.65	12.22

Figure 1: Confirmatory Factor Analysis Model with Item Factor Loadings

**p < .01