Journal of Vocational Rehabilitation, 57, Michele, C. McDonnall, Jennifer L. Cmar, Structural relationships among predictors of employer attitudes toward blind employees, 73-84, 2022, with permission from IOS Press, www.iospress.nl. The publication is available at IOS Press through https://doi.org/10.3233/JVR-221200.

Structural Relationships Among Predictors of Employer Attitudes Toward Blind Employees

Michele C. McDonnall*, Ph.D., CRC

Jennifer L. Cmar, Ph.D.

The National Research & Training Center on Blindness & Low Vision

Mississippi State University

*Corresponding author: Michele McDonnall, The National Research & Training Center on Blindness & Low Vision, P.O. Box 6189, Mississippi State, MS 39762, 662-325-2001, 662-325-8989 (FAX), or m.mcdonnall@msstate.edu.

The contents of this manuscript were developed under a grant from the U.S. Department of Health and Human Services, NIDILRR grant 90RT5040-01-00. However, these contents do not necessarily represent the policy of the Department of Health and Human Services and should not indicate endorsement by the Federal Government.

Abstract

BACKGROUND: Negative employer attitudes are a primary factor associated with low employment rates and high unemployment rates of people with blindness and low vision (B/LV). Research has identified correlates of employer attitudes, but no investigations of the structural relationships between variables have been published.

OBJECTIVE: The purpose of this study was to extend the current research regarding employer attitudes toward people with B/LV by assessing the structural relationship between variables associated with employer attitudes.

METHODS: Participants were 387 hiring managers employed by organizations across the country who completed an online survey. We utilized structural equation modeling to confirm our measurement model and evaluate structural models of predicted relationships between variables.

RESULTS: Five variables significantly predicted employer attitudes: awareness of people with disabilities at the worksite, knowledge, inaccurate belief in knowledge, previous hiring of someone with B/LV, and having a personal relationship with someone with B/LV. Previous communication with vocational rehabilitation (VR), having a company policy about hiring people with disabilities, and personal relationship predicted having hired someone with B/LV.

CONCLUSIONS: Findings support the value of VR professionals providing education about how people with B/LV perform work tasks while communicating with employers and providing trial work experiences to encourage hiring.

Keywords: blindness, low vision, visual impairment, employer attitudes, hiring, vocational rehabilitation

Structural Relationships Among Predictors of Employer Attitudes Toward Blind Employees

1. Introduction

Employment rates of people with disabilities, including those who are blind or have low vision (B/LV), have historically been substantially lower than rates for the general population, while unemployment rates have been significantly higher (McDonnall & Sui, 2019). In 2019, 46.2% of those with a vision difficulty were employed compared to 77.8% of people without disabilities and more than twice as many were unemployed (8.5% versus 4.1%, respectively; (U.S. Census Bureau, 2020). Although several factors likely contribute, negative employer attitudes are a primary factor thought to be associated with these low employment rates and high unemployment rates. Employer attitudes have been identified as a major employment barrier by both people who are B/LV (Coffey et al., 2014; Crudden & McBroom, 1999; Salomone & Paige, 1984; Silverman et al., 2019; Steverson, 2020) and the professionals who work with them (Crudden et al., 2005; McDonnall, 2014b; McDonnall et al., 2013). Despite substantial advances in assistive technology, which make work tasks in most job settings much more accessible for people with B/LV, employment rates for this population still lag far behind people without disabilities (U.S. Census Bureau, 2020). Employer attitudes are a remaining barrier that must be overcome to improve employment opportunities for people with B/LV.

Many researchers have investigated employer attitudes towards people with disabilities and factors that correlate with these attitudes. This research has been summarized in three literature reviews that included studies conducted between 1987 and 2012 (Hernandez et al., 2000; Ju et al., 2013; Unger, 2002). Several factors associated with employer attitudes were identified in these reviews, including (a) exposure to people with disabilities, (b) lack

of knowledge or misconceptions about disability, (c) type or severity of disability, and (d) contact with rehabilitation professionals. Previous exposure to people with disabilities is the factor that has most consistently been associated with better employer attitudes across all reviews (Hernandez et al., 2000; Ju et al., 2013; Unger, 2002). Misconceptions about disability is considered a primary factor that negatively impacts employer attitudes (Unger, 2002). Research has confirmed that employers have concerns about how people with disabilities could perform their work and have limited information about accommodations (Bruyère et al., 2006; Domzal et al., 2008; U.S. Department of Labor, 2014; Unger, 2002). Lack of knowledge among employers about how people with B/LV can function on the job has been documented (McDonnall et al., 2014). Type of disability has been associated with employer attitudes in many studies; although specific findings have varied, the most consistent finding has been an employer preference for people with physical disabilities over those with psychiatric disabilities (Hernandez et al., 2000; Ju et al., 2013; Unger, 2002). However, other studies have documented that employers have particular concerns about hiring people with B/LV (Chen et al., 2016; Fuqua et al., 1984; Gilbride et al., 2000; Inglis, 2006). Although not studied as frequently, some research has suggested a relationship between contact with vocational rehabilitation (VR) and similar disability support programs and more positive employer attitudes (Hernandez et al., 2000; Ju et al., 2013).

Only a limited amount of research has been conducted regarding employer attitudes towards people with B/LV. Two studies investigated factors that were associated with employer attitudes toward this population as employees. Both studies utilized multiple regression to identify correlates of employer attitudes. The first study, which utilized a relatively small sample, found that three variables significantly predicted employer attitudes toward people with B/LV as

employees: having communicated with VR about employing people with disabilities, knowledge about how people with B/LV can perform specific work tasks, and having hired someone with B/LV in the past (McDonnall et al., 2015). The second study included several additional variables, and had similar findings: having hired someone with B/LV in the past, knowledge about how people with B/LV perform specific work tasks, belief in this knowledge (even though inaccurate), and having an ongoing relationship with VR were significant predictors (McDonnall & Crudden, 2018). One major difference in the results was that communication with VR was not a significant predictor of attitudes. However, results demonstrated that having hired acted as a mediator between communication with VR and attitudes. In other words, communication with VR influenced hiring, and hiring in turn influenced attitudes. A notable finding from both studies is that having a personal relationship with someone with B/LV was not associated with more positive attitudes, which contradicts research regarding employer attitudes towards people with disabilities (Hernandez et al., 2000; Ju et al., 2013; Unger, 2002).

In summary, the research conducted to date has identified several correlates of employer attitudes toward people with disabilities and toward people with B/LV, but no investigations of the structural relationships between variables associated with attitudes have been published. The purpose of this study is to extend the current line of research regarding employer attitudes toward people with B/LV, going beyond regression analyses to assess the structural relationship between variables associated with these employer attitudes. This research will also address limitations of previous employer attitudes toward people with B/LV studies by utilizing more precise variables and adding additional variables of interest. The research question investigated was: What is the structural relationship between variables known to be related to employer attitudes towards

people who are B/LV? To follow-up on previous findings, we were particularly interested in determining the relationships between communication with VR, hiring, and attitudes.

2. Method

2.1 Participants

Participants were hiring managers identified via Research Now, an online market research company that has a vetted business-to-business research panel. We utilized this panel to invite some of its members to participate in our research study. Criteria for participation was being a U.S. resident and being involved in making hiring decisions for their company. Participants who completed the survey received compensation from Research Now.

Research Now sent 25,843 email invitations to panelists who were managers or high-level administrators. Of the invitations sent, 1,786 panelists opened the email link to read information about the study and 1,064 opened the link to the survey, for a 59.6% initial response rate. Of the 1,064 who began the survey, 668 reported being involved in making hiring decisions for their organization. Of the 668 who were qualified to participate, 464 respondents completed the survey (69.5% completion rate). After data cleaning, a usable sample of 387 with no missing data was obtained for this study.

The majority of participants were male (59.7%) and highly educated. Almost 45% had a graduate-level degree, 35.1% had a 4-year college degree, 18.1% had some college or a 2-year college degree, and 1.8% had a high school diploma or less. Participants ages varied, but most were 55 or older: 4.7% were 25 to 34, 8.8% were 35 to 44, 23% were 45 to 54, 42.9% were 55 to 64, 19.4% were 65 to 74, and 1.3% were 75 or older. Respondents were from 46 states across the country. The majority identified their positions within their companies as manager or supervisor (53.8%); other job titles were director/chief executive (25.3%), owner (13.2%), and human

resources personnel (3.9%). Almost 4% did not select one of the available categories and indicated they held a different position, such as vice president or senior analyst. Participants worked for companies of varying sizes, with most working for small or large companies: 16% very small (1 to 14 employees), 35.1% small (15 to 499 employees), 16.8% medium (500 to 999 employees), and 32% large (1,000+ employees).

2.2 Measures

2.2.1 Employer Attitudes Toward Blind Employees Scale

Our dependent variable was employer attitudes about people with B/LV as employees, measured with the Employer Attitudes Toward Blind Employees Scale (EABES; McDonnall, 2014a, 2017). The EABES is an 11-item measure that consists of two subscales: Productivity and Challenges. Items are statements for which respondents express their level of agreement on a 7-point Likert scale. An example Productivity item is “People who are legally blind would be able to perform work of the same quality as sighted people at my company.” A complete list of EABES items is available in McDonnall (2017). Total scores can range from 0 to 66, with higher scores indicating more positive attitudes. In this study, scores ranged from 3 to 66 with a mean of 34.53 (SD = 12.86). Reliability for the two subscales was high (.92 for productivity and .84 for challenges), and confirmatory factor analysis supported the validity of the measure (McDonnall, 2017). The current study provides additional support for the validity of the EABES, with confirmatory factor analysis verifying that the two subscales comprise the second-order factor attitudes.

2.2.2 Knowledge

Five items were utilized to measure employers’ knowledge about how people who are B/LV can perform common work tasks. Participants were asked if they knew how a person with

B/LV could perform the following tasks: (a) access pre-printed material, (b) access a computer, (c) utilize general office equipment, (d) utilize standard industrial equipment or machinery, and (e) handle a cashier position. Participants responded *yes* or *no* to each item; if a yes response was provided, they were asked to specify how the task could be performed in an open-ended response (text box). A team of four researchers rated the responses to this "how" question for accuracy using a coding scheme that was developed and refined in two previous studies (McDonnall et al., 2014; McDonnall & Crudden, 2018). A score of 2 was applied if the response demonstrated complete and accurate knowledge of how a B/LV person could perform the task. A score of 1 indicated that the response demonstrated some knowledge but was either incomplete or unclear, and a score of 0 indicated no knowledge. Participants who responded *no* to the item also received a score of 0. The researchers independently coded each response, compared coded responses, and discussed any inconsistent coding. The team reached a consensus on all conflicting responses. Knowledge scores could range from 0 to 10; for our sample, the range was 0 to 8, with 62.3% of the sample having no knowledge about how people with B/LV can perform the work tasks. Because this measure represents knowledge and not a latent construct, the variable was treated as observed in the analyses.

2.2.3 Inaccurate Belief About Knowledge

Many more respondents thought they knew how a person could perform the tasks than actually did – in other words, many people responded *yes* to an item, but their score on the "how" response indicated no knowledge. Each yes response to a knowledge item with a score of 0 (no knowledge) received a score of 1 point on this measure. Each yes response to a knowledge item with a score of 1 or 2 and each no response to a knowledge item received a score of 0 on this measure. This measure represents inaccurate belief in knowledge about how B/LV people

can perform work tasks. Scores covered the full range of the scale, from 0 to 5. Because this variable does not represent a latent construct, it was treated as observed in the analyses.

2.2.4 Communication with VR About People with B/LV

This measure was based on participants' responses to three questions regarding their interactions with VR. The first question was "Have you ever communicated with your state vocational rehabilitation agency about employment of people with disabilities?" If an affirmative response was provided, participants were asked "Has this included talking about people who are blind or significantly visually impaired?" Respondents who answered yes to both items and had not hired someone in the past who was B/LV received a score of 1 for this variable. For respondents who had hired someone who was B/LV in the past and had communicated with VR, the temporal order of the communication and hiring was determined – whether the communication happened before the hiring or after. Respondents who responded yes to both of the preceding items, had hired someone who was B/LV in the past, and communicated with VR *before* hiring also received a score of 1 for this variable. Respondents who had any other combination of responses on these three items received a score of 0 for this variable.

2.2.5 Other Variables

The remaining variables utilized in the study were dichotomous, based on a yes-no response to an item in the survey. Yes responses were coded 1, and no responses were coded 0. *Having hired* was assessed by the question: "Have you ever hired someone for your business who is blind or significantly visually impaired?" Having a *personal relationship* was determined by the response to the question: "Have you ever had a personal relationship with anyone who is blind or significantly visually impaired, such as a friend, family member, or neighbor?" *Company policy about hiring* was assessed by the question: "Does your company have a written

policy about employment of people with disabilities?" *Awareness of people with disabilities* was determined by the response to the question: "Are you aware of any people with disabilities working at your company?"

2.3 Data Collection

Data collection occurred in May through July of 2017. Data was collected through an online survey platform, accessed via an individual survey link for each potentially eligible participant identified by Research Now. Participants had to pass two screener items to participate in the study. The first was a question to ensure that respondents met the criteria of being involved in hiring decisions for their company. The second item was placed approximately midway through the survey; respondents were asked to select a particular answer to the item to ensure that they were reading the items. Respondents who answered this item incorrectly were disqualified and exited the survey. In an additional effort to ensure quality data, we also disqualified respondents who took less than 5 minutes to complete the survey.

2.4 Data Analysis

We used SAS 9.4 for initial data screening and descriptive analysis. We screened the data for outliers, examined descriptive statistics, and checked distributional assumptions. Our sample size of 387 exceeds the minimum recommendation of 5 to 10 observations per item for structural equation modeling (Bentler & Chou, 1987). The continuous variables did not exhibit any substantial departures from normality based on skewness and kurtosis values ranging from -0.68 to 1.91 and from -1.19 to 3.67, respectively (West et al., 1995). However, the data did not meet the normality assumption due to the inclusion of dichotomous endogenous variables.

To examine the relationships between observed and latent variables, we conducted structural equation modeling with Mplus (version 8.6) using maximum likelihood estimation

with robust standard errors (MLR). MLR is robust to departures from normality and appropriate for combinations of dichotomous and continuous endogenous variables (Muthén & Muthén, 2017). To evaluate the measurement model, we used confirmatory factor analysis (CFA) to test a second-order factor model. Absolute fit index values indicating good fit were comparative fit index (CFI) > 0.95, root mean square error of approximation (RMSEA) < 0.06, and standardized root mean square residual (SRMR) < 0.08 (Hu & Bentler, 1999). To test the hypothesized structural model, we utilized MLR with a logit link, which uses linear regression equations to estimate paths to continuous variables and logistic regression equations to estimate paths to dichotomous variables (Muthén & Muthén, 2017). Mplus does not provide absolute fit statistics for MLR models with categorical endogenous variables; therefore, we computed chi-square difference tests using loglikelihood values with scaling correction factors (Satorra & Bentler, 2010) to evaluate model fit for nested models.

3. Results

3.1 Confirmatory Factor Analysis

We ran a CFA to test a model with Attitudes as a second-order factor consisting of two first-order factors: Productivity (5 indicators) and Challenges (6 indicators). Table 1 provides descriptive statistics and Pearson correlations for the 11 indicators. The correlations ranged from .16 to .77, which signifies that multicollinearity was not present in the data. One factor loading for each first- and second-order factor and the residual variances of the first-order factors were fixed to 1, resulting in an overidentified model with 33 free parameters and 44 degrees of freedom. The second-order factor model with standardized factor loadings is depicted in Figure 1. The fit indices indicated that the model exhibited good fit to the data: $\chi^2/df = 2.09$, CFI = 0.97, RMSEA = 0.05, and SRMR = 0.06. The unstandardized factor loadings, R^2 values, and alpha

coefficients are available in Table 2. The higher-order construct of Attitudes explained 71% of the variance in the Productivity subscale and 53% of the variance in the Challenges subscale. These results confirm the adequacy of the second-order factor model and support its inclusion in the subsequent structural model.

3.2 Structural Equation Model

The structural equation model included three observed exogenous variables and four observed endogenous variables as predictors of Attitudes as a second-order latent factor. Table 3 provides descriptive statistics and a correlation matrix for the variables in the model (using a sum score for Attitudes). The correlations ranged from .05 to .62, indicating no multicollinearity issues. Model 1, the original model containing all hypothesized paths, is portrayed in Figure 2. All paths in this model were significant except three. Removing the non-significant paths one-by-one resulted in three alternative models. For Model 2, we removed the path from VR communication to Attitudes. For Model 3, we removed the paths from VR communication to Attitudes and Hired to Knowledge. For Model 4, we removed the paths from VR communication to Attitudes, Hired to Knowledge, and Company policy to Attitudes. In all models, one factor loading for each first- and second-order factor was fixed to 1 and the residual variances of the first-order factors were estimated. To assess model fit, we computed rescaled likelihood ratio tests comparing each nested model with the previous model. As shown in Table 4, the chi-square difference tests for Model 1 vs. 2 and Model 2 vs. 3 were not significant, which indicates that removing the paths from VR communication to Attitudes and from Hired to Knowledge did not adversely affect model fit. Removing the path from Company policy to Attitudes significantly worsened model fit based on the chi-square difference test for Model 3 vs. 4 (see Table 4); therefore, we retained that path and selected Model 3 as the final, best-fitting model.

Figure 3 illustrates the final model and provides standardized estimates for paths to continuous endogenous variables, odds ratios (OR) for paths to dichotomous variables, and R^2 for each continuous endogenous variable. Table 5 presents unstandardized estimates for the final model; all paths were significant except for the path from Company policy to Attitudes. The model explained 27.2% of the variance in Attitudes. Respondents who worked for companies that had a policy about hiring people with disabilities had 4.85 times higher odds (95% CI [3.07, 7.65]) of being aware of people with disabilities working at their company than respondents whose companies did not have a policy. The odds of hiring a person with B/LV were 5.61 times higher for respondents who communicated with VR (95% CI [1.83, 17.18]) compared to respondents who did not communicate with VR. The odds of hiring were 3.80 times higher for having a company policy (95% CI [1.64, 8.82]) than not having a company policy and 3.37 times higher for having a personal relationship (95% CI [1.78, 6.40]) than not having a personal relationship.

4. Discussion

In this study, we investigated the structural relationship between variables that had previously been identified as having a relationship with employer attitudes toward people who are B/LV. We refined one variable used in previous studies and included two additional variables which were unavailable in previous studies. We found that most variables in the model had a significant direct relationship with employer attitudes, but two variables had only an indirect relationship – communication with VR and company policy about hiring people with disabilities.

Having hired someone with B/LV in the past had a direct relationship with attitudes, as found in two previous studies (McDonnall et al., 2015; McDonnall & Crudden, 2018). Having hired also predicted inaccurate belief in knowledge about how people with B/LV perform work

tasks, but it did not have a significant relationship with actual knowledge in this area. This finding about the relationship between actual and perceived knowledge and hiring coincides with results from a previous study (McDonnall & Crudden, 2018). The finding suggests that employing a person with B/LV does not impact specific knowledge of how people with B/LV perform work tasks but does impact the employers' understanding that they *can* perform the tasks.

In this model, having hired precedes attitudes, which corresponds to the temporal order of these measures (i.e., having hired occurred in the past, preceding the measurement of attitudes). We realize there is likely a reciprocal relationship between these variables, with some level of positive attitude necessary prior to hiring someone with B/LV. Interaction with someone after hiring and awareness of positive work performance of an employee with B/LV can further influence attitudes. This suggests that a trial work experience sponsored by VR can be a viable method to improve employer attitudes and encourage hiring of a person with B/LV, as recommended by VR professionals (McDonnall et al., 2013). Trial work experiences provide an opportunity for employers to learn about a blind employee's skills and potential without taking on the risk of hiring. Presumably the level of positive attitude needed to agree to a risk-free trial work experience would be less than that needed to hire an individual who is B/LV.

Three factors were antecedents of hiring: (a) communication with VR about employing people who are B/LV (before a hiring decision), (b) having a personal relationship with someone who is B/LV, and (c) working for a company that has a policy about hiring people with disabilities. This study utilized a more precise variable for communication with VR than previous studies, as the current variable took into consideration timing of the communication, and only identified respondents who communicated prior to hiring (or not hiring) a person with

B/LV. Defining the variable in this way increases confidence that the communication with VR influenced the hiring decision, rather than occurred as a result of hiring. Given that slightly more than half of the people who hired and communicated with VR indicated that the communication happened after the hiring decision, this distinction is important. Communication with VR did not have a direct relationship with attitudes, only with hiring. Our findings concur with results of a previous study that supported having hired acting as a mediator between communication with VR and attitudes (McDonnall & Crudden, 2018). Previous research has also documented a relationship between company policy and hiring (Araten-Bergman, 2016; Gewurtz et al., 2016). Although company policy about hiring people with disabilities was not directly related to attitudes, it had an indirect relationship through its relationship to hiring and awareness of people with disabilities working at the company. This study suggests that company policy may prompt employers to hire someone with B/LV but does not directly influence their attitudes about this population as employees.

In addition to its direct relationship with having hired, having a personal relationship with someone with B/LV was associated with more positive attitudes. This is the first study in this series of studies on employer attitudes toward people with B/LV as employees that documented an association between personal relationships and attitudes. The current finding coincides with a large body of literature that supports having a personal relationship or previous exposure to people with disabilities being associated with more positive employer attitudes (Hernandez et al., 2000; Ju et al., 2013; Unger, 2002). In all three studies in this series, approximately half of the participants reported having a personal relationship with someone with B/LV. Reasons for differences in results of the current and previous studies are not apparent and may warrant additional research.

Three other factors had a direct relationship to attitudes: (a) knowledge about how people with B/LV perform work tasks, (b) inaccurate belief about this knowledge, and (c) being aware of people with disabilities working for the company. Perhaps surprisingly, inaccurate knowledge had a stronger relationship to attitudes than actual knowledge did. This finding indicates that belief in knowledge, or the understanding that a person with B/LV can perform specific tasks regardless of how they actually do so, is more important than actual, specific knowledge about how people with B/LV perform tasks. This is a positive finding, as specifics about how someone performs a task may be easily forgotten, while the general awareness that someone can perform the task is more likely to be retained. Awareness of people with disabilities working for the company had a relationship to attitudes of a similar strength as inaccurate knowledge and having hired in the past. This awareness variable may be similar to the concept of subjective norms in the Theory of Planned Behavior, in which the opinions and beliefs of people around an individual influence the person's behavioral intentions (Ajzen, 1985). Tests of this theory have documented that attitudes and subjective norms are related to each other and both directly influence behavioral intentions and, to a lesser extent, actual behavior (Armitage & Conner, 2001; McEachan et al., 2011). Having a company policy leads to this awareness, providing another indirect path between company policy and attitudes.

4.1 Limitations and Future Research Directions

Several limitations of this study should be mentioned. First, it relies solely on cross-sectional self-reported survey data, which may include inaccuracies, either accidental or intentional. We attempted to mitigate intentional inaccuracies by utilizing a screener item to identify people who were not reading the questions and requiring a minimum amount of time to complete the survey. Despite utilizing SEM directional paths to analyze the cross-sectional data,

we cannot be certain whether hiring resulted in better attitudes or better attitudes existed prior to hiring. Likely this is a reciprocal relationship, which could not be tested in this model. Another limitation of the study is the level of measurement used for some variables. Three variables measured as dichotomous (yes-no) in this study (company policy, personal relationship, awareness of people with disabilities) may benefit from a finer level of detail, and future studies should implement more detailed measurement. Additional research focusing on the relationship between having a personal relationship with someone with B/LV and attitudes is warranted to support this study's findings of a positive relationship, as they contradict two previous studies. More detailed information about the nature of the personal relationship would be beneficial to future investigations.

4.2 Implications for Practice

The ultimate goal of improving employer attitudes is to reduce discrimination and increase employment opportunities for people with B/LV. This study documented several variables that have a direct relationship with attitudes and three variables that have a direct relationship with having hired someone with B/LV. Two of these three variables have implications for practice for VR professionals. First, the findings provide additional support for the importance of VR professionals communicating with employers. Communication with employers before they have made a decision to hire someone with B/LV – possibly before hiring someone with B/LV was even a consideration – is clearly associated with hiring. VR professionals should be encouraged by this finding and know that their efforts at business development and employer engagement are worthwhile and can be fruitful. In the post-pandemic economy that involves a large number of jobs that employers are unable to fill across many

industries (Ellyatt, 2021), employers will likely be especially receptive to VR professionals' outreach efforts.

Second, company policies about hiring people with disabilities matter, and VR professionals may want to target companies with these policies for business development efforts. Additionally, if the VR professional has a relationship established with a company that does not have such a policy, working with the company to develop a policy would be important. Although two-thirds of our sample reported that their company had such a policy, national data indicated that far more companies have a goal for recruiting a diverse workforce (57%) than have goals for recruiting people with disabilities (28%) (Kessler Foundation, 2017). Companies that have diversity hiring goals could be encouraged to add disability to their definition of diversity, which could be a valuable talking point for VR professionals when they meet with such companies.

Another implication of these findings is the importance of educating employers about the abilities of people with B/LV, particularly how they can perform the specific work tasks needed for employers' jobs. VR professionals should be aware that imparting very detailed information about how tasks will be accomplished is not as important as providing employers with the awareness that the tasks can be accomplished without vision. However, some employers may prefer specific information (even if they do not retain it long-term), so demonstration of assistive technology or other alternative techniques for performing tasks may still be a good approach to spark interest in employers. Finally, the findings support the value to VR of utilizing trial work experiences with consumers with B/LV. Research indicates that people generally perceive individuals who are B/LV to be low in competence (Fiske et al., 2002; McDonnall & Antonelli, 2018). Employers will naturally be less likely to hire someone who they believe to be incompetent; therefore, education is important, but direct observation may be the most powerful

way to change such a perception. Giving people with B/LV the opportunity to prove themselves on the job can be a strong indicator of their worthiness of being hired, as documented by the finding that employers who had an employee with B/LV that they rated as 'above average' in performance had more positive implicit attitudes about the competence of blind people (McDonnall & Antonelli, 2018).

5. Acknowledgements

The authors have no acknowledgements.

6. Conflict of Interest

The authors declare that they have no conflict of interest.

7. Funding

The contents of this manuscript were developed under a grant from the U.S. Department of Health and Human Services, NIDILRR grant 90RT5040-01-00. However, these contents do not necessarily represent the policy of the Department of Health and Human Services and should not indicate endorsement by the Federal Government.

8. References

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In *Action Control* (pp. 11–39).

Araten-Bergman, T. (2016). Managers' hiring intentions and the actual hiring of qualified workers with disabilities. *International Journal of Human Resource Management*, *27*(14), 1510–1530. https://doi.org/10.1080/09585192.2015.1128466

Armitage, C. J., & Conner, M. (2001). Efficacy of the Theory of Planned Behaviour : A meta-analytic review. *British Journal of Social Psychology*, *40*, 471–499.

Bentler, P. M., & Chou, C. P. (1987). Practical issues in structural modeling. *Sociological Methods & Research*, *16*(1), 78–117. https://doi.org/10.1177/0049124187016001004

Bruyère, S. M., Erickson, W. A., & Vanlooy, S. A. (2006). The impact of business size on employer ADA response. *Rehabilitation Counseling Bulletin*, *49*(4), 194–206.

Chen, R. K., Blankenship, C. J., Austin, B. S., Cantu, V. C., & Kotbungkair, W. (2016). Hiring of people with disabilities: Perceptions of Hispanic small business owners. *Journal of Vocational Rehabilitation*, *45*(2), 185–196.

Coffey, M., Coufopoulos, A., & Kinghorn, K. (2014). Barriers to employment for visually impaired women. *International Journal of Workplace Health Management*, *7*(3), 171–185.

Crudden, A., & McBroom, L. W. (1999). Barriers to employment: A survey of employed persons who are visually impaired. *Journal of Visual Impairment & Blindness*, *93*(6), 341–350.

Crudden, A., Sansing, W., & Butler, S. (2005). Overcoming barriers to employment: Strategies of rehabilitation providers. *Journal of Visual Impairment & Blindness*, *99*(6), 325–335.

Domzal, C., Houtenville, A., & Sharma, R. (2008). *Survey of employer perspectives on the employment of people with disabilities: Technical report.* (Prepared under contract to the Office of Disability and Employment Policy, U.S. Department of Labor). McLean, VA: CESSI.

Ellyatt, H. (2021, October 20). There are millions of jobs, but a shortage of workers: Economists explain why that's worrying. *CNBC*. https://www.cnbc.com/2021/10/20/global-shortage-of-workers-whats-going-on-experts-explain.html

Fiske, S. T., Cuddy, A. J. C., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, *82*(6), 878–902. https://doi.org/10.1037/0022-3514.82.6.878

Fuqua, D. R., Rathbun, M., & Gade, E. M. (1984). A comparison of employer attitudes toward the worker problems of eight types of disabled workers. *Journal of Applied Rehabilitation Counseling*, *15*, 40-43.

Gewurtz, R. E., Langan, S., & Shand, D. (2016). Hiring people with disabilities: A scoping review. *Work*, *54*(1), 135–148. https://doi.org/10.3233/WOR-162265

Gilbride, D., Stensrud, R., Ehlers, C., Evans, E., & Peterson, C. (2000). Employers' attitudes toward hiring persons with disabilities and vocational rehabilitation services. *Journal of Rehabilitation*, *66*(4), 17–23.

Hernandez, B., Keys, C., & Balcazar, F. (2000). Employer attitudes toward workers with disabilities and their ADA employment rights: A literature review. *Journal of Rehabilitation*, *66*(4), 4–16.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Inglis, C. (2006). Blind people can do anything but not in my company: Employer attitudes towards employing blind and vision impaired people. *(Unpublished Master's Thesis). Massey University, Albany, New Zealand*.

Ju, S., Roberts, E., & Zhang, D. (2013). Employer attitudes toward workers with disabilities: A review of research in the past decade. *Journal of Vocational Rehabilitation*, *38*(2), 113–123. https://doi.org/10.3233/JVR-130625

Kessler Foundation. (2017). *Report of main findings from the Kessler Foundation 2017 National Employment and Disability Survey: Supervisor perspectives* (Issue October).

McDonnall, M. C. (2014a). Employer attitudes toward blind or visually impaired employees: Initial development of a measurement instrument. *Rehabilitation Counseling Bulletin*, *58*(1), 29–36.

McDonnall, M. C. (2014b). *Interviews with VR agency personnel and employers: Final report*. The National Research & Training Center on Blindness & Low Vision.

McDonnall, M. C. (2017). Additional evidence for the validity of the employer attitudes toward blind employees scale. *Rehabilitation Counseling Bulletin*, *60*(3), 155–162. https://doi.org/10.1177/0034355216642598

McDonnall, M. C., & Antonelli, K. (2018). Employers' implicit attitudes about the competence of people who are blind. *Rehabilitation Psychology*, *63*(4), 502–511. https://doi.org/10.1037/rep0000235

McDonnall, M. C., & Crudden, A. (2018). Predictors of employer attitudes toward blind

employees, revisited. *Journal of Vocational Rehabilitation*, *48*(2), 221–231. https://doi.org/10.3233/JVR-180933

McDonnall, M. C., Crudden, A., & O'Mally, J. (2015). Predictors of employer attitudes toward people who are blind or visually impaired as employees. *Journal of Vocational Rehabilitation*, *42*(1), 41–50. https://doi.org/10.3233/JVR-140722

McDonnall, M. C., O'Mally, J., & Crudden, A. (2014). Employer knowledge of and attitudes toward employees who are blind or visually impaired. *Journal of Visual Impairment & Blindness*, *108*(3), 213–225.

McDonnall, M. C., & Sui, Z. (2019). Employment and unemployment rates of people who are blind or visually impaired: Estimates from multiple sources. *Journal of Visual Impairment & Blindness*, *113*(6), 481–492. https://doi.org/10.1177/0145482X19887620

McDonnall, M. C., Zhou, L., & Crudden, A. (2013). Employer attitudes towards persons who are blind or visually impaired: Perspectives and recommendations from vocational rehabilitation personnel. *Journal of Rehabilitation*, *79*(3), 17–24.

McEachan, R. R. C., Conner, M., Taylor, N. J., & Lawton, R. J. (2011). Prospective prediction of health-related behaviours with the theory of planned behaviour: A meta-analysis. *Health Psychology Review*, *5*(2), 97–144. https://doi.org/10.1080/17437199.2010.521684

Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide (8th ed.)*. Muthén & Muthén. http://www.statmodel.com/ugexcerpts.shtml

Salomone, P. R., & Paige, R. E. (1984). Employment problems and solutions: Perceptions of blind and visually impaired adults. *Vocational Guidance Quarterly*, *33*(2), 147–156.

Satorra, A., & Bentler, P. M. (2010). Ensuring positiveness of the scaled difference chi-square test statistic. *Psychometrika*, *75*(2), 243–248. https://doi.org/10.1007/S11336-009-9135-Y

Silverman, A. M., Bell, E. C., & Mendez, M. A. (2019). Understanding the employment experiences of Americans who are legally blind. *Journal of Rehabilitation*, *85*(1), 44–52.

Steverson, A. (2020). Relationship of employment barriers to age of onset of vision loss. *Journal of Visual Impairment & Blindness*, *114*(1), 63–69. https://doi.org/10.1177/0145482X20901382

U.S. Census Bureau. (2020). *2019 American Community Survey 1-year estimates: Employment status by disability status and type, Table B18120*. https://data.census.gov/cedsci/table?q=B18120&tid=ACSDT1Y2019.B18120

U.S. Department of Labor. (2014). *Employer engagement strategy : Workforce inclusion*. https://www.dol.gov/odep/pdf/20140604BusinessCaseEngagementWhitePaper.pdf

Unger, D. D. (2002). Employers' attitudes toward persons with disabilities in the workforce: Myths or realities? *Focus on Autism and Other Developmental Disabilities*, *17*(1), 2–10. https://doi.org/10.1177/108835760201700101

West, S. G., Finch, J. F., & Curran, P. J. (1995). Structural equation models with nonnormal variables: Problems and remedies. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues and applications* (pp. 56–75). SAGE Publications.

Table 1

Descriptive Statistics and Correlations for the Employer Attitudes about Blind Employees Scale Items

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
Q1	3.43	1.99	–										
Q2	2.90	1.92	.73**	–									
Q3	3.37	2.00	.76**	.77**	–								
Q4	3.43	1.42	.46**	.42**	.46**	–							
Q5	2.94	1.50	.23**	.28**	.26**	.40**	–						
Q6	3.80	1.86	.68**	.66**	.74**	.44**	.21**	–					
Q7	2.15	1.40	.41**	.37**	.44**	.44**	.44**	.39**	–				
Q8	3.00	1.68	.49**	.52**	.54**	.48**	.38**	.48**	.51**	–			
Q9	3.33	1.79	.61**	.65**	.67**	.38**	.18**	.64**	.32**	.45**	–		
Q10	3.53	1.56	.25**	.24**	.29**	.20**	.35**	.30**	.22**	.29**	.28**	–	
Q11	2.66	1.57	.19**	.24**	.23**	.25**	.29**	.25**	.28**	.26**	.16*	.16*	–

Note. $N = 387$.
$^{*}p < .01$. $^{**}p < .001$.

Table 2

Second-order Confirmatory Factor Analysis of Employer Attitudes

Variable	Estimate[a]	*SE*	*Z*	R^2	α
Attitudes					.88
Productivity	1.00	0.00	–	.71	
Challenges	0.68	0.05	12.72	.53	
Productivity					.92
Q1	0.91	0.04	22.89	.71	
Q2	0.89	0.03	27.65	.73	
Q3	1.00	0.00	–	.83	
Q6	0.82	0.04	21.32	.66	
Q9	0.73	0.04	17.74	.56	
Challenges					.75
Q4	0.66	0.06	11.27	.44	
Q5	0.60	0.07	8.19	.33	
Q7	0.67	0.06	10.55	.48	
Q8	1.00	0.00	–	.65	
Q10	0.43	0.07	6.34	.16	
Q11	0.43	0.07	5.82	.16	

Note. $N = 387$. All estimates are significant ($p < .001$).
[a] Unstandardized factor loadings.

Table 3

Descriptive Statistics and Correlations for Structural Equation Model Predicting Employer Attitudes

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1. Attitudes[a]	34.53	12.86	–							
2. Knowledge	1.02	1.67	.19***	–						
3. Belief in knowledge	0.92	1.15	.29***	.06	–					
4. Hired	0.15	0.36	.56***	.19**	.27***	–				
5. Personal relationship	0.49	0.50	.29***	.18***	.14**	.34***	–			
6. VR communication	0.05	0.22	.08	.05	.09	.25***	.09	–		
7. Company policy	0.67	0.47	.23***	.11*	.07	.34***	.08	.08	–	
8. Awareness of PWD	0.65	0.48	.42***	.19**	.27***	.62***	.24***	.27**	.42***	–

Note. N = 387. The type of correlation varies for each pair of variables (i.e., tetrachoric for two binary variables, Pearson for two continuous variables, and biserial for one binary and one continuous variable). VR = vocational rehabilitation. PWD = people with disabilities.

[a] Total (sum) score for the Employer Attitudes about Blind Employees Scale.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4

Structural Equation Model Comparisons Using Scaled Chi-square Difference Tests

Model	LL Value	SCF	Scaled -2LL Diff	DF Diff	*p*
1	-8,906.98	1.23	–	1	–
2	-8,907.15	1.24	0.49	1	.486
3[a]	-8,909.34	1.24	3.30	1	.069
4	-8,911.73	1.24	3.99	1	.046

Note. LL = loglikelihood. SCF = scaling correction factors.
[a] Final (best-fitting) model.

Table 5

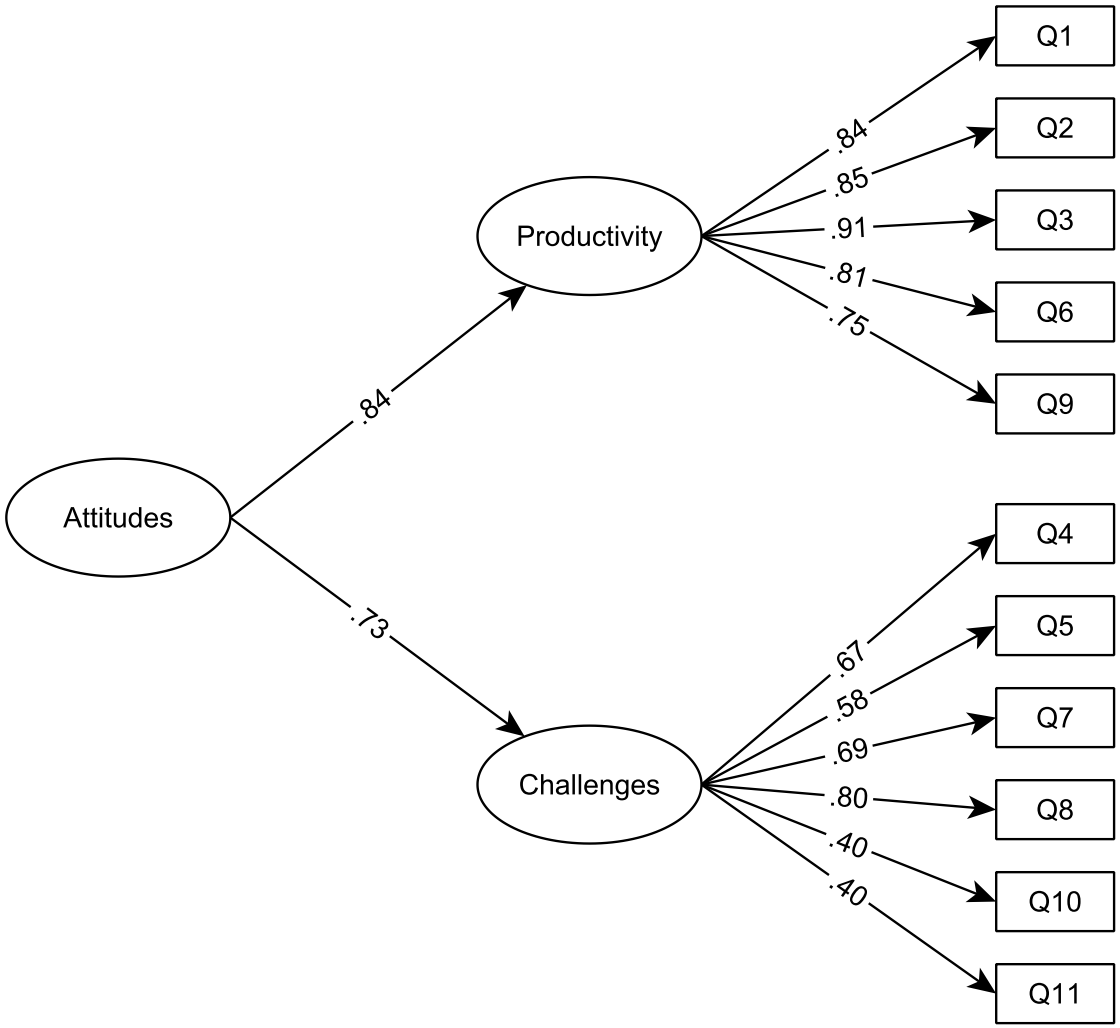
Unstandardized Estimates for Final Structural Equation Model Predicting Employer Attitudes

Path	Estimate	*SE*	*Z*	*p*
Measurement model				
Attitudes → Productivity	1.00	0.00	–	–
Attitudes → Challenges	0.60	0.07	8.12	< .001
Productivity → Q1	0.94	0.04	21.79	< .001
Productivity → Q2	0.90	0.04	26.04	< .001
Productivity → Q3	1.00	0.00	–	–
Productivity → Q6	0.84	0.04	20.71	< .001
Productivity → Q9	0.74	0.04	17.47	< .001
Challenges → Q4	0.75	0.08	9.51	< .001
Challenges → Q5	0.66	0.09	7.32	< .001
Challenges → Q7	0.74	0.08	9.48	< .001
Challenges → Q8	1.00	0.00	–	–
Challenges → Q10	0.49	0.08	6.03	< .001
Challenges → Q11	0.49	0.09	5.50	< .001
Structural model				
Attitudes ← Personal relationship	0.58	0.17	3.30	.001
Attitudes ← Hired	0.94	0.21	4.57	< .001
Attitudes ← Awareness of PWD	0.70	0.21	3.31	.001
Attitudes ← Belief in knowledge	0.27	0.08	3.62	< .001
Attitudes ← Knowledge	0.12	0.05	2.15	.032
Attitudes ← Company policy	0.41	0.21	1.95	.052
Belief in knowledge ← Hired	0.65	0.19	3.52	< .001
Knowledge ← Personal relationship	0.59	0.17	3.50	< .001
Awareness of PWD ← Company policy	1.58	0.23	6.79	< .001
Hired ← VR communication	1.73	0.57	3.02	.003
Hired ← Personal relationship	1.22	0.33	3.72	< .001
Hired ← Company policy	1.34	0.43	3.11	.002

Note. *N* = 387. PWD = people with disabilities. VR = vocational rehabilitation.

Figure 1

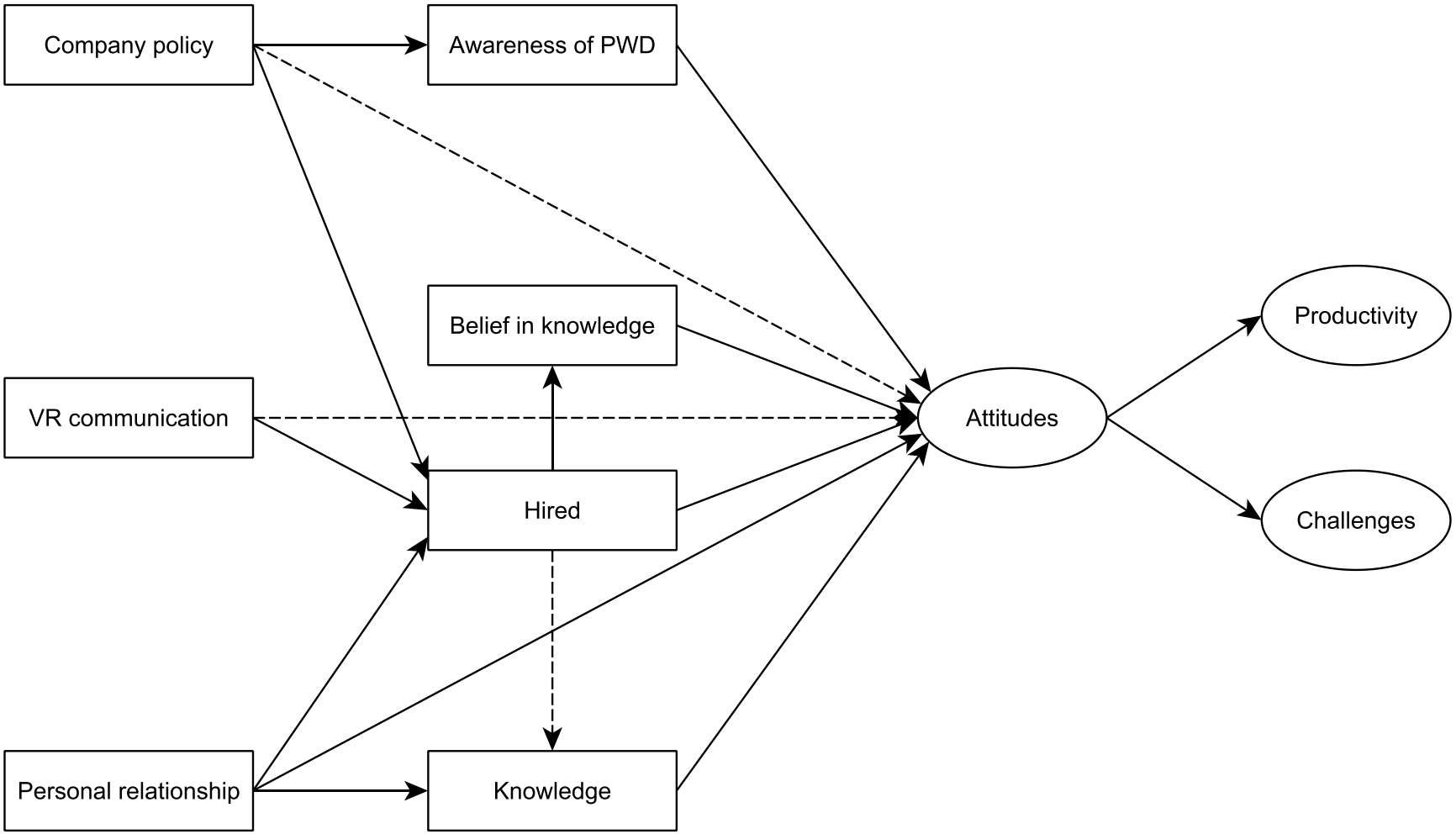
Standardized Factor Loadings for Second-order Confirmatory Factor Analysis of Employer Attitudes



Note. All factor loadings are significant ($p < .001$).

Figure 2

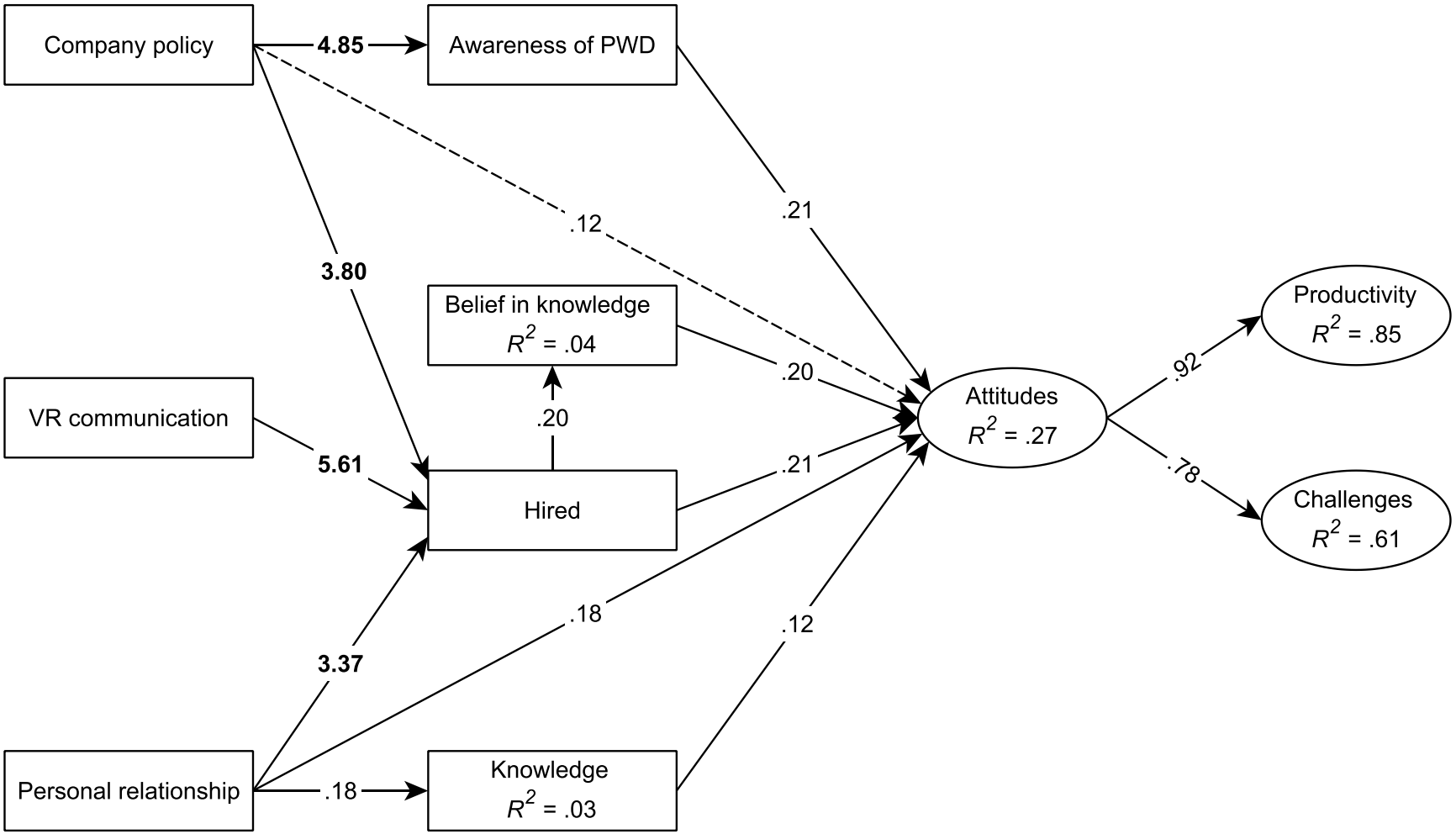
Original Structural Equation Model of Predictors of Employer Attitudes



Note. Dashed lines represent non-significant paths. The 11 Attitudes indicators were included in the model but omitted from the diagram for clarity. PWD = people with disabilities. VR = vocational rehabilitation.

Figure 3

Final Structural Equation Model Predicting Employer Attitudes



Note. Path coefficients are standardized estimates. Bold values are odds ratios. The dashed line indicates the only non-significant path. The 11 Attitudes indicators were omitted from the diagram for clarity. PWD = people with disabilities. VR = vocational rehabilitation.