

Predicting Voluntary Turnover from Job Applicant Biodata and Other Applicant Information

James A. Breugh

Department of Management, University of Missouri – St. Louis, Saint Louis, MO 63121-4400, USA.
jbreugh@umsl.edu

Research suggests that biodata (i.e., personal history information) is one of the best predictors of voluntary employee turnover. Given this fact, it is surprising that research on biodata has declined in recent years, and that biodata is not commonly used by employers for selecting employees. This article presents the results of a study that focused on the ability of biodata items and other information available on job applicants to predict voluntary turnover. With one exception, the hypotheses offered were confirmed. Specifically, applicant status (i.e., previously had applied for a job), submission of optional personal history information, employment status (i.e., job applicant was employed), and recruitment source (i.e., employee referral) all predicted voluntary turnover. The ability of applicant status, submission of a personal statement, and recruitment source to predict employee performance also was examined. Applicant status and recruitment source were found to predict subsequent performance ratings.

1. Introduction

Studies have shown that voluntary employee turnover can be financially costly for an organization and disruptive to its operations (Hom, 2011). Therefore, it is not surprising that researchers have examined turnover reduction strategies. Because posthire strategies (e.g., redesigning jobs) can be challenging to implement, the use of prehire strategies for reducing turnover can be advantageous for employers. In this regard, a recruitment approach that has been linked to reduced employee turnover is the use of employee referrals to generate job applicants (Allen, Bryant, & Vardaman, 2010). With regard to employee selection, research suggests biodata is one of the best predictors of voluntary turnover (Mumford, Barrett, & Hester, 2012). Given this fact, it is surprising that biodata has received relatively little attention from researchers in recent years (Cortina & Luchman, 2013) and that it is not widely used by organizations (Furnham, 2008).

This article presents the results of a study that examined the ability of three biodata items (e.g., Had an individual previously applied for a position with the em-

ployer?) and other job applicant data (i.e., commuting distance) to predict voluntary turnover. Although most of these predictors have not been previously examined, theoretical treatments of voluntary turnover (e.g., Holtom, Mitchell, Lee, & Eberly, 2008; Woo & Maertz, 2012) suggest they should predict turnover and thus merit investigation.

1.1. A selective review of biodata research

Mumford et al. (2012) and Schmitt and Golubovich (2013) recently have reviewed research on biodata. Among the benefits of using biodata they discussed, three are particularly noteworthy. First, biodata has been shown to be a good predictor of voluntary turnover. Second, it has been found to have only a modest level of adverse impact against minorities and little adverse impact in terms of gender. Third, compared with posthire turnover reduction strategies, the use of biodata is inexpensive and easy to implement.

Although several studies have documented benefits of using biodata, concerns have been raised about many of these studies. Four concerns (i.e., generalizing from re-

sults based on job incumbents to job applicants, the paucity of theory-based research, lack of access to the biodata items used, and practicality) are relevant to the study reported in this article. With regard to the issue of generalizability, most biodata studies have involved the use of current employees (Mumford et al., 2012). This is problematic, given job applicants are more likely to try to manage their impression (i.e., distort their responses) than employees. Because studies (e.g., Graham, McDaniel, Douglas, & Snell, 2002) have shown that faking can lower validity, it is reasonable to question whether results based on job incumbents generalize to job applicants. Stokes, Hogan, and Snell (1993) addressed this issue. They administered 168 biodata items to a sample of job incumbents. Based on the results of statistical analyses, they selected 13 items for their final biodata scale. Stokes et al. reported a validity coefficient of .22 ($p < .01$) in predicting voluntary turnover when this scale was applied to a hold-out sample of incumbents. However, when this scale was applied to a sample of applicants, the validity coefficient was .08 ($p > .05$). Stokes et al. concluded that their 'results call into question the common practice of developing biodata keys on incumbents and assuming their generalizability to applicant samples' (p. 756).

A second concern raised in the reviews of biodata research is the somewhat atheoretical nature of several studies. As noted by Mumford et al. (2012) and Schmitt and Golubovich (2013), many studies (e.g., Cascio, 1976) have relied on raw empiricism in selecting biodata items (e.g., if an item predicts turnover in pilot testing, it is selected for future use) while other studies (e.g., Mael & Ashforth, 1995) have used a technique such as factor analysis to explore the psychological meaning underlying biodata items after a study had been conducted. The atheoretical nature of many biodata studies is surprising given that several models of voluntary turnover (see Holtom et al., 2008; Steel & Lounsbury, 2009) include psychological states (e.g., job embeddedness) that are hypothesized to be predictive of voluntary turnover and given that job applicant biodata should be predictive of these psychological states.

A factor that likely has contributed to the criticism of biodata research for not being theoretically grounded is the lack of agreement on how to define the term biodata. At one extreme, researchers have used the term to represent objective personal history information (e.g., work experience). At the other extreme, researchers have 'taken a much broader perspective to personal history information and include personality, preferences, and interests; future expectations; values; and self-assessed skills' (Gatewood, Feild, & Barrick, 2011, p. 338). This more expansive view of biodata blurs the distinction between personal history information and other variables making it difficult to understand why biodata predicts turnover.

A concern raised with several biodata studies is the lack of access to the items that were used (Breugh, 2009). For example, Van Iddekinge, Eidson, Kudisch, and Goldblatt (2003) reported only two of their 42 items. Mount, Witt, and Barrick (2000) stated that a 'proprietary agreement' (p. 309) prevented them from publishing any of the items they used. Although it is understandable why a vendor or an employer may not want to disclose information on the items used, without having information on the items, a researcher cannot replicate or extend the results of an earlier study. At a more basic level, not having access to the items used makes it difficult to understand the results of a specific study (e.g., a failure to predict voluntary turnover).

A fourth concern with many studies involves their measurement of biodata and the practicality of such an approach. According to Mumford et al. (2012), the biodata scales often used have involved 150–300 items and can take 20–40 min to complete. To analyze data from a scale having 100+ items, a sample size of at least several hundred individuals is recommended (Cucina, Caputo, Thibodeaux, & Maclane, 2012). It is likely that relatively few employers will have such a large sample and that many employers would see it as impractical to require job applicants to spend so much time completing a biodata instrument. These two factors may explain why biodata was ranked ninth in terms of practicality out of 12 selection methods by human resource (HR) practitioners in a study by Furnham (2008).

Although the four concerns discussed may explain why biodata 'has lost favor among researchers' (Hom, 2011, p. 351), these concerns are not intrinsic to the use of biodata. For example, Barrick and Zimmerman (2005) examined the ability of three biodata items gathered from job applicants to predict voluntary turnover and voluntary, avoidable turnover (i.e., turnover that reflects a person's decision to leave but over which an employer had no control) after 6 months on the job. Drawing upon theory that addresses the relationship of employee recruitment activities and voluntary turnover, Barrick and Zimmerman hypothesized that individuals who found out about a job opening from an employee of the hiring organization would be more likely to remain with the organization than individuals recruited by other sources. This prediction was based on the assumption that applicants generated by means of an employee referral would possess more realistic job expectations (Barrick and Zimmerman did not measure the realism of job expectations). Their data supported this hypothesis for voluntary, avoidable turnover, but no relationship was found between the use of employee referrals and voluntary turnover. Based on job embeddedness research (e.g., Jiang, Liu, McKay, Lee, & Mitchell, 2012) that has shown that new hires who knew individuals who worked for an employer were more likely to have realistic job expectations and a so-

cial network there, Barrick and Zimmerman predicted that job applicants who reported having friends and family who worked for the organization would have less voluntary turnover and voluntary, avoidable turnover than applicants who did not have family or friends who worked for the organization. They found support for both of these predictions. The third biodata item Barrick and Zimmerman examined was a measure of how long a job applicant had worked at his or her prior job. Given research (e.g., Woo, 2011) has shown that some individuals are more predisposed to turnover than others, Barrick and Zimmerman predicted that applicants who had shorter job tenure on a prior job would be more prone to leaving. This was found to be the case for both turnover measures.

Barrick and Zimmerman (2009) examined the ability of four biodata items (i.e., Was the person referred for the job by a current employee? Does the applicant have family and/or friends working for the organization? How long has/had the individual worked in his/her prior job? and How many jobs has the person had in the last five years?) to predict voluntary turnover and voluntary, avoidable turnover. The first two items were combined to form a job embeddedness scale (perceptions of embeddedness were not measured). The second two items formed a habitual commitment scale. Barrick and Zimmerman gathered data from applicants who were hired as tellers at a credit union. To test whether the psychological factors (e.g., job embeddedness) they indirectly assessed through their biodata items had a greater effect during the first few months of employment, turnover was measured 6 and 24 months after hiring. As hypothesized, voluntary turnover at 6 months was predicted by the job embeddedness and the habitual commitment scales. Neither biodata scale predicted voluntary turnover at 24 months. Results were similar for voluntary avoidable turnover.

Given the concerns raised about many biodata studies in recent reviews (e.g., Schmitt & Golubovich, 2013), the studies by Barrick and Zimmerman are informative. For example, they demonstrated the value of utilizing biodata items that were selected based on existing theory concerning voluntary turnover. They also showed that using a few carefully selected items predicted the voluntary turnover of job applicants with comparable or better accuracy than studies using many more items (e.g., Becton, Matthews, Hartley, & Whitaker, 2009).

1.2. *The current study: hypotheses and contributions*

Although many biodata studies have been criticized for lacking a strong theoretical foundation, as just discussed, a few researchers (e.g., Barrick & Zimmerman, 2005, 2009) have selected biodata items because of their con-

nection to more proximal predictors (e.g., perceptions of job embeddedness) of voluntary turnover. Following the strategy used by Barrick and Zimmerman, five variables, that are available on job applicants and that theoretical treatments of voluntary turnover (e.g., Woo & Maertz, 2012) suggest should be predictive of such turnover, were examined in the study reported. To our knowledge, only one of these variables (i.e., recruitment source) has been examined in prior research.

Most employers would like to hire individuals who have a strong interest in working for them because such individuals should be less prone to voluntary turnover than persons who are less attracted to the employer (Hom, 2011). However, it is not easy to accurately measure a job applicant's interest in working for an organization. One approach to assessing such interest is to directly ask applicants. Barrick and Zimmerman (2009) used this approach. They created an employment motivation scale out of items tapping desire for a job and intent to stay with a firm. They reported a correlation of $-.13$ between applicant scores on this scale and voluntary turnover at 6 months (for voluntary, avoidable turnover, the correlation was $-.18$). In explaining the modest size of these correlations, Barrick and Zimmerman noted that applicant self-reports are prone to impression management and therefore may not be the best way to tap desire for a job.

A less obtrusive approach for estimating an individual's desire for a job with an employer is to focus on whether the person had previously applied for a position there. Having done so reflects a clear behavioral manifestation of an applicant's interest in working for the employer. Reapplying for a job, despite not landing a position with the employer when applying previously, suggests the person is likely to remain with the organization if hired. This is the first biodata item examined in this study. Although a search of the research literature did not locate any studies that had looked at whether applicant status (i.e., first-time applicant vs. had previously applied for a job) was related to a person's interest in a job or voluntary turnover, the theoretical argument offered by Hausknecht, Trevor, and Farr (2002) to explain the behavior of individuals who retest for a job (i.e., those who retest are more interested in the job opening and thus less likely to quit) should generalize to a person who reapplies for a job with an employer (Hausknecht et al. found that retesting was predictive of turnover). Like retesting (which may not require submitting a new application and waiting for a new job opening), reapplying for a job should indicate a strong desire to work for an employer which should, in turn, predict voluntary turnover.

Hypothesis 1: Individuals who reapplied for a job with an organization will be less likely to voluntarily leave the organization than first-time applicants.

Another potential indicator of job applicant interest in working for an employer is the amount of time and effort a person is willing to expend in applying for a position. In this regard, it has been suggested (Zottoli & Wanous, 2000) that individuals who drive to an organization to submit an application, especially if a job opening has not been advertised, are likely to remain with the organization for a longer period of time than other types of applicants because they have demonstrated their interest in working for the employer through their actions. Another example of an applicant's manifestation of interest in working for an employer is a willingness to go through several rounds of interviews (Rampbell, 2013). Although a labor-intensive application process can result in some applicants losing interest in a job opening, applicants who are willing to commit to a drawn out selection process should be more likely to remain with the employer if hired. In the study reported in this article, applicant interest in a job opening as reflected by the exertion of extra effort was measured as follows. In order to reduce the number of job applications received, the host organization for this study (a call center) required that an application be submitted in-person via a computer terminal located at the call center. After submitting an application, the call center allowed, but did not require, applicants to submit a personal history statement that included information that was not requested by the job application. Based on the assumption that taking the time to submit this optional information indicates greater interest in a job and such interest should result in greater motivation to remain in the job and thus less chance of quitting, it is hypothesized that:

Hypothesis 2: Individuals who supplemented their job application with additional information will have a lower voluntary turnover rate than persons who did not do so.

Research has established that negative aspects of a position (e.g., a poor supervisor) can result in an employee quitting (Hom, 2011). A factor that can make a job less attractive is commuting distance. For example, commuting distance has been linked to work–family conflict and stress (Stutzer & Frey, 2008; Voydanoff, 2005). Although commuting distance has not been shown to predict voluntary turnover in empirical studies, it has been linked to reported intention to quit (Burke, 1995). Furthermore, wanting a shorter commute has been mentioned as a cause of turnover in qualitative research (Woo & Maertz, 2012). Because a longer commute requires a greater amount of time and expense, it logically follows that commuting distance should be linked to lower motivation to remain in a job, and therefore, voluntary turnover.

Hypothesis 3: Individuals who travel a greater distance to work will have a higher voluntary turnover rate than individuals who travel a lesser distance.

A well-accepted adage is that past behavior is the best predictor of future behavior. In the context of voluntary turnover, Ghiselli (1974) posited the existence of a 'hobo syndrome' to capture the idea that some individuals were prone to job hopping. Building on Ghiselli's assertion, researchers have utilized indicators of past turnover behavior as predictors of future turnover. The two most commonly used measures are the number of jobs held in the past 5 years and tenure in one's prior job (e.g., Barrick & Zimmerman, 2009). Although these measures have been found to predict turnover, they can create measurement problems. For example, recent graduates may not have been in the work force for 5 years. Similarly, time in one's prior job could be low because the person had been laid-off rather than because of an inclination to job hopping. Recently, the popular press (e.g., Hu, 2013) has suggested that a number of employers consider a person's employment status (i.e., employed vs. unemployed) as a signal of turnover proneness or more generally applicant quality. Despite popular press accounts of organizations preferring to hire employed individuals, data addressing whether unemployed individuals are inclined to voluntary turnover is lacking. For example, although Eriksson and Lagerström (2006) showed that employers were less likely to contact unemployed individuals than employed individuals listed on a Swedish Public Employment web site, they were not able to examine whether, if hired, unemployed job seekers were more likely to quit. Although research is lacking in employment status, generalizing from results showing that other indicators (e.g., time in prior job) of turnover proneness are linked to future turnover, the following hypothesis is offered.

Hypothesis 4: Employed job applicants who are hired will have a lower voluntary turnover rate than unemployed applicants who are hired.

Researchers (e.g., Barrick & Zimmerman, 2009) have generally found that applicants recruited by means of employee referrals were less likely to leave their employer than applicants recruited from other sources (e.g., a college placement office). This is likely due to three reasons. First, employee referrals should be more likely to possess realistic job expectations because the employees who contact them are likely to provide an accurate view of what working for their organization is like (Yakubovich & Lup, 2006). Second, compared with most new hires, referrals are likely to feel on-the-job embeddedness given they have a relationship with someone at the organization (Weller, Holtom, Matiaske, & Mellewigt, 2009). The third reason for employee referrals being less prone to turnover is prescreening. As

documented by Castilla (2005), employees of an organization are likely to consider job-related attributes of individuals before referring them for a job. An attribute that is likely to be considered is how interested the potential referral is in the job opening. For these three reasons, persons recruited via employee referrals should be less prone to voluntary turnover than applicants recruited by other sources.

Hypothesis 5: Employee referrals will be less likely to voluntarily leave the organization than will individuals recruited by means of other sources.

Although voluntary turnover was the primary criterion of interest in conducting this research, given data on job performance was made available by the call center, the ability to predict this criterion was also examined (we thank a reviewer of this article and the editor for encouraging us to expand the scope of our inquiry to include job performance). Both theory (e.g., Hom, 2011) and prior research findings (e.g., Castilla, 2005) suggests that, as a result of job applicant prescreening, individuals referred by current employees should perform better initially than applicants generated by other sources. With regard to the other predictors examined, although prior research is lacking, logic suggests that an individual's desire to work for an employer should carry over into his or her day-to-day performance (Barrick & Zimmerman, 2009). For example, a person who is highly motivated to work for an organization should exert a high level of effort in order not to lose his or her job. A strong desire to work for an employer should also affect job performance in a less direct way. Specifically, research has shown that individuals who are more highly motivated to work for an organization require less time to be socialized, and that new employees who are more effectively socialized perform at a higher level initially (Van Maanen & Schein, 1979). Based on this logic, one would expect applicants who had previously applied for a job or had expended the effort to submit optional personal history information should receive higher performance ratings.

Hypothesis 6: Employee referrals will receive higher performance ratings than will individuals recruited from other sources.

Hypothesis 7: Individuals who reapplied for jobs with an organization will receive higher performance ratings than first-time applicants.

Hypothesis 8: Individuals who supplemented their job application with additional information will receive higher performance ratings than will persons who did not do so.

In summary, this article makes several contributions. First, it investigates a number of theoretically based predictors of voluntary turnover that are available on job

applicants, but have yet to be examined. Second, the study reported used a predictive design in which biodata was gathered from applicants (i.e., most studies have involved job incumbents who may be less likely to distort their responses). Third, the biodata items used are provided so that researchers can replicate results and practitioners can use them. Fourth, this study replicates earlier findings involving the use of employee referrals but does so using data from individuals working in one job for one employer (i.e., a number of studies have collapsed data across jobs and/or employers, which allows for the possibility of results being confounded by job or employer differences). Finally, the study reported examined the ability of three of the personal history items to predict job performance. Although the use of employee referrals has been linked to job performance, applicant status, and the submission of optional application data have not been investigated.

2. Method

2.1. Sample and time frame

The sample used in this study involved 414 individuals who worked full-time as customer service agents for a large call center located in the United States. This job, which paid on an hourly basis, involves customer contact via the telephone while simultaneously searching a company's product database for information and documenting decisions that were made. In terms of sample characteristics, 322 individuals were women and 87 were men (information was missing on five individuals). The average age of the sample was 31.01 years. Concerning employee race/ethnicity, the call center would not release this information. The call center used three categories to code education: high school graduate ($n = 106$), some college or technical school ($n = 217$), and college graduate or beyond ($n = 43$). Educational information was not reported for 48 applicants.

The customer service agents were hired between January 2, 2008 and August 14, 2008. Data gathering ended 240 days after a person was hired. Using the same 240-day window for each employee eliminated the possibility that right censoring for turnover could be confounded with one of the study's predictor variables (Singer & Willett, 2003).

2.2. Sources of data and measures

The information used in this study was provided by the call center. Data concerning gender and age were gathered from individuals once they were hired. Information concerning recruitment source, education, and residential zip code came from the application blank. Data with regard to start date, departure date, call center zip

code, whether a person had previously applied for a job with the call center, submission of additional personal information, employment status, voluntary turnover, and job performance came from call center records.

2.2.1. Turnover

The call center coded individuals who left their jobs as either involuntary or voluntary leavers. Of the original sample of 484 individuals included in the call center data set, 70 employees were terminated. In keeping with traditional practice in studies addressing voluntary turnover (e.g., Weller et al., 2009), terminated individuals were dropped from the sample. Turnover was coded: 0 = *did not leave* and 1 = *voluntarily left the call center*.

2.2.2. Employee performance

Customer service agents were to receive a probationary review within 60 days of starting work. Supervisors used a single item to rate the overall performance of a new hire on a 3-point scale (1 = *fails to meet expectations*, 2 = *meets expectations*, and 3 = *exceeds expectations*). Performance ratings were available for 390 of the 414 employees.

2.2.3. Applicant status

The first predictor was applicant status (0 = *first-time applicant*, 1 = *previously applied for a job with the call center*). The call center did not code the number of times a person had previously applied for positions.

2.2.4. Applicant personal statement

To reduce the number of job applications received, the call center required that an application be submitted in-person via a computer terminal located on-site. After submitting an application, an individual was given the opportunity to submit additional personal information (0 = *no statement submitted*, 1 = *statement added to application*). Whether additional information was provided and what information was provided was up to the individual. For example, some applicants uploaded a resume, others pasted in information from a resume, and some applicants typed information into their computerized application file.

2.2.5. Commuting distance

The distance from a job applicant's residence to the call center was the third predictor examined. Distance was computed using the web site *melissadata.com*, which determines the number of miles between two zip codes. Although not a perfect measure (e.g., if a job applicant's residence and the call center are in the same zip code, a distance of zero miles is provided), this predictor offers an unobtrusive estimate of commuting distance.

2.2.6. Employment status

For purposes of this study, an HR specialist at the call center made an evaluation concerning whether an

applicant was employed. This evaluation was only made for individuals who submitted additional personal history information (the application blank did not include information on employment status). The HR specialist was instructed only to make a judgment (0 = *unemployed*, 1 = *employed*) if it could be made with confidence (e.g., the last job listed included an end date for employment). Job applicants who submitted information that suggested they had graduated from school within the last 30 days were coded as being employed. Of the 220 individuals who submitted personal history information, the HR specialist made a judgment of the employment status of 211 individuals.

2.2.7. Recruitment source

The final predictor was recruitment source. The application blank asked how a person found out about the job for which he or she was applying. Although several alternatives were listed, only three sources were checked by more than 10 individuals. These sources were the internet (i.e., a job opening listed on the call center's web site), a newspaper advertisement (i.e., openings were publicized in local papers), and a current employee at the call center. These three sources were the ones examined in this study.

In summary, the predictors used in this study involved single-item measures, which is common (e.g., Barrick & Zimmerman, 2005). According to the call center, none of these predictors was used for making selection decisions. Three of the predictors (i.e., applicant status, employment status, and recruitment source) meet the narrow definition of biodata (i.e., personal history information) discussed by Gatewood et al. (2011). The remaining two predictors (i.e., commuting distance and submitting additional personal history information), are linked to an applicant, but may not be viewed as biodata if a narrow definition is used.

3. Results

3.1. Descriptive statistics

Table 1 provides means, standard deviations, sample sizes, and correlations for the variables examined in this study. Concerning turnover, the call center categorized 202 employees (49%) of the 414 individuals in the sample as having voluntarily left during the 240-day time frame for this study. In terms of job performance ratings, 23 individuals were rated as failing to meet expectations, 239 were rated as meeting expectations, and 128 were rated as exceeding expectations. With regard to applicant status, 31 individuals had reapplied for jobs (8%). Concerning the submission of personal history information 220 individuals (53% chose to do so). The average distance traveled to work was 8.72 miles. In terms

Table 1. Study variables: means, standard deviations, and correlations

Variable	Mean	SD	N	1	2	3	4	5	6	7	8	9
1. Voluntary turnover	.49	.50	414	–								
2. Applicant status	.08	.26	414	–.17**	–							
3. Personal statement	.53	.50	414	–.10*	.18**	–						
4. Commuting distance	8.72	8.99	396	.03	–.04	.08	–					
5. Employment status	.63	.48	211	–.32**	.17**	na	.03	–				
6. Recruitment source	.21	.41	414	–.18**	.05	–.07	–.09	.09	–			
7. Gender	.21	.42	409	.00	.08	–.04	.01	–.10	.13*	–		
8. Age	31.01	11.24	412	.06	.00	–.01	–.07	–.09	–.19**	.02	–	
9. Education	1.83	.62	366	–.06	.13*	.19**	–.03	.00	–.07	–.01	.17**	–
10. Performance rating	2.27	.56	390	.14**	.09*	.03	.04	.00	.14**	–.03	–.11*	–.07

Note: A judgment concerning employment status was only made if a personal history statement was submitted. Coding of variables: turnover and personal statement (0 = no, 1 = yes); applicant status (0 = first-time applicant, 1 = reapplied); distance (miles between residence and call center); employment status (0 = unemployed, 1 = employed); recruitment source (0 = other, 1 = referral); gender (0 = female, 1 = male); education (1 = high school, 2 = some college, 3 = college or more); and performance (1–3 scale). na, not applicable; SD, standard deviation. * $p < .05$, ** $p < .01$.

of their employment status, the HR specialist at the call center categorized 78 (37%) of the 211 individuals who submitted additional personal history information as being out of work. In terms of recruitment source, there were 88 employee referrals (21%), 180 individuals (43%) were recruited by means of the internet (i.e., call center web site), and 146 individuals (35%) were made aware of a job from a newspaper advertisement.

With regard to the correlations among the five predictors (see Table 1), it is interesting to note that those who reapplied were more likely to submit a personal statement ($r = .18$, $p < .01$), which may suggest that both biodata items reflect a strong interest in getting a job with the call center. The fact that those who reapplied for jobs were employed ($r = .17$, $p < .01$) also suggests motivation to work for the call center. With regard to the correlations reported between the three demographic variables (i.e., gender, age, and education) and the five applicant predictors, relationships in general were small. The median absolute value of the 15 correlations was .07.

3.2. Tests of the hypotheses for voluntary turnover

Given the lack of a theoretical justification for statistically controlling the demographic variables measured (Spector & Brannick, 2011), the primary test of each of the hypotheses focused on the simple relationship between a biodata item and voluntary turnover. However, for completeness, parameter values for each item with the effects of gender, age, and education removed also are reported. In analyzing results for recruitment source (Hypothesis 5), employee referrals were compared against individuals recruited by means of the call center web site and newspaper advertisements combined. Combining recruitment sources in this way is common practice when the focus is on employee referrals and

how they differ from other sources (e.g., Castilla, 2005). For completeness, Hypothesis 5 was also tested without combining these two sources; results were very similar to those reported.

Hypothesis 1 predicted that individuals who had previously applied for a job with the call center would be less likely to leave their jobs than first-time applicants. The results of a simple correlational analysis ($r = -.17$, $p < .01$) and logistic regression analysis controlling for the three demographic variables ($B = -1.53$, standard error $[SE][B] = .51$, $p < .01$) support this hypothesis. As a measure of the effect size for applicant status (Table 2 presents effect sizes for the four dichotomous predictors), the voluntary turnover rate at the end of 240 days for previous applicants was 19.4% (6 of 31 quit); for first-time applicants, it was 51.2% (196 of 383 quit).

Supporting Hypothesis 2, applicants who submitted optional personal history information were found to be less likely to voluntarily leave the call center ($r = -.10$, $p < .05$), even when demographic variables were controlled ($B = -.35$, $SE[B] = .22$, $p < .10$). Individuals who submitted information had a turnover rate of 44.1% (97 of 220 quit). Those who did not to submit information had a turnover rate of 54.1% (105 of 194 left).

Based on the assumption that a longer commute would make a job less attractive, it was hypothesized that commuting distance would predict voluntary turnover. Contrary to Hypothesis 3, no relationship was found for the simple relationship between these variables ($r = .03$, $p > .10$) or with the demographic variables partialled ($B = .01$, $SE[B] = .01$, $p > .10$). Given the median commuting distance was only 7.1 miles, an exploratory analysis was conducted to assess whether employees with longer commutes were more likely to quit. For the 119 new hires who commuted 10 or more miles, the correlation between commuting distance and turnover was .20 ($p < .05$).

Table 2. Voluntary turnover rates for the dichotomous biodata predictors

Predictor	Categories	Sample size	# Quitting	Turnover rate (%)
Applicant status	First-time	383	196	51.2
	Previous	31	6	19.4
Personal statement	No	194	105	54.1
	Yes	220	97	44.1
Employment status	No	78	52	66.7
	Yes	133	45	33.8
Employee referral	No	326	174	53.4
	Yes	88	28	31.8

Note: Significance level based on phi coefficient: $p < .01$ for applicant status, employment status, and recruitment source; $p < .05$ for submission of a personal statement. Sample size for employment status is 211 because status was only rated for those applicants who submitted a personal statement, which provided sufficient information for a human resource specialist at the call center to judge employment status.

Hypothesis 4 was tested using data on the 211 individuals who submitted personal history information that allowed for a determination of their employment status. A strong relationship was found between employment status and turnover ($r = -.32$, $p < .01$). The results of a logistic regression analysis controlling for demographic variables also supported this hypothesis ($B = -1.56$, $SE[B] = .34$, $p < .01$). In terms of actual turnover, applicants who were categorized as unemployed had a voluntary turnover rate of 66.7% (52 of 78 quit). Applicants who were categorized as employed had a turnover rate of 33.3% (45 of 133 left). Given almost half of the applicants did not submit personal history information, following the strategy suggested by Wainer (1999) for addressing missing data, two additional analyses were conducted in order to provide a sense of a potential lower bound for the relationship between employment status and turnover. First, the 203 applicants, whose employment status was not coded by the HR specialist (either because of their failure to submit personal history information or a lack of information to make an employment status determination), were coded as unemployed. Second, they were coded as employed. The respective correlations were $-.22$ and $-.17$ (both $p < .01$). Correlations of this magnitude suggest that employment status is a good predictor of voluntary turnover.

Hypothesis 5 predicted that individuals recruited by means of employee referrals would have a lower voluntary turnover rate than individuals recruited by the call center's web site or newspaper advertisements. This hypothesis was supported ($r = -.18$, $p < .01$). The results of logistic regression analysis for employee referral with gender, age, and education entered as control variables also supported *Hypothesis 5* ($B = -.85$, $SE[B] = .27$, $p < .01$). To put these results in more concrete terms, the voluntary turnover rate at the end of 240 days was 31.8% for employee referrals (28 of 88 quit) and 53.4% for nonreferrals (174 of 326 left their jobs).

3.3. Tests of the hypotheses for job performance

Hypothesis 6 predicted that employee referrals would receive higher job performance ratings than individuals recruited by other sources. This hypothesis received support ($r = .14$, $p < .01$) even when demographic variables were controlled using multiple regression analysis ($B = .15$, $p < .01$). In contrast, *Hypothesis 7* received mixed support. Individuals who had previously applied to the call center were only found to have higher performance than first-time applicants ($r = .09$, $p < .05$) when demographic variables were not statistically controlled ($B = .08$, $p > .10$). *Hypothesis 8*, which predicted that individuals who submitted a personal history statement would receive higher performance ratings, received no support ($r = .03$, $p > .10$; $B = .02$, $p > .10$).

3.4. Ancillary analyses

It is common for biodata items to be formed into a scale. Reflecting this practice, three biodata scales were created. A 2-item scale included data on recruitment source and applicant status. A 3-item scale added information concerning whether personal history information was submitted. A 4-item scale added information about employment status. Biodata items were unit weighted with one point being added for being an employee referral, having previously applied for a job, submitting personal history information, and being employed. The results for the 2-item, 3-item, and 4-item scales in predicting voluntary turnover were: $r = -.23$, $r = -.23$ (i.e., adding personal history information did not increase predictive accuracy), and $r = -.35$ (all $p < .01$). As an example of what such relationships mean, consider the following. For the two-item scale, nine individuals were both an employee referral and had reapplied. None of these individuals left the call center. One hundred one individuals were either an employee referral or reapplied. Of these, 33.7% quit. Three hundred four individuals were neither a referral or nor had

Table 3. Voluntary turnover/predictor correlations: women versus men and those less than age 40 versus 40 or older

Predictor	Gender			Age		
	Female	Male	z-value	<40	40+	z-value
Applicant status	-.18 (322)	-.14 (87)	-.29	-.19 (319)	-.10 (93)	-.79
Personal statement	.10 (322)	.10 (87)	.00	.07 (319)	.20 (93)	-1.13
Commuting distance	.00 (310)	.15 (81)	-1.14	.02 (306)	.09 (88)	-.57
Employment status	-.27 (170)	-.49 (40)	1.49	-.35 (166)	-.24 (43)	.70
Employee referral	-.18 (322)	-.17 (87)	-.08	-.19 (319)	-.21 (93)	.17

Note: Numbers in parentheses are sample sizes for the groups being compared. None of the z-values reached a $p < .10$ value.

they reapplied for a job. Of these, 55.3% left. The results for the three biodata scales in predicting job performance were less impressive. The results for the 2-item, 3-item, and 4-item scales were: $r = .16$, $r = .09$ and $r = .16$.

In considering the biodata items examined in this study for use as part of an employee selection process, attention should be given to adverse impact. In terms of gender and age, adverse impact does not appear to be a major issue. For example, as is evident from the correlations in Table 1, of the five biodata items, only employee referral was correlated with gender ($r = .13$, $p < .05$) and this correlation was modest. To be consistent with current law, age was dichotomized as 40 or greater and less than 40. The respective correlations with the predictors were: $r = .00$ (previously applied), $r = -.03$ (personal history information submitted), $r = -.08$ (commuting distance), $r = .07$ (employed), and $r = -.12$ (employee referral). Only the correlation with recruitment source reached a $p < .05$ level.

As a further check on possible legal problems that might arise by using the biodata items, at the suggestion of a reviewer, we tested whether in predicting turnover the correlations for women versus men and for new hires less than age 40 versus 40 or older differed. The results of these analyses are reported in Table 3. Although the magnitude of a few of these differences (e.g., $-.27$ vs. $-.49$ for gender for employment status) seem sizable, none was significant at a $p < .10$ level (most courts require a $p < .05$ level). As a final check on potential legal concerns, logistic regression analysis was used to assess differential validity for each predictor in predicting turnover. For each predictor (e.g., recruitment source), we entered a demographic variable (i.e., sex or age), the predictor variable, and the interaction of the two variables. Of the 10 analyses conducted (two demographic variables, five predictors), none of the interaction terms reached a $p < .10$ level (only one reached a $p < .20$ level).

We replicated these analyses for job performance. With regard to differences in the correlations between a predictor and performance, none of the 10 z-values reached a $p < .05$ level (these results are available from the authors). In terms of assessing differential validity, the results of multiple regression analysis found a statistically significant interaction between a predictor and a demographic variable for one of the 10 analyses. In predicting job performance, evidence of differential validity ($B = -.32$, $p < .05$) was found for the gender \times recruitment source interaction term. The correlation between recruitment source and performance for women was $.19$; for men it was $-.03$.

4. Discussion

This study provides considerable evidence that theoretically grounded biodata information gathered on job applicants can predict voluntary turnover and, to a lesser extent job performance. More specifically, as predicted, individuals who had previously applied for jobs with the call center (*Hypothesis 1*), had submitted additional personal history information (*Hypothesis 2*), were employed (*Hypothesis 4*), or were referred by current employees (*Hypothesis 5*) were found to be less likely to leave their jobs than first-time applicants or applicants who did not submit additional personal history information, were unemployed, or were recruited by means of the call center's web site or newspaper advertisements. Only *Hypothesis 3*, which involved commuting distance, failed to be supported.

In interpreting the results reported for turnover, three factors should be considered. First, results were consistent regardless of whether a simple biodata–turnover relationship was examined or demographic variables were statistically controlled. Second, the differences in turnover rates for the groups being contrasted, not only were statistically reliable (most at the $p < .01$

level), but reflected important practical effects (see Table 2). For example, the difference in the turnover rates between first-time versus previous applicants was 32%. The third factor meriting consideration is that for some of the hypotheses the maximum possible correlation is far less than ± 1.00 . This is due to the fact that the strength of association between two dichotomous variables is affected by the distributions of the variables (Breugh, 2003). For example, because recruitment source and voluntary turnover did not have the same marginal distributions, the maximum possible correlation between them was ± 0.51 . Stated differently, if the percentage of referrals in the sample were larger, the correlation between recruitment source and turnover would have been larger than -0.18 .

The results for predicting job performance with biodata were less impressive than for predicting turnover. As expected (*Hypothesis 6*), employee referrals were found to receive higher performance ratings both in terms of results for a simple correlation analysis and a multiple regression analysis (controlling for gender, age, and education). However, results were mixed for *Hypothesis 7*, which involved applicant status (only the simple correlation between applicant status and performance suggested those reapplying received higher performance ratings). With regard to the submission of a personal statement, no support was found for *Hypothesis 8*. In interpreting the results for *Hypotheses 6, 7, and 8*, it is important to consider that job performance was measured using a single item, that a 3-point rating scale was used, and that 58% of the employees received the same rating (i.e., meets expectations).

4.1. Practical implications

The results reported suggest that in terms of reducing voluntary turnover an organization may benefit greatly from considering several types of personal history information in making selection decisions. For example, even the smallest turnover difference we found (i.e., 10% for the submission of personal history information) is likely to be meaningful in terms of financial costs and the efficient operation of the call center. When contrasted with the potential costs of posthire turnover reduction strategies (e.g., job redesign) and the difficulty of effectively implementing some of these strategies (e.g., training supervisors to be more supportive), the results reported suggest that employers should make greater use of biodata than they do (Furnham, 2008). This is particularly the case when one considers that, as exemplified by the current study and studies by Barrick and Zimmerman (2005, 2009), the use of biodata does not have to involve lengthy scales or the purchase of a vendor's biodata instrument. In terms of the use of biodata to predict job performance, results were mixed for the three biodata examined. However, it is possible that a

better performance measure may have resulted in stronger results. The results reported for the use of biodata are particularly important for an applied setting given that there was little evidence of adverse impact or differential validity.

4.2. Limitations and directions for future research

The study reported in this article has a number of limitations. One limitation is the fact that the psychological variables (e.g., realism of job expectations) thought to explain the effectiveness of the biodata items were not measured. Although this is typical of most biodata studies (e.g., Barrick & Zimmerman, 2009), future research examining the relationships discussed is needed. A second limitation is that adverse impact against minorities linked to the biodata items could not be examined given the call center did not provide data concerning a person's race. A third limitation is the performance measure used. Clearly, utilizing a 1-item measure that only has three response options is not desirable. However, echoing the arguments of Becker and Cropanzano (2011) in defending their use of a 1-item performance rating scale, the performance measure in this study was what the call center used to make personnel decisions. A fourth limitation to note is that a single rater was used to estimate employment status. Although the call center's only agreeing to have one HR specialist take the time to make the employment judgment sought for this study is understandable, ideally multiple raters would have been used. That having been said, to the extent that the judgments made concerning employment status were not highly reliable, the relationship reported between employment status and turnover ($r = -.32$) is impressive. A final limitation to note involves the measure of commuting distance used. Given a person with a residential address with the same zip code as the call center was coded as having no commuting distance, the distance measure used is imprecise. This distance measure may also provide misleading results if a person were to move after being hired. Although not a limitation of the measure of commuting distance used in this study, it should be noted that it may be unwise and possibly illegal for an employer to use residential zip code as a biodata predictor.

Given the limitations of past biodata research including the study reported in this article, more research using job applicants is clearly called for. For example, although the findings reported for applicant status (i.e., first-time vs. previously applied) and employment status (i.e., currently working) suggest the value of these biodata items, these results need to be replicated. Drawing upon theory addressing voluntary turnover, it is likely that other biodata items, that are predictive of voluntary turnover, but have yet to be investigated, can be derived. For example, for a job opening that would

require relocation, a past history of relocating for a job may be a good predictor of employee retention. The topic of commuting also merits future attention. Although commuting distance was not found to predict turnover in the study reported, a study that more directly measured commuting cost and time might find these variables to be linked to voluntary turnover. Alternatively, for a sample that commuted a longer distance to work, commuting distance might be more predictive of leaving. Despite the fact that several studies have addressed the use of employee referrals, they also merit additional research. For example, in studying employee referral effects, insight may be gained by considering how well the person making the referral knows the position being filled (e.g., a member of the work group with the job opening is likely to have more information to share than a person who works in a different department).

5. Conclusion

In introducing this article, we noted that biodata was receiving less attention from researchers in recent years and that it was not being used by many employers for selecting employees. Our hope is that the results reported (e.g., the sizable differences in turnover rates) reverse these trends. In terms of research, numerous types of biodata items have yet to be investigated (at least as best as one could tell given the lack of access to the biodata items used in many studies). Drawing upon existing theory, it is likely that researchers will be able to develop biodata items that improve our ability to predict voluntary turnover, job performance, or other criteria. In terms of employers, the results reported clearly demonstrated the value of using theoretically grounded biodata items to select employees. Compared with posthire turnover reduction strategies, the use of biodata is inexpensive and easy to implement.

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