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An Examination of Variables that Predict Turnover, Staff and Caregiver Satisfaction in Behavior-analytic Organizations

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ABSTRACT

Staff turnover can pose a significant problem for human service organizations. For Applied Behavior Analysis (ABA) service providers, turnover may be particularly problematic due to the resources required for training. Accreditation organizations such as the Behavioral Health Center for Excellence® (BHCOE®) collect large amounts of organizational data that can point to trends in ABA organizations and provide a basis for problem identification and intervention. In this study, we evaluated BHCOE® data to examine potential predictors of staff turnover and staff and caregiver satisfaction in ABA organizations. Results of multiple regression analyses suggest that high turnover rates among job classes (i.e., technicians and supervisors) correlate with each other's turnover. Behavior Technicians are also more likely to turnover when wages are lower and caregiver satisfaction wanes. Staff satisfaction was not a significant turnover predictor but was generally predicted by caregiver satisfaction. These findings suggest that turnover and satisfaction are multifaceted processes worthy of examination; we provide broad recommendations for improvement and avenues for further study.

Turnover is a worrisome issue for many organizations, as high levels of turnover can derail many management processes. For example, attrition is often preceded by tardiness and absenteeism (Berry, Lelchook, & Clark, 2012). Attrition is also costly; estimates suggest that turnover-related expenses (e.g., selection, training, and development) can exceed the annual salary for that position (Allen, Bryant, & Vardaman, 2010). Moreover, there are clear links between voluntary turnover rates and diminished organizational performance, especially within industries reliant on the development of human capital (e.g., health and human services; Park & Shaw, 2013). Organizations providing Applied Behavior Analysis (ABA) services are included in this category.

ABA service providers frequently work with individuals with Autism Spectrum Disorder (ASD) or other intellectual disabilities, utilizing behavioral principles to assess and functionally treat behaviors of social importance (e.g.,

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barriers to life quality or age-appropriate adaptive and prosocial skills; Council of Autism Service Providers, 2020). Direct care staff, or behavior technicians, supervised by Board Certified Behavior Analysts® (BCBAs®) or Board Certified Assistant Behavior Analysts® (BCaBAs®), provide the bulk of intervention. Positive outcomes are largely reliant on the staff members' accurate implementation of treatment (Fryling, Wallace, & Yassine, 2012). In ABA service settings, client interaction can be taxing (e.g., when managing aggression and other challenging behavior) and job requirements are intensive (i.e., 40 hours per week of intervention; Council of Autism Service Providers, 2020).Burnout is common and may correlate with sub-optimal performance and increased rates of turnover (Gibson, Grey, & Hastings, 2009; Griffith, Barbakou, & Hastings, 2014).

Although attrition may be a particular problem in organizations providing ABA services, there are few datasets that elaborate on the scope of turnover problems among ABA service providers. The Behavioral Health Center of Excellence® (BHCOE®), a private accreditation organization for clinical behavior-analytic services, provides one estimate; their data suggest that ABA direct-staff turnover hovers around 50% annually (Behavioral Health Center of Excellence [BHCOE], 2018). Therefore, average turnover (i.e., the percentage of voluntary turnover relative to organizational size) occurs at a level higher than national averages (i.e., 44.5%) and is 17% above similar fields such as Education and Health Services (i.e., 34%; United States Bureau of Labor Statistics, 2019).

In concert with the relative organizational costs and potential detriments to treatment outcomes, these data suggest that turnover in behavior-analytic organizations is a problem worthy of empirical investigation. While the primary purpose of BHCOE® measurement is to determine standards and quality of an individual organization, accreditation processes produce aggregate data comprising turnover, satisfaction, and other organizational metrics; therefore, these large datasets provide a unique perspective on a complex process.

Empirical examination of turnover and related variables

Industrial-organizational (I/O) psychologists have researched turnover thoroughly, describing it as an "unfolding" process due to the myriad variables involved (Johns, 2002). Employee fit within an organization (i.e., organizational goals and structure), antecedent events that trigger leaving, changing attitudes, and corresponding effects on behavior and perceptions have been identified as contributing to final decisions to stay or leave (Grotto, Hyland, Caputo, & Semedo, 2017). Variables impacting turnover decisions can be idiosyncratic, including motivation (Kammeyer-Mueller, Wanberg, Glomb, & Ahlburg, 2005), job embeddedness (Jiang, Liu, McKay, Lee, & Mitchell,

2012;Mitchell & Lee, 2001; Porter et al., 2019), and cognitive ability (Maltarich, Nyberg, & Reilly, 2010). Job satisfaction (Hulin, 1991; Locke, 1976), a frequently examined predictor of turnover, tends to be the most predictive of turnover when measurement targets satisfaction with the work itself (Griffeth, Hom, & Gaertner, 2000; Grotto et al., 2017). Environmental antecedents also may occasion turnover, such as critical "shocks" signaled by organizational changes in values or goals (Lee & Mitchell, 1994), workplace stressors (Podsakoff, LePine, & LePine, 2007), and potential career opportunities (Kraimer, Seibert, Wayne, Liden, & Bravo, 2011; Swider, Boswell, & Zimmerman, 2011). In brief, a multitude of variables, distal and proximate, have been observed to predict turnover. However, the proximal variables (e.g., alternative positions, pay, job satisfaction) do so most strongly (Griffeth et al., 2000).

High rates of turnover in human service organizations have also prompted investigations into the specific variables that influence attrition in these settings. Research suggests that merely working with students with disabilities may increase the likelihood of turnover (Gilmour & Wehby, 2020). Special education teachers frequently report job dissatisfaction, which tends to produce lower measures of organizational commitment. This, in turn, can influence intent to stay (Billingsley & Cross, 1992; Stempien & Loeb, 2002). Among direct support staff who serve adults with intellectual disabilities, some correlates with intended turnover include poor staff satisfaction, supervisor support, and organizational fit (Hatton & Emerson, 1993, 1998; Mascha, 2007; Razza, 1993).

A larger concern is that these issues may then be passed on to the consumers (e.g., clients and caregivers). In medical settings, nurse burnout and turnover lowers patient satisfaction and wreak havoc on processes that mediate patient outcomes (Bae, Mark, & Fried, 2010; Garman, Corrigan, & Morris, 2002). Similarly, parents of children enrolled in early childhood programs report better engagement when staff relationships are cultivated and access to services remains high (Nik Aida et al., 2019). Difficulty with reliable staffing, such as those caused by frequent turnovers, can be disruptive to service delivery (Sulek, Trembath, Paynter, Keen, & Simpson, 2017).

Behavior analysis and turnover

Few studies have examined turnover and related variables (e.g., burnout, job satisfaction) within samples of purely behavior analytic staff. In a rare examination of turnover within behavior analysis, Kazemi, Shapiro, and Kavner (2015) identified predictors of turnover intent among 96 behavior technicians employed at various agencies in California. Various satisfaction measures (i.e., satisfaction with pay, supervision, and training) significantly predicted technicians' intent to turnover. Despite the immense fiscal consequences and

performance declines related to attrition, behavior analysis has not fully investigated nor intervened upon these processes. One possible reason for the dearth of behavior analytic research on turnover is related to philosophical underpinnings: measurement of cognitive schemas and constructs, common in I/O turnover research, are generally eschewed in behavior analytic research (Stewart, Barnes-Holmes, Barnes-Holmes, Bond, & Hayes, 2006).

Instead, behavior analysis and organizational behavior management (OBM) in particular, commonly focuses on prediction and control of operant behavior (Geller, 2002). Turnover is difficult to study in this manner, because the behavior (e.g., voluntary separation) occurs only once per individual within a given organization and often comprises a broad range of environmental variables. Some OBM subdisciplines, such as Systems Analysis, may be better suited toward large-scale adjustments of organizational ecosystems and processes (Diener, McGee, & Miguel, 2009). For example, in one of the few OBM studies targeting turnover, Strouse, Carroll-Hernandez, Sherman, and Sheldon (2003) used a within-subject design to reduce staff vacancies by affecting a process change to staff scheduling. However, applied intervention remains scarce. Turnover is also a slow process, most commonly measured across years or months; trends in turnover and, therefore, intervention choices cannot be evaluated with ease (Wine, Osborne, & Newcomb, 2020).

However, given the prevalence of the problem, conceptual misgivings and methodological difficulties should not preclude studying these variables. Leaving one's job is operant behavior. Further extension of studies (e.g., Kazemi et al., 2015) may help point behavior analysts toward more effective assessment and prevention of turnover. Moreover, many commonly investigated variables that may correlate with turnover (e.g., job satisfaction) are similarly underrepresented in behavior-analytic research. Job satisfaction is a critical aspect of OBM. It correlates with many positive social impacts (Hantula, 2015), and can be further elaborated and intervened upon in conceptually systematic ways (Bond & Flaxman, 2006; Stewart et al., 2006).

Utility and purpose

BHCOE®'s organizational data includes information on over 200 clinical ABA service providers, including their annual turnover, wages, satisfaction measures and features of clinical practice. Analysis of these data may address gaps in research and practice, potentially yielding some insight into turnover, as well as staff and caregiver satisfaction. At a minimum, these data may further highlight problematic trends, hint at potential areas of prevention, and prompt future research. Thus, the purpose of the present study is to examine predictors of employment trends in behavior analytic organizations and, given the results of multiple regression analyses, provide broad recommendations to reduce turnover as well as improve staff and caregiver satisfaction.

Based upon previous research models (e.g., those elaborated in Grotto et al., 2017), turnover is likely predicted by measures in the data set reflecting the most proximal variables across key categorical areas. Specifically, within behavior analytic organizations, these factors may include job satisfaction regarding supervision, training, and pay (Kazemi et al., 2015). Therefore, it is likely that the average pay rate, staff and caregiver satisfaction, supervisory or subordinate turnover, and the presence of organizational features required for accreditation (e.g., oversight and monitoring processes) will predict turnover rate of behavior technicians and supervisory staff.

Self-reported job satisfaction within clinical organizations will likely be most strongly predicted by variables related to the work itself (Grotto et al., 2017). In these data, there are multiple variables that are proximate to direct outcomes and daily job duties (i.e., caregiver satisfaction, job supports, wages). Therefore, it is likely that pay rates, caregiver satisfaction, and organizational quality variables will predict staff satisfaction scores.

Caregiver satisfaction with ABA services, as a predictor in analyses of turnover and satisfaction, also serves as the only potential measure of outcome within these data. Therefore, this measure and its determinants may be important, given the potential threat to organizational processes and outcomes that turnover may pose (e.g., Sulek et al., 2017). Parent questionnaires have suggested that caregivers most frequently experience challenges with funding, therapists, and organization administration (Grindle, Kovshoff, Hastings, & Remington, 2009). Therefore, we expect that increases in self-reported caregiver satisfaction will be influenced by the most direct points of contact with their respective organizations, such as the organization's quality metrics (i.e., ratings of treatment programs, staff qualifications, availability of services and parent training) and the staff (i.e., satisfaction and staff inconsistency).

Method

Sample

BHCOE® accreditation data contains information on over 200 organizations internationally, though not all entries had complete entries for each area under investigation. Incomplete records were excluded, so the sample we used comprised 100 and 63 behavior-analytic organizations within the United States. The sample included all organizations which applied for accreditation for which complete data were available. That is, if an organization applied for accreditation and was rejected, their data were included in this analysis. Approximately 86.72% of the organizations included in this analysis were granted full or provisional accreditation when they applied. Approximately, 2.8% of organizations did not pass the accreditation process. No demographic information (e.g., employee age, gender, experience level) was provided

regarding organizations; job classes were divided between direct support staff (i.e., behavior technicians) and clinical supervisors (e.g., BCBAs® and BCaBAs®).

Data were provided by the BHCOE®, and all identifying information (i.e., company name, individual names, location) was omitted. The sample included three individual sets of data for turnover, pay, and staff and caregiver satisfaction measures, as well as measurement of BHCOE® Code elements required for final accreditation decisions. Wage data indicates that direct support staff working a forty-hour week earn a median income of 35,360 USD annually ($M = 37$, USD 440). Clinical supervisors earn a median salary of 67,475 USD ($M = 76,976$ USD). The median number of supervisors at each location was 5.32, while the median number of behavior technicians employed annually per organization was 19.59 (i.e., a roughly 1:4 ratio).

Interrater agreement

A research assistant and the primary researcher both calculated separate totals to evaluate acceptable levels of agreement on all employee wage/salary information. Percentage agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements, multiplied by 100. Agreement was 99.91% across 1190 entries. The disagreements were redressed by revisiting the original data file and re-calculating the wage/salary information for that entry. In total, two records were corrected.

Measures

Questionnaires

When an organization applies for accreditation, the BHCOE® requests administrative documents from the organization and distributes questionnaires to assess caregiver and staff satisfaction. Within a week of receiving documents, questionnaires are delivered to all clinical job classes within the organization (e.g., clinical director, supervisor, technician, or equivalent titles) as well as to caregivers of organizational consumers via e-mail. Questionnaires remain open to submission for one calendar month. Satisfaction questionnaires were sent to 13,752 staff at the time of their respective organization's accreditation process and approximately 9,100 responded (66% mean response rate). Questionnaires were also sent to 13,060 caregivers during their respective organization's accreditation process; approximately 5,300 responded (41% mean response rate).

These questionnaires were developed expressly for internal BHCOE purposes. Although the questionnaires were not formally validated before use, the items are very similar to items provided by commonly used and validated questionnaires including Beehr et al.'s (2006) *Facet Satisfaction Scale*, Smith,

Kendall, and Hulin (1969) *Job Descriptive Index Facet Measures*, Spector's (1985) *Job Satisfaction Survey*, and Weiss, Dawis, England, and Lofquist (1967) *Minnesota Satisfaction Questionnaire*. Unfortunately, no data exists directly comparing the BHCOE questionnaire with these validated instruments. However, the high level of content overlap provides evidence of content validity.

Staff satisfaction. Staff satisfaction questionnaires include approximately 50 items containing statements for the respondent to score on a 5-point Likert scale, ranging from Strongly Disagree to Strongly Agree. Items were split into categories and specific facets include satisfaction with the following: career development (9 items), work engagement (11 items), compensation (3 items), relationships to management (9 items), employment status (2 items), work environment (11 items) and benefits (5 items). The questionnaire items vary in wording but address the same listed areas and have similar item counts per section. Additionally, there are also demographic questions on salary, raises, employment status, hours scheduled, background experience and relevant certifications. Cronbach's alpha for the various item categories was .39, indicating poor consistency and suggesting that data for benefits and work environment should not be considered in the aggregate measure. Removal of those two sections raised Cronbach's alpha to .88, providing the basis for the aggregate measure used in this analysis. Overall satisfaction scores were determined by calculating a percentage from the total number of points possible across all scales (e.g., if all scored 4's on a facet with five questions: 20/25 = 4/5 = 80%). These facets were then averaged together to produce a total score.

Caregiver satisfaction. The caregiver satisfaction questionnaire was formatted similarly to the job satisfaction questionnaire in that it contained approximately 50 items and was organized by seven different facets of stakeholder approval, including satisfaction with: treatment (7 items), staff (10 items), scheduling (6 items), parent training (12 items), client progress (7 items), navigating funding sources (3 items) and an overall measure of caregiver satisfaction (3 items). Much like the staff satisfaction questionnaire, there are also demographic questions related to experience with ABA service providers, age, location of therapy delivery, hours received and total treatment duration. Cronbach's alpha for the scored facets was .85, indicating high consistency within this sample. Overall caregiver satisfaction was determined by calculating a percentage from the total possible score. These facets were then averaged together to produce a total score.

Average annual turnover

During the BHCOE® document review process, the prospective accreditation-seeking organizations submitted a variety of information regarding company

policies, procedures and records. Turnover data were included in these records and referred to the total number of separations (i.e., voluntary/involuntary) as an annualized percentage of average employment, consistent with the method used by the United States Bureau of Labor Statistics (2019). Turnover percentage for a given organization was calculated by dividing the number of annual separations divided by the average number of clinical employees yearly, multiplied by 100.

The turnover percentages were included only if the reporting organization provided, at a minimum, one calendar year of separation data. Moreover, a separate percentage was calculated for each job class (i.e., technician, supervisor and clinical director) per organization. Each annual turnover percentage per organization was averaged together to produce a mean turnover rate per organization.

Average hourly pay

Record review also included reporting of wages and salaries for all clinical employees. To standardize wages and salaries, the data included are the mean gross hourly rates for each clinical job class. For positions that reported salary, the hourly rate was calculated by dividing the annual salary by the number of weeks in the year (i.e., 52); the quotient was then divided by a typical work week (i.e., 40). These data do not control for cost of living or wage differences across regions. That is, these data are not sensitive to local variations in pay or insurance reimbursement rates.

Individual measures of BHCOE® code items

In addition to self-report and questionnaire data on turnover and satisfaction, full accreditation comprises a process that includes record review, interview, and direct observation. Observation is conducted through onsite visits. Within the BHCOE® code, there are five additional sections that specify code elements which comprise a variety of organizational elements: Staff Qualifications, Training & Oversight, Treatment Program & Planning, Collaboration & Coordination of Care, Ethics & Consumer Protection, and Health Insurance Portability and Accountability Act (HIPAA) Compliance. During clinical observation, each section is scored as a percentage compliance, calculated by dividing the number of observed code elements within the section divided by the total number of code elements in the section, and multiplied by 100. Each organization within the data set receives a score for each domain in each accreditation attempt.

Statistical analyses

Regression refers to a family of statistical methods used to describe the relationship between two or more variables. Specifically, regression procedures

produce a line of best fit for a set of variables. Simultaneous multiple regression, used to analyze these data, is so named because all variables are entered into the regression equation at the same time (see Cohen, Cohen, West, & Aiken, 2013 for a thorough explanation). Additionally, when describing the relationship between variables, it may be prudent to investigate the degree to which one variable predicts changes in the criterion variable relative to others. For these data, we use dominance analysis, a method which estimates a predictor variable's relative contribution by determining its average contribution across all possible combinations of the regression model (see Tonidandel and LeBreton (2011) for a discussion on appropriate methods to determine a variable's relative importance).

Results

Behavior technician turnover

Descriptive statistics and correlations for all study variables are provided in Table 1. To analyze variables related to average annual technician turnover, a multiple regression analysis was conducted. Average annual technician turnover was regressed on average technician hourly wages, average staff satisfaction, average caregiver satisfaction, average annual supervisor turnover, presence of treatment program and planning, and staff qualifications. All six predictors explained a significant amount of the variance in average annual technician turnover ($R^2 = .22$, $F(6, 107) = 4.99$, $p < .001$). Average technician pay ($\beta = -.269$, $p = .005$), average caregiver satisfaction ($\beta = -0.301$, $p = .002$), and annual average supervisor turnover ($\beta = 0.296$, $p = .001$) were all significant predictors of annual average technician turnover. Average staff satisfaction ($\beta = 0.094$, $p = .322$) as well as organizational quality measures, including treatment program and planning ($\beta = 0.005$, $p = .962$) and staff qualifications ($\beta = -.006$, $p = .954$), were not significant predictors of average annual technician turnover. Dominance analysis indicated that average supervisor turnover accounted for 43% of the variance explained, while the average technician pay and average caregiver satisfaction accounted for 29% and 27%

Table 1. Means, standard deviations, intercorrelations for all study variables.

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Average Technician Turnover	51.76	28.77	-								
2. Annual Supervisor Turnover	18.89	15.95	0.32	-							
3. Technician Average Pay	18.46	3.89	−0.18	0.05	-						
4. Average Supervisor Pay	36.69	12.92	−0.17	0.25	0.21	-					
5. Staff Satisfaction	81.94	7.98	−0.08	−0.17	0.25	0.21	-				
6. Caregiver Satisfaction	89.73	6.53	−0.02	−0.19	−0.12	−0.11	0.20	-			
7. Overall Accreditation Score	87.99	6.94	0.06	−0.01	−0.03	0.03	0.25	0.02	-		
8. Treatment Program	92.32	7.60	0.04	−0.10	−0.06	−0.08	0.01	−0.12	0.60	-	
9. Staff Qualifications	90.79	12.07	0.03	0.06	−0.17	−0.21	−0.00	0.04	0.53	0.29	-

n = 116–147. Correlations larger than |.16| are statistically significant, $p < .05$, two tailed.

of the variance explained, respectively. The remaining variables, average staff satisfaction, treatment program and planning, and staff qualifications each accounted for less than 1% of the explained variance. Regression results and general dominance weights for average annual technician turnover are provided in Table 2.

Supervisor turnover

As with technician turnover, a simultaneous multiple regression was used to analyze variables related to average annual supervisor turnover. Average annual supervisor turnover was regressed on average supervisor hourly wage, average staff satisfaction, average caregiver satisfaction, average annual technician turnover, and aggregate organizational quality measures. The five variables predicted a significant amount of the variance in average annual technician turnover ($R^2 = .12$, $F(5, 102) = 2.78$, $p = .021$). However, of the five predictors, only annual average technician turnover ($\beta = .295$, $p = .003$) significantly predicted annual average supervisor turnover. Average supervisor hourly wage ($\beta = .049$, $p = .621$), average staff satisfaction ($\beta = -.104$, $p = .296$), average caregiver satisfaction ($\beta = -.070$, $p = .483$), and aggregate organizational quality measures ($\beta = -.056$, $p = .538$) were not significant predictors of average annual supervisor turnover. Dominance analysis indicated that average technician turnover accounted for 73% of the variance explained. Average staff satisfaction and average caregiver satisfaction each accounted for 13% of the variance explained. Average hourly supervisor pay and aggregate organizational quality measures each accounted for less than 1% of the explained variance. A summary of the regression results and general dominance weights for average annual supervisory turnover is provided in Table 2.

Table 2. Summary of multiple regression analysis and dominance analysis.

	Average Technician Turnover ($n = 113$)		Average Supervisor Turnover ($n = 107$)		Staff Satisfaction ($n = 122$)		Caregiver Satisfaction ($n = 115$)
	β	GDW	β	GDW	β	β	GDW
Average Technician Turnover	–	–	0.30*	0.088	–	−0.21*	0.046
Average Supervisor Turnover	0.30*	0.093	–	–	–	−0.06	0.021
Technician Average Pay	−0.08*	0.063	–	–	0.26*	–	–
Supervisor Average Pay	–	–	0.05	0.001	0.04	–	–
Staff Satisfaction	0.09	0.001	−0.10	0.016	–	0.19*	0.049
Caregiver Satisfaction	−.030*	0.06	−0.07	0.016	0.27*	–	–
Overall Accreditation Score	–	–	−0.06	0.001	0.21*	0.12	0.006
Treatment Program	0.05	0.001	–	–	–	–	–
Staff Qualifications	−.006	0.001	–	–	–	–	–

GDW = General dominance weights. R^2 values were .22, .12, .19, and .12 for average technician turnover, average supervisor turnover, staff satisfaction, and caregiver satisfaction, respectively. *$p < .05$.

Staff job satisfaction

To analyze variables that predict satisfaction, a simultaneous multiple regression was conducted, regressing staff satisfaction on average technician and supervisor hourly wages, average caregiver satisfaction, and aggregate organizational quality measures. The four predictors predicted a significant amount of the variance in average job satisfaction ($R^2 = .19$, $F(4, 118) = 7.04$, $p < .001$). Three predictors, average technician hourly wage ($\beta = .257$, $p = .047$), average caregiver satisfaction ($\beta = .265$, $p = .002$), and aggregate organizational quality measures ($\beta = .205$, $p = .017$) were significant predictors of average job satisfaction. Average supervisor hourly wage ($\beta = .041$, $p = .746$) did not predict a significant amount of variance. Dominance analysis indicated that average caregiver satisfaction and aggregate organizational quality measures accounted for 30% and 29% of the variance explained, respectively. The two hourly wage variables, average technician and supervisor hourly wages, accounted for 24% and 18% of the variance explained, respectively. A summary of regression results and general dominance weights of average job satisfaction is provided in Table 2.

Caregiver satisfaction preliminary analysis

To analyze variables that predict average caregiver satisfaction, a simultaneous multiple regression was conducted, regressing average caregiver satisfaction on organizational quality measures, average annual staff turnover, and average staff satisfaction. The four predictors predicted a significant amount of the variance in average caregiver satisfaction ($R^2 = .12$, $F(4, 111) = 3.89$, $p = .005$). Two predictors, average technician turnover ($\beta = -.209$, $p = .027$) and average staff satisfaction ($\beta = .192$, $p = .040$) were significant predictors of average job satisfaction. Average annual supervisor turnover ($\beta = -.064$, $p = .500$) and aggregate organizational quality measures ($\beta = .119$, $p = .198$) did not predict a significant amount of variance. Dominance analysis indicated that average staff satisfaction accounted for 40% of the variance explained, while average technician turnover accounted for 37% of the variance explained. Average supervisor turnover accounted for 17% of the variance explained whereas aggregate organizational quality measures accounted for 5% of the variance explained. A summary of regression results and general dominance weights of average caregiver satisfaction is provided in Table 2.

Discussion

Caregiver satisfaction, supervisor turnover, and behavior technician wage significantly predicted behavior technician turnover within behavior-analytic organizations, while employee satisfaction and organizational variables did

not. The negative relationship between wage and turnover suggests that, for technicians, pay may heavily weigh into the decision to leave ABA organizations. Though these data stand in contrast to findings on turnover intent in ABA organizations (e.g., Kazemi et al., 2015), they are measuring different things. Verbal report of intent to leave is not leaving. ABA technicians often work with clients with severe or dangerous behavior and effective behavior-analytic procedures (e.g., extinction procedures) to remediate deficits, resulting in heightened and immediate negative outcomes, leading to eventual staff burnout and stress (Biglan, Layton, Jones, Hankins, & Rusby, 2013). For many technicians, the relatively low pay may not be worth the risks and other negative aspects of the job.

Supervisor hourly pay, staff satisfaction, average caregiver satisfaction, and the presence of processes and organizational features required for accreditation all failed to significantly predict average annual supervisor turnover. The failure of supervisor pay to predict turnover may be due to their generally higher pay rates over technicians. Interestingly, staff and caregiver satisfaction were not strongly linked to supervisory turnover. Caregiver interactions, in some ways, may not be as frequent or impactful for supervisors. Larger caseloads, relative to technicians, could mean supervisors are less likely to be scrutinized by caregivers daily. One negative caregiver report might comprise a small portion of a supervisor's caseload, whereas technicians might see that same caregiver daily.

Consistent with previous estimates from the BHCOE (2018), turnover for technicians tends to be far greater than national averages while turnover for supervisory roles is near the overall national average. Multiple variables may be responsible for this. For example, while demand may be high, supervisor's wages are generally more stable while competing for fewer spots, given the typical ratio (i.e., 1:4) between supervisors and supervisees. Technicians, as an entry-level position, may have less experience and fewer reasons to remain in their position, especially if they are also pursuing professional development. If supervisors remain entrenched in positions, technicians who work toward advanced certification may vacate positions for other organizations with unoccupied supervisory slots.

As technician wages, caregiver satisfaction, and organizational quality metrics increased, so did staff satisfaction. These outcomes broadly support previous research, in that positive job features and work-related outcomes might strongly predict job satisfaction. Simply put, technicians who were relatively well compensated, had more organizational structure, and worked with satisfied consumers tended to report satisfaction with their jobs. However, despite being content via verbal report, satisfaction did not seem to impact the decision to stay or leave.

Conversely, across both turnover and staff satisfaction, one commonality was the importance of caregiver-reported satisfaction. However, caregiver

satisfaction was only predicted significantly by decreases in technician turnover and increased staff satisfaction. Seemingly, caregivers tend to be most satisfied when staff, particularly those who work directly with their child, are consistent and content. Technicians may be the most common points of interaction with caregivers and largely shape their verbal reports regarding the organization.

Recommendation

In brief, turnover processes, as well as consumer and staff satisfaction, are complex multi-faceted variables that comprise many different, sometimes interconnected, relationships; some general recommendations follow below.

Recommendation one: target behavior technician turnover

Intervention upon technician turnover might be the most efficient route to affecting change: technician turnover occurs at the highest rate, has the most significant predictors, and relates strongly to other variables. Caregivers whose technicians frequently turn over report lower satisfaction with services. In addition, supervisor turnover is the variable that most strongly accounts for technician turnover in these analyses. The retention of technicians and supervisors are clearly related; while not necessarily indicative of a causal relationship, turnover at one level predicts turnover in the other. Because of this relationship, immediately addressing any developing trends in separations may be of key importance to the organization. Process improvement has been one intervention used in treating staff turnover (Strouse et al., 2003). However, intervening on turnover has been limited in the behavior analytic literature likely due to the relatively delayed outcome and the number of variables involved. Nevertheless, research in some sub-fields of OBM (e.g., Behavior-Based Safety; see Agnew & Daniels, 2011) have proven effective at treating delayed and uncertain outcomes and may inform potential intervention strategies. Additional research is needed to appropriately identify and target the measurable variables that lead to these outcomes.

Recommendation two: value and enhance caregiver satisfaction

Caregiver satisfaction, based on these data, is both positively related to the satisfaction of staff and negatively related to technician turnover. Conversely, consistency of direct care staff and employees' overall satisfaction seems to predict positive caregiver reports. Of course, maintaining consistent and satisfied client teams indefinitely is not practical or likely. One solution might be to train and monitor technicians to better interact with caregivers, thereby normalizing the standard of care caregivers receive. Another common point of contact with organizations for caregivers is parent training. Parent training can be effectively delivered in a variety of ways, targeting specific skills

(e.g., Gross, Miltenberger, Knudson, Bosch, & Breitwieser, 2007; Lafasakis & Sturmey, 2007; Mueller et al., 2003), as formal parenting curricula (e.g., Postorino et al., 2017), or specifically tailored to address barriers to effective parenting repertoires (e.g., Blackledge & Hayes, 2006; Gould, Tarbox, & Coyne, 2018; Hahs, Dixon, & Paliliunas, 2019). Teaching a variety of skills and abilities to parents may better equip them as direct change agents and could shift the emphasis away from relationships with technicians.

Recommendation three: examine pay structures

Relatively higher pay seems to reduce technician turnover. However, simply paying staff more is not always feasible, as most service providers are subject to outside environmental factors for revenue (e.g., third party payers). Wages provided contingent on performance and indexed to organizational profit may allow organizations reliant solely on insurance billing to equitably reward high performers (Abernathy, 2014). While these current analyses are not sensitive to pay structure variations, partitioning at least some of an employee's wage into a pay-for-performance schematic may lead to beneficial performance change (Bucklin & Dickinson, 2001; Warman, Wine, & Ernest, 2020). Though impacts on productivity and reduction of turnover require further investigation, redistribution of wages might be the most readily available option for employers to strategically reward exemplary performers.

Recommendation four: heighten focus on job satisfaction

The current data suggest that pay, enhancing client outcomes (i.e., work products), and maintaining organizational standards may improve the way employees perceive their respective organizations. In turn, these benefits may also be passed on to the consumer, as their satisfaction seems to influence the consumer. However, job satisfaction was a non-significant predictor of other important variables such as staff turnover. If the broad goal of OBM is to craft both industrious and happy employees (Mawhinney, 2011) and job satisfaction appears to have a significant role in service delivery, then employee satisfaction should be a variable of interest in further study and better investigated in relation to the retention process. Incorporation of some trends in OBM research could potentially help align these variables, or, at a minimum, further bolster employee satisfaction. For example, as noted above, performance contingent pay schemas are both preferred (Long, Wilder, Betz, & Dutta, 2012) and have increased job satisfaction (Koffarnus, DeFulio, Sigurdsson, & Silverman, 2013). Organizations with limited funding might consider using preference assessments to identify non-wage-based rewards (Wine, Kelley, & Wilder, 2014) or to guide environmental manipulation (Green, Reid, Passante, & Canipe, 2008; Reed, Reed, Campisano, Lacourse, & Azulay, 2012) as potential options.

Limitations and future research

As a preliminary investigation into employment trends in organizations providing ABA services, there are multiple limitations that temper the conclusions of these findings. First, a broad problem is the limited predictive validity, as these data do not account for multiple sources of variability (e.g., geographical disparities in wage). In addition, these data are based on measurement of satisfaction variables by proprietary BHCOE® questionnaire. Subsequent studies should investigate ways to normalize data, use standardized measurement tools (e.g., the Minnesota Satisfaction Questionnaire (MSQ); Weiss et al., 1967), or psychometrically validate the questionnaires.

Second, the turnover data we analyzed does not discriminate between voluntary and involuntary turnover; variables responsible for each can differ (Allen & Griffeth, 2001; Park & Shaw, 2013; Trevor, Gerhart, & Boudreau, 1997). Wine et al. (2020) proposed a taxonomy of turnover that includes *good* turnover (e.g., expected professional growth of the employee), *neutral* turnover (e.g., turnover resultant of uncontrollable variables), and *bad* turnover (e.g., organizational variables are at least partly responsible for separation). Future studies should investigate turnover across these categories both to better frame concern (e.g., finding that *good* turnover is the dominant form of separation) and reduce the rate of problematic turnover.

Third, the sample is arguably biased by the accreditation process. As an entirely voluntary process initiated by self-evaluation, many organizations, exemplary or poor, may not be well represented. Generally, high means in the various accreditation categories hint at this bias. Moreover, metrics are scored in a binary fashion (i.e., an element is scored present or absent). The scoring ceiling imposed by this method may not reflect how well some organizations integrate quality features and processes relative to other applicants. Future studies could seek additional or supplemental data from organizations that represent a broader range of organizational performance.

A fourth limitation to these data is asserting causality, as correlations only hint at the functional relationships that promote these outcomes. For example, turnover of supervisors predicted technician turnover and vice versa, but this does not indicate the specific direction of that effect. Therefore, recommendations for treating turnover were necessarily broad; more nuanced statistical analysis is needed. Moreover, behavior-analytic inquiry is typically routed toward prediction and control; these data only address the former. Future research should examine methods of controlling or managing turnover and other important behaviors.

Finally, caregiver satisfaction was the only measure of clinical outcomes examined within the data set. Direct outcomes of service, such as child improvement relative to age-typical peers, would likely be the best and most proximal measure of effective service delivery. Further studies should

incorporate client progress and outcome data as a potential predictor of other variables.

In summation, these data indicate that attrition as well as the way staff and caregivers interact are important within organizations which provide behavior analytic services. While necessarily broad, the analyses herein are intended to highlight some problematic employment trends and provide some basic recommendations for intervention. Functionally intervening upon retention issues in behavior analytic service delivery, given the variables involved, will require more sophisticated research.

Disclosure statement

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