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A REVIEW OF REMOTE WORK EVALUATION APPROACHES

by

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A Review of Remote Work Evaluation Approaches

When Coronavirus disease (COVID-19) reached the United States in March 2020, government officials instated physical distancing guidelines as well as advised against large gatherings in public locations (World Health Organization, 2020). As a result, much of the workforce abruptly switched to remote work (completing required work duties from a home office) while the pandemic surged. In May 2020, 35.4% of United States workers were working from home. The most recent data from February of 2021 shows that 22.7% of workers continue to work from home (U.S. Bureau of Labor Statistics, 2021). Organizations began returning employees to their physical office spaces, though many made it clear that post-pandemic working will be hybrid, with nine out of 10 organizations claiming they will combine remote and on-site working (Alexander, Cracknell et al., 2021). With the state of the pandemic constantly changing, organizations are left with uncertainty about business and staffing needs.

Many organizations have chosen to pursue this hybrid model of work. Surveys suggest that productivity and customer satisfaction have increased during the pandemic (Alexander, De Smet et al., 2021). Hybrid models may also decrease a company's overhead costs due to a reduced need for office space (Ferreria et al., 2020). By being present in office once or twice a week, employees working remotely have more flexibility for home-life (Alexander, De Smet, et al., 2021). More than 70% of employees stated that managing their work-life balance is easier, offering more control over their work. Even if remote working is not ideal for everyone, 99% of remote employees recognize at least one benefit of working from home (Ferreria et al., 2020).

Though remote work does have benefits (e.g., increased productivity, improved work-life balance, etc.), it also has drawbacks. In a recent survey, 76% of employees reported having negative experiences when working entirely remotely (Boston Consulting Group, 2021).

Additionally, a survey conducted by Hancock & Schaninger (2020) found that more than 40 percent of the participants surveyed described a decline in mental health. While these results suggest the opposite conclusion of Ferreria et al. (2020), both convictions can be equally true. While some organizations are facing increasing levels of attrition, declines in productivity, and lost value stemming from unrealized potential, others are pleased with the flexibility and comfort remote work has provided. Organizations must find a way to navigate these contrasting outcomes if they continue to use remote work models, as we discover the new normal in a post-pandemic workplace (Boston Consulting Group, 2021).

These survey data provide some insight into the experience of remote workers and their managers; however, an examination of the existing literature is needed to provide a complete picture of the effects of remote work. Two unique domains within business and industry offer particularly relevant research on this topic: Organizational Behavior Management (OBM) and Industrial/Organizational Psychology (I/O). Described plainly, both fields focus on work, workers, and workplaces. These fields are uniquely situated to help us understand the short- and long-term effects of remote work on such factors as productivity, job satisfaction, and more. However, there are distinct differences between the two fields (McGee, 2017). OBM began simply as the application of behavioral principles to organizational settings maintaining the scientific and methodological principles of behavior analysis. I/O psychologists have traditionally focused more on personnel selection and placement, but have researched and practiced a wide variety of topics (Bucklin et al., 2000). Understanding the differences between these two disciplines is essential for understanding the differences in how studies are conducted and evaluated in both behavioral (OBM) and traditional (I/O Psychology) journals. This

comparison highlights the gaps in existing literature more clearly in terms of the focus of each discipline.

Studies on the effects of remote work on performance published in behavioral journals, like Journal of Applied Behavior Analysis and Journal of Organizational Behavior Management, have focused mainly on training and treatment in health and human services. Within this category, a sizeable portion of the behavioral literature has focused on the function of telehealth training and treatment. This is partly due to clinical treatment not typically being seen as an industry that lends itself to remote work, yet the clientele of this industry cannot and should not go without services, regardless of the environmental situation. Behavior analysts must consider how to best use telehealth as a method of providing clinical services so that they can treat clients while maintaining the health and safety of those involved (Schieltz & Wacker, 2020).

Studies by Dalmau et al. (2013) and Lerman et al. (2019) assessed the effectiveness of functional assessments completed through telehealth as well as remotely trained parents on implementation programs. Carroll et al. (2017) and Schieltz and Wacker (2020) also conducted studies, but with a broader focus on the effectiveness of telehealth behavioral treatment in general. While telehealth is an important aspect of remote work, the lack of external validity was noted by the researchers in all four of these studies, as each setting provides unique challenges.

While behavioral studies have primarily focused on developing and expanding telehealth services during the COVID-19 public health crisis, there are also studies published that focus on performance measures of employees working remotely. Chae et al. (2020) and Eagle et al. (2020) both evaluated the difference in effectiveness of feedback delivered via face-to-face and email. Performance was measured based on the number of correct responses and the percentage of units assembled correctly in both studies. In addition, both studies noted the lack of

psychological measures in their dependent variables, suggesting that information regarding employee psychology is an important factor that should not be overlooked when evaluating varying work modalities.

Traditional workplace psychology journals, such as Journal of Applied Psychology, Academy of Management and Personnel Psychology, have published studies on remote work that focus on productivity and other performance-based measures. Journals from this traditional background generally employ more of these traditional measures, such as units produced, as a simpler way to show the effects of remote work on the employees and the larger organization. Researchers published in these traditional journals also generally make adequate efforts to address employee satisfaction, in addition to measuring specific productivity factors. The addition of employee satisfaction and experience data in these journals presents a more holistic view, which captures both experience and outcomes for both the organization and its workforce. This shows an emphasis on the importance of the success of the company overall and its employees. Researchers must consider the short- and long-term effects of remote work on all aspects of business if they seek to provide better performance improvement strategies for companies expanding their remote working options.

Bos et al. (2013) studied how to increase effective communication between virtual teams with measures like the number of messages sent between team members, length of messages, and message content. Bailey et al. (2017), and Ilies and Judge (2004) focused on the relationship between psychological measures, such as the spillover effects of working from home. Bailey et al. (2017) generally looked at anxiety carryover from work to home, as well also what types of job stressors caused that anxiety to carryover. Researchers specifically measured through participant display of undermining behaviors at home. Ilies and Judge (2004) also looked at

anxiety spillover but was more focused on how mood spillover at work related to job satisfaction. Both studies were conducted over short periods of time, in which the authors noted the need for a longitudinal study of the same effect.

Caplan and Doby (1995) studied anxiety symptoms and their ability to carry over from the workplace to home. While this does not directly address remote work, the current blend of home life and work life should be understood in the context of these carryover effects. Collihan et al. (1998) completed a study examining the effects of a virtual office environment on a variety of measures including productivity, morale, teamwork, flexibility, and work life balance. Both studies utilized self-reports to collect their data and noted that a longitudinal study to the same effect is necessary to account for employee burnout and long-term varying work environments.

As work environments change and adapt, it is important that all disciplines of psychological research are aware of what effects workplace environments have on their employees and businesses. While there are numerous studies that concentrate on the effects of remote work on employees presented in both behavioral and traditional psychological journals, there has not yet been a comprehensive review of the existing literature. The current study seeks to determine the extent to which behavioral and non-behavioral journals address remote workplace interventions differently, identify the differences in remote work assessment or evaluation between IO and OBM researchers, and identify gaps in the literature across domains.

METHOD

Search Strategy

A computer search of the database PsycINFO was conducted to find studies published in five different journals between 1995 and 2021. The journals included in the search were Journal of Organizational Behavior Management (behavioral), Journal of Applied Behavior Analysis

(behavioral), Journal of Applied Psychology (traditional), Personnel Psychology (traditional), and Academy of Management Journal (traditional). The selected journals were chosen to evaluate the main behavioral and traditional journals that publish workplace performance research. To search for articles related to the topic of virtual work, seven keywords were used: virtual, virtual teams, virtual meetings, remote work, remote teams, work from home, and telehealth. A total of 97 articles resulted from the keyword search across all five journals.

Inclusionary Criteria

We then refined our results to only include experimental and correlational studies that directly addressed the effects of remote working conditions on individuals or workplace teams. This resulted in the exclusion of 81 articles, leaving us with a total of 16 articles that met the inclusion criteria.

Categories

We analyzed the articles according to eight categories: if the article was experimental or correlational, article topic, target behavior and intended direction of change, independent variable(s), dependent variable(s), how dependent variable(s) were measured, results, and limitations. These categories were chosen to provide a complete picture of the research that was conducted as well as to be able to directly compare how each type of journal (behavioral or traditional) evaluated remote work. The dependent variable category was further broken down into sub-categories to better classify what each article was measuring. These categories were: workplace performance, relationship management, psychological measures, employee satisfaction, and other. The "other" subcategory was included to capture any measures that did not fit well into any of the other subcategories.

Procedures

  For the first category, the article was classified as either an experimental study or a correlational study. For example, Chae et al. (2020) was classified as an experimental study because it included the direct manipulation of the independent variables. For the category of article topic, the focus of the article was listed. Using the same example, Chae et al. (2020) addressed the effect of feedback modality on workplace performance. For the category of target behavior and intended direction of change, the actual behavioral change evaluated and whether the authors attempted to increase or decrease said behavior was recorded. In the case of Chae et al. (2020), behaviors were evaluated relating to performance on an assembly task with the intention of increasing correct product assembly.

  For the category of independent variable(s), each of the independent variable(s) investigated in the experimental studies was listed. For many of the articles, there was more than one independent variable, and all that were provided were listed in this category. Chae et al. (2020) included two independent variables in their study, one being the nature of the relationship between the participant and the provider of the feedback and the second being the means through which performance feedback was delivered to the participant (email or face-to-face). The dependent variable category included the specific dependent variable(s) measured to determine whether the independent variable(s) had any effect. Chae et al (2020) measured the total number of correct responses and the percentage of correct assemblies at the end of a cell phone assembly task. The information in this category was then categorized again into one of the five subcategories. As previously mentioned, these categories were workplace performance, relationship management, psychological factors, satisfaction, and other.

Dependent variables were placed in the category of workplace performance if the behavior observed related to performance-based measures. For example, Chae et al. (2020)'s dependent variable was categorized into workplace performance because the observed behavior was the number of correct responses on an assembly task. Dependent variables were placed into the category of relationship management if the behavior observed related to managing relations between participants and others. An example of a study that fell into this category is Johnson & Venkatesh (2002), who measured the ability of virtual teams to transmit social cues, change understanding, and resolve conflict. Dependent variables were placed in the psychological measures category if they were assessing reports of psychological states, such as mood, motivation, or anxiety. Dependent variables were placed in the category of satisfaction if the behaviors measured had to do with employee/participant satisfaction in the workplace. For example, Collihan et al. (1998) measured morale, work-life balance, and flexibility and these were categorized as satisfaction. Dependent variables that did not fit into these categories were classified as other. Most of these classifications came from behavioral journals that focused on telehealth, as their measures were not specifically relevant to the remote work itself.

Another category relating to dependent variables was how the dependent variable was measured. These methods were direct observation, measure of results/permanent product, or self-reports/surveys. Variables were classified as direct observation if the researcher directly observed the behavior of interest. Variables were classified as measure of results/permanent product if the researcher only measured the end results of the behavior. Chae et al (2020) was coded as both. The authors measured using direct observation to determine the number of correct responses as well as a measure of results at the end of the assembly task. Variables were classified as self-reports/surveys if the researcher distributed some type of survey to measure

results or asked participants to report on specific measures. This method was used heavily by articles with dependent variables categorized as psychological measures, as those are unlikely to be directly measured and do not produce tangible results.

For the category of results, the results of the study identified and discussed by the author(s) were included. Chae et al. (2020) concluded that the results of their study indicated that e-mail feedback from a non-authority figure resulted in consistently lower performance than face-to-face feedback from an authority figure, face-to-face feedback from a non-authority figure, and e-mail feedback from an authority figure. Overall, the two face-to-face conditions resulted in the highest performance. The final category measured was the limitations of the research. Chae et al. (2020) noted a lack of a control condition as one limitation of their study.

Interobserver Agreement (IOA)

The above categories were reviewed and modified through discussion between the author and an IOA observer. For the second category, the original category name was modified from 'issue addressed' to 'article topic' because the issue addressed was too vague and often overlapped with another category, target behavior. This category was also changed to include the intended direction of change for the target behavior to further analyze how varying journals evaluate the effects of remote work. The categories experimental or correlational, independent variable(s), dependent variable(s), and how the dependent variable was measured were not modified from the original analysis after discussion. An additional category, 'Did the authors directly measure the behavior of interest?', was excluded from the current study as it did not hold relevancy to the topics addressed. Results and limitations were left unmodified.

The purpose of calculating interobserver agreement is to examine the degree to which two or more independent observers report the same observed values after measuring the same

events. This essentially determines whether the definition of the target behavior is clear and aids in convincing the reader that the provided data is believable (Austin et al., 2008). To calculate interobserver agreement, the number of agreements was divided by the number of agreements plus disagreements and then multiplied by 100. The total possible number of agreements was 144, which was calculated by multiplying the 8 categories determined by the 16 articles included. For the current study, 123 agreements were calculated out of the 128 possible. This results in an interobserver agreement of 96.5%. Where disagreements occurred, original author data were used.

RESULTS AND DISCUSSION

A total of 97 articles resulted from the keyword search, of which 16 met the inclusionary criteria. Traditional industrial/organizational psychological journals accounted for 50% of the selected articles and behavioral journals accounted for the other 50% of the selected articles. Selected articles were reviewed, and the information was sorted into the categories previously described in the Methods section. Table 1 summarizes the selected articles. For the purposes of the current study, only 7 categories are included in the results section in accordance with overall relevancy to evaluation approaches. These categories include if the study was experimental or correlational, article topic, target behavior and intended direction of change, independent variable(s), dependent variable(s), how dependent variable(s) were measured, and results.

Table 1.

Titles Published in Selected Articles from 1995 – 2021.

	Author	Title	Year	Journal	Journal Type
1	Chae, Choi, Eagle, Johnson, Moon, & Oah	The Impact of Authority Relations and Feedback Delivery Method on Performance	2020	*JOBM*	Behavioral
2	Eagle, Johnson, & Warriwillow	The Effects of Feedback Modality on Performance	2020	*JOBM*	Behavioral
3	Ilies & Judge	Affect and Job Satisfaction: A Study of Their Relationship at Work and at Home	2004	*JAP*	Traditional
4	Bailey, Barber, Burton, & Taylor	A Self-regulatory Perspective of Work-to-Home Undermining Spillover/Crossover: Examining the Roles of Sleep and Exercise	2017	*JAP*	Traditional
5	Dalmau, Lee, & Wacker et al.	Conducting Functional Analysis of Problem Behavior via Telehealth	2013	*JABA*	Behavioral
6	Lerman, Toper-Korkmaz, & Tsami	Effectiveness and Acceptability of Parent Training via Telehealth Among Families around the World	2019	*JABA*	Behavioral
7	Sheieltz & Wacker	Functional Assessment and Function-Based Treatment Delivered via Telehealth: A Brief Summary	2020	*JABA*	Behavioral
8	Sivaraman, Roeyers, & Virues-Ortega	Telehealth Mask Wearing Training for Children with Autism During the COVID-19 Pandemic	2021	*JABA*	Behavioral
9	Brewer, Grubb, Richman, Schaefer, & Sump	Telehealth and In-Person Training Outcomes for Novice Discrete Trial Training Therapists	2018	*JABA*	Behavioral
10	Carroll, Fisher, Higgins, Luczynski, & Mudford	Evaluation of a Telehealth Training Package to Remotely Train Staff to Conduct a Preference Assessment	2017	*JABA*	Behavioral
11	Massey, Montoya-Weiss, & Song	Getting it Together: Temporal Coordination and Conflict Management in Global Virtual Teams	2001	*AOMJ*	Traditional
12	Barsness, Diekmann, & Seidel	Motivation and Opportunity: The Role of Remote Work, Demographic Dissimilarity, and Social Network Centrality in Impression Management	2005	*AOMJ*	Traditional
13	Caplan & Doby	Organizational Stress as a Threat to Reputation: Effects on Anxiey at Work and at Home	1995	*AOMJ*	Traditional
14	Johnson & Venkatesh	Telecommuting Technology Implementations: A Within- and Between-Subjects Longitudinal Field Study	2002	*Personnel Psychology*	Traditional
15	Collihan, Hill, Miller, & Weiner	Influences of the Virtual Office on Aspects of Work and Work/Life Balance	1998	*Personnel Psychology*	Traditional
16	Bos, Cheshin, Kim, Nan, & Olson	Emergence of Differing Electronic Communication Norms within Partially Distributed Teams	2013	*Personnel Psychology*	Traditional

Table 2 summarizes the article authors and year, whether the article was experimental or correlational, and the article topic. Of the traditional articles, three (37.5%) were correlational studies, while five (62.5%) were experimental studies. Of the behavioral journals, all eight articles were experimental. These results show a similar ratio to that seen in Bucklin et al. (2000), where the authors noted that 95% of articles published in *JOBM* were experimental, while only 39% of articles published in JAP were experimental. On average, traditional journals seem to include more correlational studies than behavioral journals do. This proportion may relate to the measures of each study; correlational studies provide a much more practical analysis of covert behaviors, such as satisfaction and anxiety, while experimental studies are a better method for measures that involve the direct observation of overt behavior.

Article topics in behavioral journals primarily investigate telehealth training. Given the difficulty of providing clinical services remotely, behavioral journals are most likely interested in examining how to effectively treat patients remotely. Considering clinical services are also a common career path for behavior analysts, researchers may be interested in improving inefficiencies in their own field through behavioral research. Two studies published in *JOBM* investigate remote versus face-to-face feedback and how it impacts workplace performance. This is consistent with previous OBM research evaluating feedback effects on employee performance. Topics of studies published in traditional journals are more diverse, highlighting a broader range of remote work factors.

Table 2.

Summary of Type of Study and Article Topics in Selected Articles.

	Author	Experimental/ Correlational	Article Topic
1	Chae et al. (2020)	Experimental	The effect of feedback modality and authority relations on employee performance
2	Eagle et al. (2020)	Experimental	The effects of feedback modality on employee performance
3	Ilies & Judge (2004)	Correlational	The relationship between job satisfaction on mood and an assessment of the spillover affects at work and home
4	Bailey et al. (2017)	Experimental	The effects of sleep and exercise on work-home spillover effects
5	Dalmau et al. (2013)	Experimental	An assessment of the effectiveness of functional analyses done via telehealth
6	Lerman et al. (2019)	Experimental	An assessment of the effectiveness and acceptability of functional analyses done via telehealth
7	Sheieltz & Wacker (2020)	Experimental	An assessment of the effectiveness of function-based treatment delivered via telehealth
8	Sivaraman et al. (2021)	Experimental	An assessment of the effectiveness of telehealth training on mask wearing of children with autism
9	Brewer et al. (2018)	Experimental	A comparison between telehealth and in-person training for therapists
10	Carroll et al. (2017)	Experimental	An evaluation of the effectiveness of telehealth training
11	Massey et al. (2001)	Experimental	The effect of temporal coordination on conflict management in virtual teams
12	Barsness et al. (2005)	Correlational	An assessment of the relationships between remote work, demographic dissimilarity, social network centrality, on the use and effectiveness of impression management behaviors
13	Caplan & Doby (1995)	Correlational	The relationship between threats to reputation and anxiety at work and at home
14	Johnson & Venkatesh (2002)	Experimental	The effects of telecommunication on social richness, motivation, and job system use
15	Collihan et al. (1998)	Experimental	The relationship between a virtual office and productivity, morale, teamwork, flexibility, and work life balance
16	Bos et al. (2013)	Experimental	An evaluation of communication norms within partially distributed teams

Table 3 summarizes the authors and year, independent variables, and dependent variables of the studies included in the present review. If the studies were correlational, "N/A" was listed in the independent variable category. Six (46.2%) of the 13 experimental studies in both traditional and behavioral journals provided some type of independent variable illustrating how a remote office/workspace versus a face-to-face condition affects some dependent variable. Five

(38.5%) of the studies included an independent variable relating to how a communication medium affects some dependent variable, mostly comparing a face-to-face condition to a virtual condition. The distribution of these independent variables across both journal types seemed to be proportional. This likely results from the few independent variables that can be chosen for the topic of remote work and shows that there is an overall recognition of the issue in both journals.

The dependent variables are listed in Table 3 the way they were categorized in the methods section. These categories include workplace performance, relationship management, employee satisfaction, psychological measures, and other. Of the eight behavioral articles, two (25%) measured workplace performance, and six (75%) measured other performance. No other articles from behavioral journals measured relationship management, employee satisfaction, or psychological measures. Of the eight traditional articles, five (62.5%) measured workplace performance, five (62.5%) measured relationship management, two (25%) measured employee satisfaction, three (37.5%) measured psychological measures, and zero measured other. Note that some articles measured more than one dependent variable resulting in a higher total number of articles represented in Figure 1.

The behavioral journals measured several 'other' dependent variables. Notably, examples of these dependent variables include improvements in challenging behavior of autistic children (Schieltz & Wacker, 2020) and child performance on mask wearing (Sivaraman et al., 2021) article. These dependent variables highlight that an improvement in challenging behavior is a direct measure of outcomes in these clinical settings. It is also noteworthy that the articles with dependent variables categorized as 'other' were the articles produced from the keyword search 'telehealth.' Very few, 25%, behavioral journals produced articles directly involved in a traditional workplace setting. This is emblematic of what types of organizations or institutions

behavioral journals are focused on evaluating and improving with regards to remote work. While two behavioral articles did measure workplace performance, these articles were published *JOBM,* a journal that mainly includes empirical studies in traditional workplace settings (or in labs with simulated workplace tasks) as that is the nature of OBM.

The traditional journals produced articles with a more distributed group of dependent variables. Most of the articles, 62.5%, utilized some type of workplace performance measure. This highlights studies published in traditional journals are concerned with workplace performance outcomes when evaluating remote work. In terms of individual employees, traditional journals utilized five total measures relating to employee-based measures. These include employee satisfaction (25%) and psychological measures (37.5%). Examples of these dependent variables include reports of work-life balance as well as reports of motivation. Based on these data, it can be inferred that traditional journals do place at least some value on employee-based measures when evaluating remote work in addition to overall workplace performance. It is possible traditional journals are concerned with the overall wellbeing of their employees, or that these factors influence overall workplace performance. This may also be informative of the interaction between these two dependent variable measures; is performance related to motivation or work-life balance? Traditional journals may be interested in answering these questions.

Five articles from the traditional journals (62.5%) measured relationship management for their dependent variables. These measures mostly relate to ensuring effective collaboration between employees in virtual work environments. This is indicative of traditional journals placing importance not only on individual performance, but also on team performance. Again, this may be evaluated to show how effective virtual team collaboration affects workplace

performance. This may also tie into the overall wellbeing of employees as traditional journals want to highlight how virtual teams affect individual employees and their communication. Is this communication effective enough to create a work environment conducive to maximizing production? Do employees feel fulfilled socially, regardless of performance? Looking at the difference between traditional journals and behavioral journals, traditional journals are interested in a variety of different measures whereas behavioral journals have yet to widen their scope of evaluation into remote work.

Figure 1.

Categories in Dependent Variables for Behavioral and Traditional Articles.
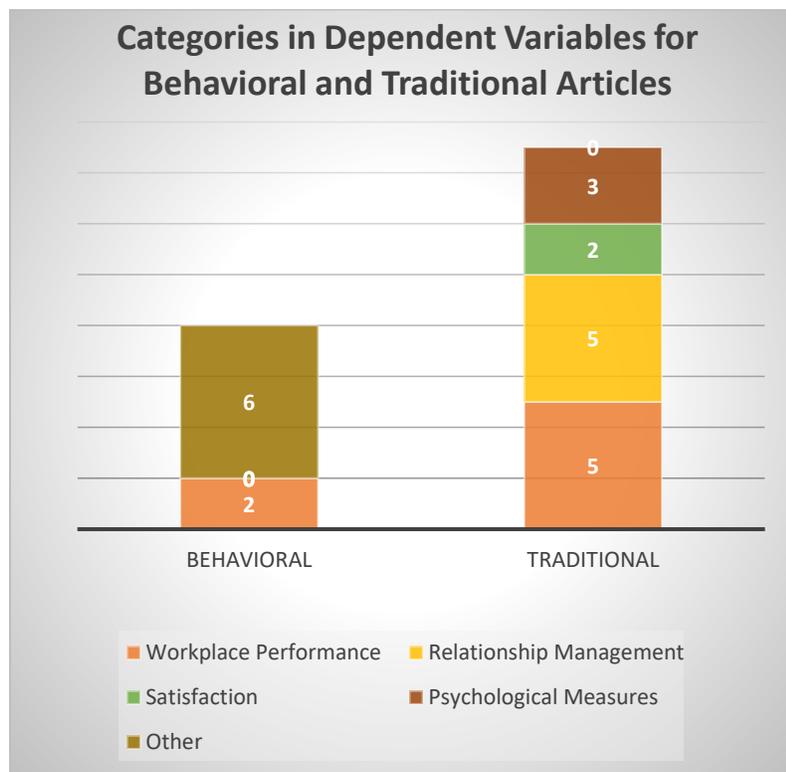
Table 3.

Summary of Independent Variable(s) and Dependent Variable(s) in Selected Articles.

	Author	Independent Variable(s)	Dependent Variable Categories
1	Chae et al. (2020)	(1) Nature of relationship with the provider of feedback (2) Means through which performance feedback was delivered to the participant (face-to-face versus email)	(1) Workplace Performance
2	Eagle et al. (2020)	(1) Means through which the feedback was delivered (face-to-face versus email)	(1) Workplace Performance
3	Ilies & Judge (2004)	N/A	(1) Employee Satisfaction (2) Psychological Measures
4	Bailey et al. (2017)	(1) Supervisor undermining (2) Sleep quality (3) Exercise	(1) Relationship Management
5	Dalmau et al. (2013)	(1) Training via telehealth	(1) Other
6	Lerman et al. (2019)	(1) Training via telehealth	(1) Other
7	Sheieltz & Wacker (2020)	(1) Training via telehealth	(1) Other
8	Sivaraman et al. (2021)	(1) Training via telehealth	(1) Other
9	Brewer et al. (2018)	(1) Training via telehealth vs in person training	(1) Other
10	Carroll et al. (2017)	(1) Training via telehealth with (a) multimedia presentation, (b) descriptive feedback, & (c) scripted roleplay	(1) Other
11	Massey et al. (2001)	(1) Temporal coordination in virtual teams	(1) Workplace Performance (2) Relationship Management
12	Barsness et al. (2005)	N/A	(1) Workplace Performance (2) Relationship Management
13	Caplan & Doby (1995)	N/A	(1) Psychological Measures
14	Johnson & Venkatesh (2002)	(1) Telecommuting system (2) Perceptions of social richness (3) Perceptions of telepresence (4) Extrinsic motivation (5) Intrinsic motivation	(1) Relationship Management (2) Psychological Measures (3) Workplace Performance
15	Collihan et al. (1998)	(1) Remote or physical office	(1) Workplace Performance (2) Relationship Management (3) Employee Satisfaction
16	Bos et al. (2013)	(1) Type of electronic communication (2) Change in media environment	(1) Workplace Performance

Table 4 summarizes the methods used to measure the dependent variables across studies in the present review. These methods include measure of performance results, direct observation of employee performance, and self-report. Of the eight behavioral articles, two (25%) measured results, eight (100%) measured behavior using direct observation, and zero measured using self-reports. Of the eight traditional articles, zero measured results, three (37.5%) measured behavior using direct observation, and six (75%) measured using self-reports. Note that some articles measured using more than one method resulting in a higher total number of articles represented in Figure 2.

Behavioral journals seem to lean toward more direct sources of measurement, like measure of results and direct observation, which equate to 25% and 100% of articles respectively. These measurement methods are more representative of behavioral journals as behavioral principles are concerned with observable behavior and the factors that impact it. In addition, many of the behavioral articles concerning telehealth were focused on the behaviors of special needs children. Direct observation is typical for these studies as practitioners are often directly implementing interventions and it allows for researchers to account for what factors are influencing specific behaviors firsthand. The two articles that utilized a measure of results for their studies were both articles from *JOBM,* as they were concerned with workplace performance measures. Based on these data, it is clear behavioral journals evaluating remote work tend to lend themselves to more behaviorally recognized methods of measurement.

Researchers publishing in traditional journals employ different methods of measurement. While the selected articles from traditional journals did utilize all three methods of measurement, self-reports were the main measurement method used (75%). Similar to behavioral journals, this could be directly correlated to the dependent variables chosen for each study. Traditional

journals had a much higher percentage of employee related dependent variables, such as employee satisfaction and psychological measures. These dependent variables are difficult to measure using direct observation or measure of results as these are internal emotions on the part of the employee. It should also be noted that all correlational studies utilized self-reports to collect their data. This is most likely due to the practicality of surveys and self/reports for gathering correlational data. Additionally, relationship management is unlikely to be effectively measured without the use of self-reports as collaboration between individuals can only be contextualized by the employees involved. Self-reports remain one of the most effective measurement methods for these dependent variables, should that be a topic of interest in either journal type. Traditional journals do still employ the use of direct observation and measure of results and these methods are used for workplace performance measures.

Figure 2.

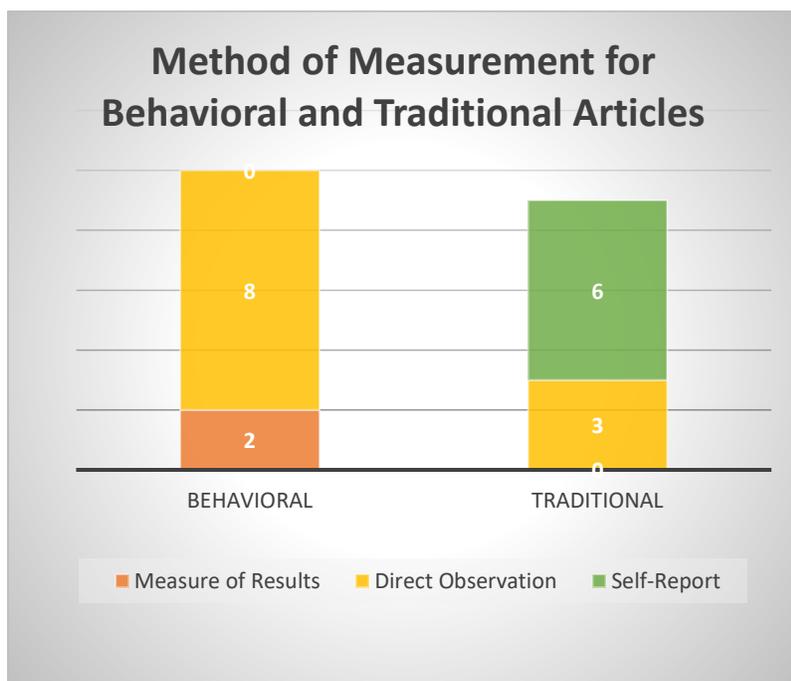*Method of Measurement for Behavioral and Traditional Articles.*

Table 4.

Summary of How Dependent Variables were Measured in Selected Articles.

	Author	How Each Dependent Variable was Measured
1	Chae et al. (2020)	Measure of Results Direct Observation
2	Eagle et al. (2020)	Measure of Results Direct Observation
3	Ilies & Judge (2004)	Self-Report
4	Bailey et al. (2017)	Self-Report
5	Dalmau et al. (2013)	Direct Observation
6	Lerman et al. (2019)	Direct Observation
7	Sheieltz & Wacker (2020)	Direct Observation
8	Sivaraman et al. (2021)	Direct Observation
9	Brewer et al. (2018)	Direct Observation
10	Carroll et al. (2017)	Direct Observation
11	Massey et al. (2001)	Direct Observation
12	Barsness et al. (2005)	Self-Report
13	Caplan & Doby (1995)	Direct Observation Self-Report
14	Johnson & Venkatesh (2002)	Self-Report
15	Collihan et al. (1998)	Self-Report
16	Bos et al. (2013)	Direct Observation

Table 5 summarizes the article author(s) and year, the target behavior, the intended direction of change, the dependent variable(s), how the dependent variable(s) was measured, and the results of the study. Between traditional and behavioral journals, results are consistent for experimental studies. When evaluating the differences between face-to-face work and remote work, face-to-face was a more preferred and more effective independent variable. However, remote working conditions were generally effective regarding workplace performance. For

dependent variable categories such as employee satisfaction and psychological measures, the relationship between remote working and psychological factors such as motivation or work-life balance is significant. Those who experience dissatisfaction with work or experience lack in motivation at work often carry these emotions home. In unusual cases, like a pandemic, where working remotely is sustained over long periods of time, it may be noteworthy that the home and the workplace are the same location. Implications working from home include the difficulty for employees to visualize the difference between a comfortable home environment and their strenuous work environment. This can create severe mental health problems concerning carry over effects as employees throughout 2020 and 2021 have had to face the unprecedented challenge of remaining focused on work and daily living requirements during times of such uncertainty.

Dependent variables such as relationship management faced varying results. While some participants felt it easier to communicate via online settings, many results found that team communication suffered greatly under remote working conditions. Behavioral journals that focused specifically on telehealth training and treatment resulted in effective treatments for special needs children as well as successful training efforts via telehealth. Results of the correlational studies showed varying relationships between remote work and other measures, such as anxiety and mood. For example, Ilies & Judge (2004) found that job satisfaction showed a significant effect on positive mood after work and Barness et al. (2005) found that working remotely correlated with higher rates of supervisor impression management. These correlational studies are useful in identifying relationships between factors relating to remote work. Overall, the data suggests that there are many benefits and drawbacks of remote working and both types of journals show consistent data in that regard.

Table 5.

A Summary of Target Behavior, Intended Direction of Change, Dependent Variable(s), How Each Dependent Variable was Measured,

and the Results in Selected Articles.

	Author(s) & Year	Target Behavior	Intended Direction of Change	Dependent Variable(s)	How the Dependent Variable was Measured	Results
1	Chae et al. (2020)	Performance	Improve performance based on performance feedback	(1) The total number correct, and percentage correct during an assembly task	Measure of Results Direct Observation	Face-to-face feedback with authority OR non-authority figures provided the highest level of performance improvement.
2	Eagle et al. (2020)	Performance	Improve performance based on performance feedback	(1) The mean number of checks completed correctly per session	Measure of Results Direct Observation	Face-to-face conditions provided the highest level of performance improvement.
3	Ilies & Judge (2004)	Job satisfaction and mood at home	N/A	(1) Job satisfaction (2) Mood (3) Trait PA and trait NA	Self-Report	Job satisfaction affected positive mood after work and spillover of job satisfaction onto positive and negative mood was stronger for employees high in trait-positive and trait-negative affectivity. Positive (negative) moods at work affected positive (negative) moods experienced later at home.
4	Bailey et al. (2017)	Home undermining behaviors	Decrease home undermining behaviors	(1) Home undermining	Self-Report	Undermining experienced from supervisors increased sleep difficulties and the frequency individuals engaged in undermining at home. Indirect effects occurred for employees with low but not high levels of physical exercise.
5	Dalmau et al. (2013)	Problem behavior	Decrease problem behavior in children	(1) Parent performance on implementation of intervention program	Direct Observation	Results suggested that behavior analysts can conduct FAs effectively and efficiently via telehealth.
6	Lerman et al. (2019)	Problem behavior	Decrease problem behavior in children	(1) Parent performance on implementation of intervention program	Direct Observation	Parent implemented functional analyses and treatment with functional communication training were highly effective in reducing problem behavior in children diagnosed with autism.

7	Sheieltz & Wacker (2020)	Challenging desired behavior	Increase challenging desired behaviors in children	(1) Number of challenging behaviors displayed	Direct Observation	Practitioners can effectively provide functional analyses via telehealth to improve challenging behavior.
8	Sivaraman et al. (2021)	Mask wearing	Increase mask wearing in children	(1) Child performance on mask wearing	Direct Observation	Practitioners can effectively provide telehealth training to increase mask wearing in children.
9	Brewer et al. (2018)	Skill training	Increase better skill training via telehealth among undergraduate students	(1) Implementing a multiple stimulus without replacement preference assessment (2) Setting up an instructional context (3) Delivering antecedent prompts (4) Delivering consequences for accurate and inaccurate responding	Direct Observation	All participants provided high acceptability ratings for both training procedures. Results also showed that telehealth training was as efficacious and efficient as in-person training for all skills across all participants.
10	Carroll et al. (2017)	Treatment services	Improve treatment services via telehealth	(1) Trainer performance on conduction of preference assessment	Direct Observation	Training resulted in robust and immediate improvements and participants expressed high satisfaction with the web-based materials and the overall remote-training experience.
11	Massey et al. (2001)	Team performance	Improve virtual team performance	(1) Virtual team performance (2) Quality of team rationale used to support team decisions	Direct Observation	Results indicate that the conflict management behaviors have varied effects on team performance and that temporal coordination moderates certain effects
12	Barsness et al. (2005)	Impression management and performance	N/A	(1) Remote Work (2) Impression management (3) Demographic Dissimilarity (4) Social Network Centrality (5) Performance Evaluation	Self-Report	A higher proportion of time spent working remotely from supervisors increased the frequency of supervisor- and job-focused impression management but reduced social network centrality decreased job-focused impression management. Social network centrality moderated the relationships between job- focused impression management and both remote work and sex dissimilarity. Sex dissimilarity intensified a negative association between job-focused impression management and performance appraisal. Both sex dissimilarity and

						network centrality enhanced the positive association between supervisor-focused impression management and performance appraisal.
13	Caplan & Doby (1995)	Anxiety	N/A	(1) Job Stressors (2) Anxiety symptoms at work and at home	Direct Observation Self-Report	The high-threat stressors generated the most home-experienced anxiety, and work-experienced anxiety served as a key mediator
14	Johnson & Venkatesh (2002)	Acceptance of telecommuting and performance	Increase acceptance and improve performance	(1) Social richness (2) Telepresence (3) Extrinsic motivation (4) Intrinsic motivation (5) Telecommuting system use	Self-Report	Results showed high telecommuter acceptance and use of the virtual reality telecommuter system. Supported the hypothesis that higher social richness and higher telepresence leads to higher motivation and higher sustained use of the system.
15	Collihan et al. (1998)	Productivity, morale, teamwork, flexibility, and work life balance	To improve productivity, morale, teamwork, flexibility, and work life balance	(1) Productivity (2) Morale (3) Teamwork (4) Flexibility (5) Work-life balance (6) Hours worked	Self-Report	Teleworkers wrote favorable comments about productivity, morale, flexibility, and ability to work longer hours. Unfavorable comments about teamwork. Both favorable and unfavorable about work/life balance.
16	Bos et al. (2013)	Communication	To improve communication in virtual teams	(1) Number of messages sent, actual use of text, and frequency of reading (2) Number of messages sent, frequency of reading, length of messages, and content	Direct Observation	Email condition sent more messages, read more messages, wrote longer messages, and communication was relevant to content in their messages.

CONCLUSION

As technology advances and with the prospect of future public health crises, working conditions will constantly change and evolve. As such, it is imperative to understand the varying effects of remote working conditions on employee and organizational performance. Industrial/Organizational Psychology and Organizational Behavior Management are two specializations within the field of psychology that recognize the need for understanding these conditions. These two fields hold distinctly different theoretical approaches and as such evaluate the effects of remote work in different ways. Understanding the difference between these assessments is essential for identifying where each journal type may fall short in their analysis of remote work. It also suggests that authors in each journal type could supplement their primary dependent variables with other measures (i.e., self-report or performance/results). Equally important to how these journals assess remote work is the apparent lack of research done on the topic. While there is a clear recognition of the topic within both journals, very few empirical studies have been done to assess the exact effects remote work on varying measures. Though reasons for this may be unclear, it is certain that more research determining the effects of remote work are necessary.

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