Understanding Self-Report Bias in Workplace Research:

Insights from Multitrait-Multimethod Analyses with

Positive Work and Organizations Constructs

Scott I. Donaldson

University of California, San Diego

Stewart I. Donaldson

Claremont Graduate University

Abstract

Self-report and monomethod bias threaten the validity of contemporary workplace research. The current study used multitrait-multimethod analyses to examine the relationship between positive work and organizations constructs PERMA+4 and work role performance (adaptivity, proactivity, and proficiency) beyond self-report and monomethod bias. Findings from 221 coworker pairs demonstrated strong positive convergence between self-reported and collateral-reported PERMA+4 ($r > .85$) and work role performance ($r > .85$), including organizational adaptivity ($r > .71$), organizational proactivity ($r > .68$), and organizational proficiency ($r > .73$). PERMA+4 was also a significant predictor of overall work role performance. A multitrait-multimethod matrix showed that monomethod trait interrelationships were systematically higher than heteromethod trait interrelationships with inflated correlations ranging from .07 to .20. Monomethod parameter estimates and coefficients of determination were generally higher than in bias corrected self-reports, knowledgeable collateral-reports, and heteromethod parameter estimates. The results provide support for the validity of the relationship between PERMA+4 and work role performance, and suggest the importance of including procedural design and statistical control methods in workplace surveys to correct for self-report and monomethod bias.

Keywords: Self-report bias; Monomethod bias; Common method variance; Organizational behavior, MTMM.

Understanding Self-Report Bias in Workplace Research:

Insights from Multitrait-Multimethod Analyses with

Positive Work and Organizations Constructs

Scientific advances in contemporary workplace research are contingent on valid measurement of employee psychological processes, behaviors, performance and organizational effectiveness. Evidence-based conceptual frameworks describing patterns of organizational behavior tend to inform and guide future research and practice, whereas frameworks with null, controversial, or mixed empirical results tend to wane over time (Donaldson & Grant-Vallone, 2002). Unfortunately, many organizational research studies rely primarily on cross-sectional self-report surveys (Pedersen, Kitic, Bird, Mainsbridge, & Cooley, 2016; Wick, Faude, Schwager, Zahner, & Donath, 2016), making it challenging to disentangle the relationship between constructs from mono-method bias and self-report bias. This problem is especially challenging for researchers asking employees about positive psychology constructs such as well-being, strengths, prosocial behavior, and positive work role performance (cf. Ackerman, Warren, & Donaldson, 2018). Therefore, we selected constructs from this emerging area of business psychology known as positive organizational psychology, positive organizational behavior, positive organizational scholarship, or positive work and organizations to illustrate how to understand and correct for self-report bias in contemporary workplace research (Cameron, Quinn, & Dutton, 2003; Donaldson, Donaldson, & Ko, 2020, Donaldson & Chen, 2021; Luthans, 2002; Luthans & Youssef, 2007; Warren, Donaldson, & Luthans, 2017)

One of the leading theory-driven conceptual frameworks in positive work and organizations is PERMA+4 (Donaldson, Heshmati, Lee, & Donaldson, 2020; Seligman, 2018). PERMA+4 identifies 9 building blocks of well-being at work:

Positive emotions —experiencing happiness, joy, gratitude, etc.

Engagement —using your strengths to meet challenges; experiencing flow

Relationships —connecting with others; love and be loved

Meaning —connect to meaning; find your purpose

Accomplishment —pursue and accomplish goals; strive for greatness

Physical Health — biological, functional, and psychological health assets

Mindset — future-oriented, growth mindset, perseverance

Environment — spatiotemporal elements, such as access to natural light, nature,

physiological safety

Economic — perception of financial security

Security

The Positive Functioning at Work Scale (PF-W) was developed and validated as an instrument to measure each building block and provide an overall PERMA+4 score for workplace research (Donaldson, 2019; Donaldson & Donaldson, 2021). Donaldson et al. (2020) recently found strong support that PERMA+4 measured by the PF-W scale predicts worker well-being as measured by the Subjective Well-Being Scale (Diener, 1985).

The analyses reported in the current study focus on the relationship between PERMA+4 and work role performance. Work role performance is defined by three positive workplace behaviors: organizational adaptivity, organizational proactivity, and organizational proficiency, and often serves as a unifying framework of job performance for uncertain and interdependent organizational contexts (Griffin et al., 2007; Donaldson, et al. 2020; Villalobos et al., 2020). The

PF-W scale (Donaldson, 2019; Donaldson & Donaldson, 2021) and the Work Role Performance Scale (Griffin, et al. 2007) are both scales with sound psychometric properties for psychological research in business settings. The current study design sought to provide data that would help understand and correct for self-report and mono-method bias while examining the relationships between these constructs measured by these validated scales. This was accomplished by gathering knowledgeable coworker reports of PERMA+4 and work role performance, in addition to self-reports which are more commonly use in contemporary workplace research.

Common Method Variance and Self-Report Bias

The issue of common method variance dates back more than 60 years to Campbell and Fiske's (1959) seminal paper on convergent and discriminant validation by the multitrait-multimethod matrix. The shortcomings of cross-sectional self-report measures have been contentiously debated thereafter, including journal editors stating that the sole use of self-report measures in organizational behavior research is unacceptable (Campbell, 1982; Pedersen et al., 2016; Meade, Watson, & Kroustalis, 2007, April; Schmitt, 1994; Spector, 1994, 2006; Wick et al., 2016). Regardless, most organizational researchers agree that monomethod bias inflates parameter estimates between observed measures, and unfortunately often leads researchers and organizational leaders to make erroneous empirical and thus theoretical conclusions about organizational behavior (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003). For example, Cote and Buckley (1987) showed that more than 26% of variance in a typical research measure is likely due to a common method, which was even as high as 41% in attitudinal measures administered in the business, psychology, and marketing literatures. Moreover, Sacket and Larson (1990) found that 83% of organizational studies used a cross-sectional design and 52% relied exclusively on self-report measures. The well-being and positive organizational

psychology literature shows a similar trend. Ackerman et al. (2018) reviewed 972 empirical articles linked to positive psychology, and found that nearly 70% of articles used self-report measures and 89% of all scales were cited only once or twice with few validation studies.

In organizational studies, online self-report surveys are the preferred method to save valuable time, resources, and the effort necessary to employ multiple research methods (Miner & Hulin, 2006). Podsakoff et al. (2003) provided a summary of potential sources of common method bias in organizational studies, such as characteristics of items on a survey instrument and the tendency for individuals to respond in socially desirable ways, particularly in the work setting where employees may fear that their responses will get back to their supervisors (Zerbe & Paulhus, 1987). In a meta-analysis, Moorman and Podsakoff (1992) showed a relationship between social desirability bias and organizational behavior constructs, such as job satisfaction and organizational commitment. Thus, the issue of common method variance is cojoined with potential sources of motivational self-report bias, highlighting the need for procedural and statistical methods of bias control in organizational behavior research (Meade et al., 2007; Podsakoff et al., 2003).

Schmitt (1994) proposed a taxonomy of method bias in organizational research defined by the type of measures (e.g., job attitude, performance rating, personality) and potential sources of motivational bias (e.g., acquiescence, social desirability, carelessness, etc.). Donaldson and Grant-Vallone (2002) expanded Schmitt's work by developing a conceptual framework of four factors that motivate self-report bias in organizational research (see Figure 1). For example, an employee who is seeking to leave his or her job (true state of affairs), reporting on turnover intentions (sensitive construct), who is likely to respond in a socially desirable way (dispositional

characteristic), and who fears that his or her response may cause him or her to get punished (situational characteristics) is likely to bias his or her response on a self-report instrument.

Current Study

While considerable recent research has shown that PERMA+4 is highly related to well-being and performance at work (Donaldson, Chen, & Donaldson, 2021; Donaldson et. al, 2019ab), this empirical study examines if these relationships hold under MTMM analyses. That is, we examine these relationships using both self-reports and collateral-reports, and attempt to correct for self-report and monomethod bias (Reio, 2010). The following hypotheses were tested:

1. A multitrait-multimethod matrix of the Positive Functioning at Work Scale (PERMA+4) and Work Role Performance Scale will demonstrate the desideratum criteria of convergent and discriminant validity proposed by Campbell and Fiske (1959). That is:

   a) Convergence correlations between self-reported and collateral-reported PERMA+4 and work role performance should be statistically significant.

   b) Values in the validity diagonals should be higher than the values in the heterotrait-heteromethod blocks.

   c) Values in the validity diagonals should be higher than the values in the heterotrait-monomethod blocks.

   d) The relationship between PERMA+4 and work role performance should show the same pattern across all of the heterotrait and monomethod triangles.

2. Self-reported PERMA+4 will significantly predict self-reported and collateral-reported work role performance.

3. Collateral-reported PERMA+4 will significantly predict collateral-reported and self-reported work role performance.

Participants

A total of 442 participants in 221 co-worker pairs participated in the study. The average age of

the employees was 40.33 years old (SD = 12.46) with 56.26% female (n = 247) and 43.51% male

(n = 191). One participant identified their gender as 'other' (.23%). The majority of participants

were White (63.64%, n = 280), Multiple Races (10.90%, n = 48), Black (10.40%, n = 46), and

Asian (10.40%, n = 46). Respondents reported having a Bachelor's degree (38.57%, n = 167),

followed by a Master's degree (26.33%, n = 114), an Associate degree (19.86%, n = 86), Other

(7.85%, n = 34), and a Doctorate degree (7.39%, n = 32). Five participants did not report their

educational attainment. The three most represented annual income categories included 25-49k

(24.09%, n = 106), 50-74k (23.63%, n = 104), and 75-99k (21.81%, n = 96). Of participants who

reported their work industry, Food & Beverage (19.31%, n = 84), Banking & Financial Services

(13.56%, n = 59), and Media & Entertainment (13.56%, n = 59) were the most common. Other

industries included Education, Government, Manufacturing, and Non-Profit, among others.

Please see Table 1 for sociodemographic characteristics.

Procedure

A Qualtrics panel recruited full-time employees in a sample of U.S. organizations. Qualtrics uses

Grand Mean certified sample partners to ensure reliability and validity, checks every IP address,

and implements a sophisticated digital fingerprinting technology. Qualtrics panel uses stratified

random sampling to approximate employees in the general population, and then randomly

assigns the survey to eligible participants. Respondents were sent an email invite, including

information on the research purposes and length of the survey. Qualtrics used an incentive system (e.g., gift cards, airline miles, cash) to encourage participation.

The survey was divided into two sections. In the first part, employees completed the 29-item PF-W Scale and Work Role Performance Scale (Donaldson & Donaldson, 2021; Griffin et al., 2007). The second section of the survey included a transition between the employees and their closest coworker. The instructions read, "For the next stage of the survey, we ask that you please answer the questions about your closest coworker. Thank you for your participation." The coworker then completed the same items about their coworker. The final items measured demographic characteristics, such as gender, ethnicity, education, and income, as well as items about self-reported and collateral-reported bias. The research protocol was approved by the Institutional Review Board.

Measures

Positive Functioning at Work Scale (PF-W). The 29-item PF-W scale was developed and validated by Donaldson (2019) and Donaldson and Donaldson (2021). This measure includes the five PERMA building blocks of well-being plus four new building blocks–physical health, mindset, environment, and economic security. Confirmatory factor analytic fit indices supported a general factor structure of PF-W with nine lower order dimensions, and exhibited validity with other well-being and performance measures (see Donaldson, 2019; Donaldson & Donaldson, 2021). Respondents reported their level of PF-W using a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

    Work Role Performance. Work Role Performance was measured using a model of positive behavior developed by Griffin et al. (2007). Comparison of alternative factor structures

in three employee samples demonstrated nine subdimensions – adaptivity, proactivity, and proficiency at the individual, team, an organizational level. In the current study, the organizational subscale was selected and demonstrated internal consistencies ranging from .85-.90. Respondents reported their level of adaptivity, proactivity, and proficiency in the workplace on a 7-point Likert-type scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

Self-report bias. Donaldson and Grant-Vallone (2002) created a framework that examined an employee's propensity to give biased responses. Some of these factors include sensitivity of a construct, fear of reprisal, and knowledge about a coworker's thoughts, feelings, and behaviors. Two knowledge questions and one question about confidentiality on a 7-point Likert type agreement scale (1 = *strongly disagree*; 7 = *strongly agree*) were included. For example, questions stated "I am knowledgeable about my coworkers work environment" and "I am knowledgeable about my coworkers' thoughts, feelings, and behaviors." In terms of self-report bias, items on self-admission of error and fear of reprisal were included. For example, one item stated "I have some concern that my answers could get back to my supervisor or coworkers. In total, we asked three questions about biased coworker-reports and two questions about biased self-reports. Controlling for reverse-coded items, employees that reported 5 = *somewhat agree*, 6 = *agree*, or 7 = *strongly agree* were categorized as participants most likely to be accurate.

Analytic Strategy

All analyses were conducted in R (version 3.6.1, R Foundation for Statistical Computing, 2019) using the psych (Revelle, 2019), Hmisc (Harrell, 2019) and QuantPsyc (Fletcher, 2010) packages. Pearson's linear correlations coefficients were computed between PF-W and Work Role Performance. General linear regression models were fit from self-reported and collateral-

reported PERMA+4 to predict self-reported and collateral-reported work role performance. Summaries and confidence intervals showed the results of various model fitting functions.

<div align="center">**Results**</div>

Missing Data and Outlier Analysis

Qualtrics panels initially recorded 212 coworker pairs for the present study. However, 13 pairs had incomplete surveys (e.g., PF-W Scale was not 100% complete) or survey response times less than a few minutes. Huang, Curran, Keeney, Poposki, and DeShon (2012) suggest it is unlikely to answer survey items faster than the rate of two seconds per item. Thus, Qualtrics sent an additional 22 pairs that satisfied the data screening methods. An outlier analysis was conducted on the final sample using Mahalonobis distance and longstring invariant responding. Desimone, Harms, and Desimone (2015) recommend screening respondents with up to 14 invariant responses, especially for multidimensional surveys with a mixture of positively and negatively worded items. Since the items in the present study were positively worded, invariant responses above 20 were flagged for further review. There were four possible survey points that could result in invariant data– employee 1 self-report, employee 1 collateral-report, employee 2 self-report, and employee 2 collateral-report. In total, there were 82 coworker pairs with invariant responses. In order to assess the impact of outliers on self-reported and collateral-reported PERMA+4 and work role performance, we examined the convergence between the original dataset with 221 pairs and the dataset with outliers removed (i.e., 140 pairs). The difference in the correlations ranged from .00 to .07, which we considered negligible. Thus, the 82 invariant responders were not excluded from the final analyses to retain statistical power.

An exploratory data analysis showed that PERMA+4 and organizational adaptivity, proactivity, and proficiency were normally distributed with no significant skewness or kurtosis statistics. Convergence tests between self-reported and collateral-reported PERMA+4 and work role performance were significant and strong, ranging from $r = .61$ to .85. Table 2 presents descriptive statistics and convergence (r) between self-reported and collateral-reported PERMA+4 and work role performance.

Evaluating the Multitrait-Multimethod Matrix

The four desideratum validation criteria outlined by Campbell and Fiske (1959) were tested in *Hypothesis 1*. *Hypothesis 1a* stated that convergence correlations should be statistically significant and warrant future attention. Table 3 shows strong positive correlations (all correlations > .71) for PERMA+4 and work role performance. Thus, the validity diagonals provide support for *Hypothesis 1a. Hypothesis 1b* suggested the values in the validity diagonals should be higher than values in its column and row in the heterotrait-heteromethod triangles. This evaluation criterion was supported for PERMA+4 since the convergence correlation was .85 and the values in the row and column heterotrait-heteromethod triangle were below .78. However, *Hypothesis 1b* was only partially supported in work role performance. Values in the heterotrait-heteromethod triangle for PERMA+4 and work role performance measures were higher than convergence correlations for organizational adaptivity, organizational proactivity, and organizational proficiency. Heterotrait-heteromethod values within work role performance measures provided support for *Hypothesis 1b* with the exception of the convergence correlation between organizational proficiency and organizational adaptivity compared to the convergence correlation for organizational proactivity.

Hypothesis 1c stated that values in the validity diagonals should be higher than the values in the heterotrait-monomethod blocks. As shown in Table 3, *Hypothesis 1c* was not supported in the multitrait-multimethod matrix. Finally, *Hypothesis 1d* tested the pattern of trait interrelationships shown in both the monomethod and heteromethod blocks. The interrelationships in the monomethod blocks compared to the heteroblocks were mixed. Thus, these findings provide partial support for *Hypothesis 1d*.

Predictive Validity Adjusting for Self-Report and Mono-Method Bias

Before predicting work role performance from PERMA+4, we conducted a descriptive analysis of the bias items. Respondents indicated that their self-reports were more likely to be inaccurate (64%, $n = 208$) than accurate (36%, $n = 116$). On the other hand, collateral-reports were more likely to be accurate (90%, $n = 294$) than inaccurate (10%, $n = 30$). We then tested *Hypothesis 2* that self-reported PERMA+4 will significantly predict self-reported and collateral-reported work role performance. As demonstrated in Table 4, self-reported PERMA+4 was a significant predictor of self-reported work role performance, consisting of organizational adaptivity ($\beta = .95$, 95% CI [.90, 1.01], $p < .01$, $R^2 = .73$), organizational proactivity ($\beta = .94$, 95% CI [.88, .99], $p < .01$, $R^2 = .69$), and organizational proficiency ($\beta = .98$, 95% CI [.92, 1.04], $p < .01$, $R^2 = .72$). Adjusting for self-reports that were most likely to be accurate, the parameter estimates and the proportion of variance explained in work role performance, beside organizational proficiency ($\beta = 1.01$, 95% CI [.90, 1.13], $p < .01$, $R^2 = .72$), decreased across organizational adaptivity ($\beta = .91$, 95% CI [.80, 1.02], $p < .01$, $R^2 = .67$), organizational proactivity ($\beta = .87$, 95% CI [.75, .98], $p < .01$, $R^2 = .66$). Finally, self-reported PERMA+4 predicting collateral-reported work role performance showed the smallest regression parameters for organizational adaptivity ($\beta = .84$, 95% CI [.77, .91], $p < .01$, $R^2 = .57$), organizational proactivity ($\beta = .85$, 95% CI [.78, .93], $p < .01$,

$R^2 = .56$), and organizational proficiency ($\beta = .87$, 95% CI [.81, .94], $p < .01$, $R^2 = .60$). Table 4 demonstrates support for *Hypothesis 2*.

Hypothesis 3 suggested collateral-reported PERMA+4 will significantly predict self-reported and collateral-reported work role performance. As demonstrated in Table 5, self-reported PERMA+4 was a significant predictor of self-reported work role performance, consisting of organizational adaptivity ($\beta = .95$, 95% CI [.90, 1.00], $p < .01$, $R^2 = .77$), organizational proactivity ($\beta = .98$, 95% CI [.93, 1.03], $p < .01$, $R^2 = .67$), and organizational proficiency ($\beta = .99$, 95% CI [.93, 1.03], $p < .01$, $R^2 = .80$). After correction for biased collateral-reports, the parameter estimates and the proportion of variance explained in work role performance, beside organizational proactivity ($\beta = 1.01$, 95% CI [.94, 1.08], $p < .01$, $R^2 = .72$), decreased across organizational adaptivity ($\beta = .94$, 95% CI [.87, 1.01], $p < .01$, $R^2 = .70$), organizational proficiency ($\beta = .96$, 95% CI [.89, 1.03], $p < .01$, $R^2 = .72$). Finally, self-reported PERMA+4 predicting collateral-reported work role performance showed the smallest regression parameters for organizational adaptivity ($\beta = .83$, 95% CI [.76, .89], $p < .01$, $R^2 = .58$), organizational proactivity ($\beta = .82$, 95% CI [.75, .89], $p < .01$, $R^2 = .55$), and organizational proficiency ($\beta = .86$, 95% CI [.80, .93], $p < .01$, $R^2 = .60$). Table 5 demonstrates support for *Hypothesis 5*.

Discussion

This study advances knowledge about the role of self-report and mono-method bias in contemporary workplace research, particularly among studies that utilize positive work and organizations constructs. The findings have two important implications: 1) monomethod correlations between PERMA+4 and work role performance were inflated compared to heteromethod correlations, and 2) overall, adjusting for self-report bias and knowledgeable

coworker-reports attenuated regression parameters and coefficients of determination, which were observed to be the smallest in heteromethod (i.e., self-reported PERMA+4 predicting collateral-reported work role performance) regression parameters. Taken together, this study suggests that PERMA+4 is predictive of work role performance; however, researchers and practitioners should be cautious when interpreting findings from cross-sectional monomethod designs as they may inflate estimates between workplace measures.

A multitrait-multimethod matrix showed support for the reliability and convergent validity of PERMA+4 and work role performance, as well as partial support for discriminant validity based on the validation criteria proposed by Campbell and Fiske (1959). Values in the validity diagonals between PERMA+4 and work role performance showed strong positive correlations (> .68) between self-reports and collateral-reports. These convergence findings support *Hypothesis 1a*. Findings from the last three criteria for discriminant validity were mixed (*Hypotheses 1b-d*). For example, the validity diagonal for PERMA+4 was higher than correlations between PERMA+4 and work role performance values in heteromethod blocks (*Hypothesis 1b*). However, values in monomethod blocks showed inflated correlations in line with or above values in the validity diagonal. Campbell and Fiske (1959) reviewed multitrait-multimethod matrices in the psychological measurement literature and found that the three criteria for discriminant validity were rarely met. We found support for discriminant validity for the Positive Functioning at Work Scale (PERMA+4), but less support for the Work Role Performance Scale. Griffin et al. (2007) suggested that differentiating among work role performance subdimensions may pose a problem for collateral-reports because they may make an overall evaluation of the employee. In addition, it could be that these two measures are desirable constructs in the workplace and more likely to be inflated. Future studies would benefit

15

from exploring the impact of self-report and monomethod bias on these two positive workplace measures.

PERMA+4 was a significant predictor of work role performance for self-reports and collateral-reports, thus supporting *Hypotheses 2 & 3.* Notably, 64% of employees in our sample agreed that their self-reports may be inaccurate and that they had some concern their answers could get back to their supervisor. On the other hand, 90% of employees in our sample reported knowledgeable collateral-reports. Donaldson and Grant-Vallone (2002) found that employees with a propensity to give socially desirable responses reported more favorable workplace behaviors, particularly if the participants feared the repercussions of reporting it to researchers. This may help explain the monomethod bias observed in the multitrait-multimethod matrix (Table 3). In addition, adjusting for biased self-reports reduced parameter estimates and coefficients of determination, which was even further reduced in heteromethod predictions (e.g., self-reports predicting collateral-reports and vice versa). A meta-analytic review of job attitudes and organizational citizenship behavior found that self-reports inflated correlations compared to other-ratings (Organ & Ryan, 1995). Donaldson and Grant-Vallone (2002) suggest the patterns observed between self-reports and collateral-reports can function as a confidence interval, indicating that the true score may lie between the two parameter estimates. Organizational researchers should consider using multiple independent methods of data compared to just self-reports to avoid self-report and monomethod bias in business psychology research.

Limitations and Future Directions

There were some study limitations that deserve further attention. First, the data collected was cross-sectional. Future multitrait-multimethod organizational research could longitudinally assess self-reports and collateral-reports for temporal stability. Second, we included two positive

business psychology constructs. Watson, Pennebaker, and Folger (1987) suggest that measures of negative affect are also likely to bias relationships between a large number of variables. Thus, future studies should include undesirable workplace behaviors, such as job stress and turnover intentions, to further understand the role of self-report bias on correlations and parameter estimates. Third, we found support for predictive validity between PERMA+4 and work role performance. However, from cross-sectional survey data we are unable to establish a causal relationship. Future laboratory research, including randomized control trials, would help delineate temporal precedence and third variable explanations between PERMA+4 and work role performance. Finally, findings from this study and other studies with multiple data sources can provide caution for researchers who interpret findings using one data source in workplace research.

Conclusion

The current study expanded upon the traditional paper-and-pencil or online organizational self-report surveys by using a co-worker pair design. Findings provided validation for PERMA+4 and work role performance using self-reported and collateral-reported data. However, the impact of self-report and monomethod bias on the relationship between PERMA+4 and work role performance suggests that empirical findings in the business psychology literature may suffer from inflated or deflated parameter estimates. It is our hope that future researchers in business psychology include procedural and statistical bias control methods in their research designs to advance valid theoretical understanding of organizational behavior and business psychology research.

References

Ackerman, C. E., Warren, M. A., & Donaldson, S. I. (2018). Scaling the heights of positive psychology: a systematic review of measurement scales. *International Journal of Wellbeing*, *8*(2), 1–21.

Avey, J. B., Reichard, R. J., Luthans, F., & Mhatre, K. H. (2011). Meta-analysis of the impact of positive psychological capital on employee attitudes, behaviors, and performance. *Human Resource Development Quarterly*, *22*(2), 127–152.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin, 56*(2), 81–105.

Campbell, J. P. (1982). Editorial: Some Remarks from the Outgoing editor. *Journal of Applied Psychology, 67*(6), 691–700.

Cote, J. A., & Buckley, M. R. (1987). Estimating trait, method, and error variance: Generalizing across 70 construct validation studies. *Journal of Marketing Research, 24*(3), 315–318.

DeSimone, J. A., Harms, P. D., & DeSimone, A. J. (2015). Best practice recommendations for data screening. *Journal of Organizational Behavior*, *36*(2), 171–181.

Donaldson, S. I., & Donaldson, S. I. (in press). The Positive Functioning at Work scale: Psychometric assessment, validation, and measurement invariance. *Journal of Well-Being Assessment.*

Donaldson, S. I., & Grant-Vallone, E. J. (2002). Understanding self-report bias in organizational behavior research. *Journal of Business and Psychology*, *17*(2), 245–260.

Donaldson, S. I., Heshmati, S., & Lee, J. Y. (2020). Examining building blocks of well-being beyond PERMA and self-report bias. *Journal of Positive Psychology*, *(2020)*.

Fletcher, T. D. (2010). *Package 'QuantPsyc.'* Retrieved from https://cran.r-project.org/web/packages/QuantPsyc/QuantPsyc.pdf/

Griffin, M. A., Neal, A., & Parker, S. K. (2007). A new model of Work Role Performance: Positive behavior in uncertain and interdependent contexts. *Academy of Management Journal, 50*(2), 327–347.

Harrell, F., Jr (2019). *Hmisc: Harrell miscellaneous. R package version, 4-2-0.* Retrieved from https://cran.r-project.org/web/packages/Hmisc/Hmisc.pdf/

Huang, J. L., Curran, P. G., Keeney, J., Poposki, E. M., & DeShon, R. P. (2012). Detecting and deterring insufficient effort responding to surveys. *Journal of Business and Psychology, 27*(1), 99–114.

International Positive Psychology Association (2019). *IPPA work and organizations division*. Retrieved from https://www.ippanetwork.org/divisions/work/

Luthans, F. (2002). The need for and meaning of positive organizational behavior. *Journal of Organizational Behavior, 23*(6), 695–706.

Meade, A. W., Watson, A. M., & Kroustalis, C. M. (2007, April). *Assessing common methods bias in organizational research*. Paper presented at the 22nd Annual Meeting of the Society for Industrial and Organizational Psychology, New York.

Miner, A. G., & Hulin, C. L. (2006). Multimethods in industrial and organizational psychology: Expanding "methods" to include longitudinal designs. In M. Eid & E. Diener (Eds.), *Multimethod measurement in psychology* (pp. 429–439). Washington, DC: American Psychological Association.

Moorman, R. H., & Podsakoff, P. M. (1992). A meta-analytic review and empirical test of the potential confounding effects of social desirability response sets in organizational behaviour research. *Journal of Occupational and Organizational Psychology, 65*(2), 131–149.

Organ, D. W., & Ryan, K. (1995). A meta-analytic review of attitudinal and dispositional predictors of organizational citizenship behavior. *Personnel Psychology, 48*(4), 775–802.

Pedersen, S. J., Kitic, C. M., Bird, M.-L., Mainsbridge, C. P., & Cooley, P. D. (2016). Is self-reporting workplace activity worthwhile? validity and reliability of occupational sitting and physical activity questionnaire in desk-based workers. *Bmc Public Health*, *16*(1).

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903.

R: A language and environment for statistical computing (2019). R Core Team. R foundation for statistical computing, *1*, 409.

Reio, T. (2010). The threat of common method variance bias to theory building. *Human Resource Development Review*, *9*(4), 405–411.

Revelle, W. R. (2019). *Psych: Procedures for psychological, psychometric, and personality research, R package 1.8.4*. Retrieved from https://CRAN.R-project.org/package=psych/

Sackett, P. R., & Larson, J. R., Jr. (1990). Research strategies and tactics in industrial and organizational psychology. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (pp. 419–489). Consulting Psychologists Press.

Schmitt, N. (1994). Method bias: the importance of theory and measurement. *Journal of Organizational Behavior*, *15*(5), 393–398.

Seligman, M. (2011). *Flourish*. Free Press.

Spector, P. E. (1994). Using self-report questionnaires in OB research: A comment on the use of a controversial method. *Journal of Organizational Behavior, 15*(5), 385–392.

Spector, P. E. (2006). Method variance in organizational research: Truth or urban legend? *Organizational Research Methods*, *9*(2), 221–232.

Villalobos, J., Chan, L. B., Chen, C., & Donaldson, S. I. (2020). Exploring adaptability and proactivity across cultural contexts. *International Journal of Cross-Cultural Management*, *20*(3).

Warren, M. A., Donaldson, S. I., & Luthans, F. (2017). Taking positive psychology to the workplace: Positive organizational psychology, positive organizational behavior, and positive organizational scholarship. In M. A. Warren & S. I. Donaldson, *Scientific advances in positive psychology.* Westport: CT: Praeger.

Watson, D., Pennebaker, J. W., & Folger, R. (1987). Beyond negative affectivity: measuring stress and satisfaction in the workplace. *Journal of Organizational Behavior Management*, *8*(2), 141–158.

Wick, K., Faude, O., Schwager, S., Zahner, L., & Donath, L. (2016). Deviation between self-reported and measured occupational physical activity levels in office employees: Effects of age and body composition. *International Archives of Occupational and Environmental Health*, *89*(4), 575–582.

Zerbe, W. J., & Paulhus, D. L. (1987). Socially desirable responding in organizational behavior: A reconception. *The Academy of Management Review, 12*(2), 250–264.