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The buffering effects of virtual coaching during crisis: A quasi-experimental study of changes in well-being, work, and social outcomes before and during the COVID-19 pandemic

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Abstract

We examined the buffering effects of virtual coaching during the COVID-19 pandemic. Through a pre-post quasi-experimental design, we compared change in well-being, social behaviour, and work outcomes for coached and non-coached samples (n = 1,005). We found that post-COVID outcomes were generally more positive for those who received coaching: they experienced positive gains in optimism, life satisfaction, authenticity, and productivity while those who did not receive coaching experienced a decline in those outcomes. Further, those who received coaching experienced larger growth in resilience and social connection. Changes in work engagement did not differ by group.

Introduction

Given numerous calls for research-based interventions that alleviate the psychological damage of COVID-19 on employees (Holmes et. al., 2020); we explore the effectiveness of virtual coaching as one possible solution. Virtual coaching, which can be delivered remotely anytime during a pandemic (Torous, Myrick, Rauseo-Ricupero, & Firth, 2020) or crisis, has already shown promising

results for optimizing positive behavioural outcomes (e.g., Jones, Woods & Guillaume, 2015). In this study, we examine the potential buffering effects of such coaching during the onset of the COVID-19 pandemic crisis.

Data collected for unrelated purposes right before the onset of the pandemic serendipitously enabled a pre-post quasi-experimental design, allowing for comparison of the changes in both work and non-work outcomes for a coached and non-coached group as COVID-19 began. Well-being, relational behaviour, employee engagement, and employee productivity continue to be affected by the pandemic (e.g., Carnevale & Hatak, 2020; Trougakos, Chawla, & McCarthy, 2020), which we explore in these data. Additionally, we examine the potential of coaching as an intervention to prevent or reduce the hypothesized negative effects of the pandemic. Adding to qualitative work suggesting that the application of group coaching in the workplace improves employee well-being and performance (Jaroz, 2021), this study contributes more broadly to an understanding of the potential of one-to-one, virtual coaching as an intervention in times of great change and crisis.

How COVID-19 is Impacting Work and Life

The COVID-19 pandemic continues to upend life as we know it. The present study focuses on the beginning of the pandemic, when many employees abruptly shifted to remote work (Brynjolfsson et al., 2020; Wang, Liu; Qian, & Parker, 2021), government stay-at-home orders went into effect (e.g., State of Minnesota Executive Order No. 20-20, 2020), and most schools and universities moved to online classes. Most centrally to the present study, the pandemic changed the way we work (Fouad, 2020). With the sudden shift to remote work, employees dealt with massive increases in job loss and uncertainty (Blustein et al., 2020), unsafe working conditions (e.g., medical personnel treating COVID-19 patients; Lai et al., 2020), and increases in other work-related stressors. Not only do these stressors negatively affect well-being at work (Hart & Cooper, 2002; Johnson et al., 2005), especially during a crisis (Nickell et al., 2004), but the added non-work-related distractions (e.g., childcare, social/physical distancing, etc.; Cluver et al., 2020) led to dips in well-being and behavioural outcomes (Jett and George, 2003; Brooks et al., 2020; Sibley et al., 2020). Research from past pandemics has also demonstrated that this stress and uncertainty impairs psychological functioning, both at work and home (e.g., Lau, Griffiths, Choi, Tsui, 2010; Jun, Tucker, Melnyk, 2020), and COVID-19 has been similar, negatively impacting many people's mental health and other outcomes (Holmes et al., 2020; Trougakos, Chawla, & McCarthy, 2020). This leads to our first hypothesis:

H1: Both the coaching and non-coaching group will experience an average decline in (a) well-being, (b) relational behaviour, (c) work engagement, and (d) work productivity during the COVID-19 pandemic.

How Coaching can Ameliorate the Impact on People during a Global Crisis

Recent estimates from the International Coach Federation have suggested that there are more than 53,000 professional coach practitioners world-wide, an 11% increase since 2016 (International Coach Federation, 2012, 2016). While the popularity of coaching in organisations appears to be growing, academic research on coaching has lagged behind, resulting in numerous calls for additional research (e.g., Theeboom, Beersma, & Vianen, 2014; Sonesh et al., 2015). While the coaching literature is still emerging, results from recent meta-analyses have suggested that coaching has positive effects on employee well-being and performance (e.g., Jones, Woods, & Guillaume, 2016). Additionally, recent work suggests that coaching has protective and reactionary benefits regarding the well-being of employees during times of change and crisis (e.g., Weinberg, 2016; David, Ionicioiu, Imbarus, & Sava; 2016; Grant, Curtayne, & Burton, 2009; Schermuly et al., 2020). Most recently, a small experimental study of those with and without group coaching support during COVID-19 suggested that coaching can support well-being (Jarosz, 2021). To increase our

understanding of the role and impact of coaching during global crises like the COVID-19 pandemic, we sought to both expand generalizability of past findings through a large, quantitative study and increase the scope of outcomes examined to better explore impact areas across personal and professional life.

Coaching Definitions and Approaches

Fundamentally, coaching is a "one-to-one learning and development intervention that uses a collaborative, reflective, goal-focused relationship to achieve professional outcomes that are valued by the coachee" (Jones, Woods, & Guillaume, 2016). Coaches primarily act as a facilitator by listening, offering support, empowering, questioning, and encouraging goal-setting rather than providing specific advice or recommendations (Ellinger, Ellinger, and Keller, 2003; Hamlin et al. 2006). Coaches generally do not need to be an expert in or have extensive experience in a particular discipline - in contrast to, mentors (Brockbank & McGill, 2012; Conner & Pokora, 2012). Effective coaching across most domains often takes a positive, strengths-oriented approach (Biswas-Diener, 2020) and focuses on future events instead of processing past personal events or helping with clinical needs, as with therapy (Grant, 2001). Finally, while there is some debate about the relationship between coaching psychology and positive psychology, both focus on positive aspects of human's nature and their strengths. Many have argued that coaching can be thought of as an applied form of positive psychology (Grant & Cavanagh, 2007) or that coaching fits appropriately within the broader positive psychology framework (Freire, 2013; Theeboom, Beersma & van Vianen, 2014). Using this shared foundational conceptualization of coaching, different forms of coaching have been developed to target different domains of life and have been found to be highly effective such as professional workplace coaching (Jones et al., 2015), life coaching (Grant, 2003), and relational coaching (Critchley, 2010).

While the core functions of different coaching types suggest substantial similarities in approach (Hamlin, Ellinger, & Beattie, 2008), one important distinction of professional coaching is between external and internal coaching. Internal coaching (which largely focuses on relationships between manager and direct report; Dahling et al 2016; Hackman and Wageman, 2005; Liu & Batt, 2010) is thought to be more effective for performance-based outcomes, given the contextual knowledge within the organisation. External coaching (which focuses on relationships between an employee and a coach outside the organisation; Sonesh et al, 2015; Theeboom et al, 2014; Jones et al., 2015) is thought to be more effective for improving affective outcomes because external coaches are better positioned to create "safe" and trusting relationships with increased confidentiality (Jones, Woods, and Zhou, 2018). Another important distinction among coaching approaches is between virtual and in-person: Virtual coaching occurs remotely (e.g., via phone, video conferencing) and allows for increased accessibility, convenience, and scalability (compared to in-person coaching; Ghods, Barney, and Kirschner, 2019). Our study focuses on virtual external professional coaching, to gauge the degree to which it is particularly well-suited for improving outcomes related to well-being.

Effectiveness of Virtual Coaching

Recent meta-analyses suggest that coaching has positive effects on employee well-being and performance (Theeboom et al., 2014; Sonesh, Coultas, Lacerenza, Marlow, Benishek & Salas, 2015; Jones, Woods, & Guillaume, 2016). Theeboom et al. (2014) found moderate and positive effects of coaching on performance/skills ($g = .60$), well-being ($g = .46$), coping ($g = .43$), work attitudes ($g = .54$), and self-regulation ($g = .74$), although the estimates were based on only a few studies. Sonesh, Coultas, Lacerenza, Marlow, Benishek, and Salas (2015) similarly found positive effects of coaching, although these effects were smaller. Specifically, they found coaching to have a positive effect on goal attainment ($g = .21$), behavioural change ($g = .12$), work-related attitude change ($g =.18$) and personal attitude change ($g = .08$). A more recent meta-analysis of coaching found small to moderate effects of coaching across a diverse variety of outcomes ($d = .33$). This

included affective outcomes (e.g., job satisfaction; d = .46), skill-based outcomes (e.g., competency-based skills; d = .26), and individual-level results (e.g., productivity; d = 1.15); however, the individual-level results were based on only a few studies (Jones, Woods, & Guillaume, 2016). While there is variation in the specific estimates of the effects of coaching on outcomes, generally coaching interventions appear to have positive, small-to-moderate effects on work and non-work-related outcomes.

Jones and colleagues (2016) evaluated two potential moderators that are particularly relevant to this study's focus. The impact of in person coaching compared to virtual coaching and the impact of using internal coaches compared to external professional coaches. They found that effectiveness did not differ between face-to-face coaching and blended coaching, which they defined as coaching that included both virtual and in-person components (Jones, Woods, and Guillaume, 2016). While the authors were unable to directly compare face-to-face to purely virtual coaching, these results suggest any differences between the effectiveness of in-person and virtual coaching are likely small or non-existent. In another study, they found that affective outcomes (e.g., job satisfaction) were higher for external coaching (compared to internal coaching), providing evidence for the idea that coachees may feel more comfortable with the more secure confidentiality of an external coach (Jones, Woods, and Zhou, 2018). Together these two studies suggest that there is no loss in effectiveness in delivering coaching over at least partially virtual experiences, and that there are potential benefits for using coaches employed outside of the organisation.

Coaching as a Buffer in Crisis

As discussed above, coaching has generally shown positive effects on work and non-work outcomes. Thus, while COVID-19 related life changes and stress effects are expected to adversely affect employees (e.g., Sibley et al., 2020), the positive effects of coaching are hypothesized to mitigate some of those adverse effects of COVID-19 by acting as a buffer. Specifically, coaching has the potential to buffer adverse effects of the COVID-19 pandemic by 1) building pre-crisis psychological resources as a preventative intervention and 2) by providing ongoing support during the crisis.

By building resilience and other psychological capital, coaching might be able to prevent some of the detrimental effects of a global crisis like the COVID-19 pandemic. For example, Grant (2017) suggested that coaching could serve as a preventative mechanism for reducing stress-related fatigue and burnout. Consistent with the Conservation of Resources Model (Hobfoll, 1989), coaching - particularly programs involving a professional coach (Spence & Grant, 2007) - may improve a coachee's ability to prepare for challenges in the future through goal setting, adaptation planning, and building resources such as resilience. According to Hobfoll's model, demands or threats can deplete resources, and pre-emptively boosting resources can have protective benefits. In a study by Weinberg (2016), 46 managers either volunteered for coaching or were directed to engage in coaching by their employer, while thirty managers were in the control group. Weinberg (2016) measured psychological health pre and post-coaching intervention and found that coaching exposure prevented an increase in psychological strain exclusively for those who voluntarily chose to receive coaching. Further, a higher frequency of voluntary coaching sessions was related to lower levels of psychological strain. This study provides initial evidence of and theoretical ground for the preventative effects of coaching for mitigating psychological harm.

In addition to coaching as a preventative intervention, coaching might also be beneficial as a consistent and ongoing intervention, providing support to individuals during or after the onset of crisis or change. David and colleagues (2016) examined the effectiveness of a coaching program on stress and resilience during a financial recession in Italy. A small sample of managers attended a development workshop and received one session of executive coaching. Results indicated small to moderate effects of this intervention on decreasing depressed mood. Similarly, Grant (2014) conducted a within-subject study on a small sample of managers during times of organisational

change (i.e., restructuring and new executive leadership). Grant found four coaching sessions to be associated with an increase in the ability to deal with change, self-efficacy and resilience, goal attainment, solution-focused thinking, and a decrease in depression, further supporting the notion that coaching might be beneficial during stressful times. Schermuly and colleagues (2020) examined the effects of coaching on coping resources, health, and cognitive performance in a small sample of insolvent entrepreneurs. They found evidence of positive improvement in psychological wellbeing, exhaustion, and vigilance but not coping resources. Most recently, preliminary data on coaching during COVID-19 provided a hopeful picture for coaching's effectiveness under extreme challenge. Despite the limited size of previous studies, the existing empirical evidence suggests that coaching prevents and reduces adverse effects stemming from change and/or negative events. As a result, in this investigation we hypothesize that:

> H2: Employees who receive coaching will experience less of a decline in indicators of (a) well-being, (b) relational behaviour, (c) work engagement, and (d) work productivity during the COVID-19 pandemic.

Method

Using a mixed quasi-experimental design, this study examined the effects of coaching on the within-person change between two naturally occurring groups before and right after the onset of the COVID-19 pandemic. Both groups had consistent survey data on well-being, relational behaviour, work engagement, and work productivity, both pre (data collected prior to March 11th, 2020) and during (March and April 2020) the onset of the COVID-19 pandemic. In the coaching group, participants completed pre-COVID-19 surveys prior to receiving any coaching as part of the coaching platform onboarding and registration process. Prior to these surveys, participants are made aware that their individual responses are confidential, that this information will not be shared with their employing organisation, and that their responses may be used in aggregate for research purposes. After completing those surveys, participants completed a follow-up survey. In the non-coaching group, participants completed pre-COVID-19 surveys as part of a cross-sectional study on Amazon Mechanical Turk (described further below) and did not receive any coaching. The same participants completed a survey during COVID-19 in April 2020 (for reference, the pandemic was declared on March 11, 2020).

Participants

Participants for the coached and non-coached group originated from two sources. The first group (the coached group) were active users of a virtual coaching platform that enables organisations to offer scalable, one-on-one coaching to employees. Participants in this group completed surveys at multiple time points as they engaged in coaching to track progress. As this data is continuously collected as users engage with the coaching platform product, we used pre-post data that naturally fell before and during the COVID-19 pandemic. Specifically, we included participants who completed a follow-up measure on or after March 11th, 2020 (the day the World Health Organisation declared the COVID-19 pandemic) through May 1st, 2020 (n = 545). The second group (the non-coached group) was composed of Amazon Mechanical Turk workers who completed a survey study prior to the onset of the COVID-19 pandemic (between February 3rd and 9th, 2020) as part of a separate study; these participants completed follow-up surveys during the COVID-19 pandemic (between April 3rd and 7th, 2020). Amazon Mechanical Turk is an online labour market (also referred to as a crowdsourced or gig work platform) used extensively in the behavioural sciences as a respondent sampling methodology for crowdsourcing responses from a qualified population. One thousand and eight completed the initial Mechanical Turk study and 640 participants completed the follow-up surveys (63% retention rate). To maximise certainty that this group did not have access to coaching, those who reported any amount of coaching in the past 12

months were excluded from the sample (n = 180). The final non-coached sample size was 460. The total number of participants in this study was 1,005.

Coaching Intervention

Participants in the coached group received one-on-one coaching from an external, professionally certified coach through a virtual coaching platform. Each coaching session is conducted via video and lasts approximately 30-45 minutes. The participants were engaged with coaching for reasons completely unrelated to the purposes of this study and were given access to the platform through their employer. When participants began coaching, they completed a series of surveys to establish a baseline measure of relevant constructs and capture preferences used for coach matching. Participants on this platform are able to work with coaches on a wide variety of topics related to work and well-being (e.g., communication, well-being, stress management). Participants who received coaching took the post-intervention survey after an average of 10.11 (SD = 5.23) coaching sessions across an average of 15.18 weeks (SD = 5.94 weeks). Coachees in this sample had a minimum of 3 sessions, a maximum of 45 sessions, a minimum of 6 weeks of coaching, and a maximum of 40 weeks of coaching. No demographic information is collected from coachees on the coaching platform.The coaching platform company chooses not to collect demographic information to maintain privacy and protect the data of its users regardless of their geographical location.

Measures

With the exception of the optimism measure, which was pre-existing, all scales used in this study were validated on an independent sample of over one thousand working professionals using a multi-phased validation study (BetterUp Inc., 2019) prior to their operational use on the platform. The coaching platform developed their own metrics for three primary reasons: 1) the original short versions of several existing scales had poor psychometric properties in some cases and were too lengthy for commercial purposes, 2) since the coaching platform is targeted at working professionals the scales needed to be framed to assess how work and the workplace shaped employee perceptions, and 3) the coaching platform requires commercial usage of the scales and does not qualify exclusively as a use for research purposes. In addition, re-administering standard, open-source measures typically used for research purposes was not practically feasible and would have harmed the external validity of the data collected in this study.

To summarise the scale validation effort, items were generated through a comprehensive examination of the literature and interviews with subject matter experts. Items within each measure were reduced from the initial larger set of items using a variety of classical test theory item statistics including means, standard deviations, skewness, kurtosis, inter-item correlations, total-item correlations, and Cronbach's alpha. Convergent validity was evaluated by assessing the relationship between newly developed measures and previously validated measures. All scales demonstrated adequate reliability and convergent validity.

Well-being. To examine employee well-being, we examined life satisfaction, resilience, and optimism. Optimism was measured using a two-item Likert-type scale from the Psychological Capital Questionnaire (Time 1 α = .73, Time 2 α = .85). An example item is "I always look on the bright side of things regarding my job" (Luthans et al., 2004). Life satisfaction was measured using the single Likert-type item "Overall, how satisfied are you with your life as a whole?" Resilience was measured using the single Likert-type item "I recover quickly after stressful experiences."

Relational Behaviour. To examine employee relational behaviour, we examined authenticity and social connection. Authenticity was measured using a three-item Likert-type scale (Time 1 α = .82, Time 2 α = .87). An example item is "I open up to people." Social connection was measured using a three-item Likert-type scale (Time 1 α = .58, Time 2 α = .72). An example item is "I surround myself with people I can depend on."

Work Engagement and Productivity. Work engagement was measured using a three-item Likert-type scale (Time 1 α = .78, Time 2 α = .83). An example item is "I often become engrossed in my work". Work productivity was measured using the single item "With 0 as not at all productive and 10 as full productivity, how productive have you been at work recently?"

Ethics

Ethical and Independent Review Services completed ethical reviews of our research. For the coached sample, data & research was deemed non-human subjects research (Protocol #: 20106 – 01). Because this work was classified as non-human subjects research, informed consent was not needed. For the non-coached sample, data & research was approved by the Ethical and Independent Review Services review board (Protocol Name & #: Investigating the American Workplace, 18164). Informed consent forms were administered as described in the protocol for all subjects.

Data availability statement

Data not available due to ethical, legal, and commercial restrictions. Due to the nature of this study, which included archival data from a live coaching platform, participants of this study and their organisations did not agree for their data to be shared publicly, so supporting data is not available.

Results

Means, standard deviations, and the inter-correlations between all measures across time are reported in Table 1. Additionally, the means and standard deviations across all measures for both the coached and non-coached groups before and after onset of the COVID-19 pandemic are summarised in Table 2. We tested both hypotheses using a series of linear mixed-effect models with random intercepts and fixed predictors (Tables 3 and 4). This statistical approach allows the calculation of both fixed and random effects when there exists non-independence in observations. This technique is a more flexible and modern approach to modelling repeated measure effects than using repeated-measures ANOVAs (Gueorguieva & Krystal, 2004). The random effects components of our models were not of empirical interest to our hypotheses but allowed for the accurate assessment of the fixed effects by accounting for correlation between repeated measurements of the same participant.

Table 1. Correlation Matrix and Descriptive Statistics

	Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Coaching Intervention	0.54	0.50	-														
2	T1 Social Connectedness	3.91	0.61	0.00	*0.58*													
3	T2 Social Connectedness	4.06	0.66	0.09	0.58	*0.72*												
4	T1 Optimism	3.65	0.87	-0.01	0.41	0.38	*0.73*											
5	T2 Optimism	3.76	0.85	0.15	0.34	0.49	0.63	*0.85*										
6	T1 Life Satisfaction	3.69	0.89	0.25	0.42	0.43	0.44	0.46	-									
7	T2 Life Satisfaction	3.78	0.91	0.40	0.30	0.46	0.35	0.51	0.68	-								
8	T1 Resilience	3.52	0.99	-0.06	0.16	0.16	0.37	0.33	0.27	0.19	-							
9	T2 Resilience	3.74	0.91	0.06	0.16	0.27	0.38	0.50	0.34	0.35	0.56	-						
10	T1 Authenticity	3.66	0.82	0.12	0.43	0.36	0.30	0.25	0.33	0.29	0.11	0.19	*0.82*					
11	T2 Authenticity	3.68	0.87	0.33	0.32	0.47	0.29	0.41	0.40	0.45	0.14	0.31	0.63	*0.87*				
12	T1 Productivity	7.68	1.81	-0.17	0.23	0.15	0.28	0.28	0.19	0.11	0.16	0.22	0.14	0.11	-			
13	T2 Productivity	7.18	2.28	0.31	0.13	0.25	0.23	0.35	0.31	0.36	0.13	0.27	0.13	0.25	0.23	-		
14	T1 Engagement	3.87	0.72	0.11	0.28	0.24	0.44	0.43	0.33	0.29	0.23	0.22	0.25	0.26	0.33	0.25	*0.78*	
15	T2 Engagement	3.97	0.69	0.14	0.25	0.35	0.40	0.55	0.33	0.37	0.16	0.31	0.23	0.36	0.37	0.35	0.67	*0.83*

Note. All correlations greater than the absolute value of .06 are statistically significant at p < .05. Coefficient alpha reliability estimates are on the diagonal of the matrix

Table 2. Means and Standard Deviations of Pre/Post COVID-19 Onset

	Pre-COVID-19 Pandemic Onset						Post-COVID-19 Pandemic Onset					
	Full Sample		No Coaching		Coached		Full Sample		No Coaching		Coached	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Social Connectedness	3.91	0.61	3.91	0.66	3.91	0.57	4.06	0.66	4.00	0.80	4.12	0.52
Optimism	3.65	0.87	3.66	0.92	3.64	0.82	3.76	0.85	3.63	0.95	3.88	0.74
Life Satisfaction	3.69	0.89	3.44	0.97	3.89	0.76	3.78	0.91	3.38	0.99	4.12	0.68
Resilience	3.52	0.99	3.59	0.99	3.46	0.99	3.74	0.91	3.67	1.01	3.79	0.83
Authenticity	3.66	0.82	3.56	0.86	3.75	0.77	3.68	0.87	3.36	0.99	3.94	0.65
Productivity	7.68	1.81	8.01	1.80	7.40	1.78	7.18	2.28	6.41	2.69	7.84	1.60
Engagement	3.87	0.72	3.72	0.93	3.91	0.64	3.97	0.69	3.80	0.91	4.03	0.60

Note: Full sample n = 1004, Non-coached sample n = 460, Coached sample n = 545

For each of the mixed-effect models, observations were nested within each participant (i.e., the grouping variable). The predictors of interest were COVID-19 onset (pre-covid or post-covid), coaching exposure (coached or non-coached), and their cross-level interaction term. Tables 3 & 4 presents the results of our analyses for each of our seven outcome variables: Social connectedness, optimism, life satisfaction, resilience, authenticity, productivity, and engagement. The tables include the estimates of all fixed effects and the estimates of the random effects. In all cases the intraclass correlation coefficient (ICC) of our models were greater than .50, which suggests a substantial amount of variance between individuals remains unexplained. This is unsurprising given the individual characteristics outside of coaching and the COVID-19 pandemic that likely explain an individual's scores on all of our dependent variables. The marginal R-squared values represent the proportion of variance explained by the fixed effects terms (Nakagawa et al., 2017).

Hypothesis 1 proposed that both the coaching and non-coaching groups would experience a decline across a set of indicators of well-being, engagement, and productivity as a result of the COVID-19 pandemic. This hypothesis was partially supported (see Table 3). On average across both groups only productivity experienced an overall decline. All other outcome variables were significantly higher after the onset of COVID-19; however, these gains did not manifest for both groups. Figure 1 shows that the vast majority of gains were exclusive to the coached group. On average, the non-coached group experienced little to no growth or experienced a sharp decrease across all measured outcomes (see Figure 1). Although hypothesis 2 proposed that coaching would moderate the effect we did not hypothesise that the coaching group would experience these significant increases. With the exception of engagement, our analyses indicated a significant moderation effect between COVID-19 onset and coaching on all outcome variables (see Table 4).

Table 3. Results for Linear Mixed Effects Models of Changes after COVID-19 Onset

	Social Connectedness			Optimism			Life Satisfaction			Resilience		
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	3.91	3.87 – 3.95	<0.001	3.65	3.60 – 3.71	<0.001	3.68	3.63 – 3.74	<0.001	3.52	3.46 – 3.58	<0.001
Pre/Post COVID-19 Onset	0.16	0.12 – 0.19	<0.001	0.11	0.07 – 0.16	<0.001	0.1	0.05 – 0.14	<0.001	0.22	0.16 – 0.27	<0.001
Random Effects												
σ2	0.17			0.27			0.26			0.4		
τ00 (ID)	0.24			0.47			0.56			0.5		
ICC	0.58			0.63			0.68			0.55		
N(ID)	1005			1005			1005			1001		
Observations	2010			2010			2010			2002		
Marginal R2	0.015			0.004			0.003			0.013		

Table 3 cont. Results for Linear Mixed Effects Models of Changes after COVID-19 Onset

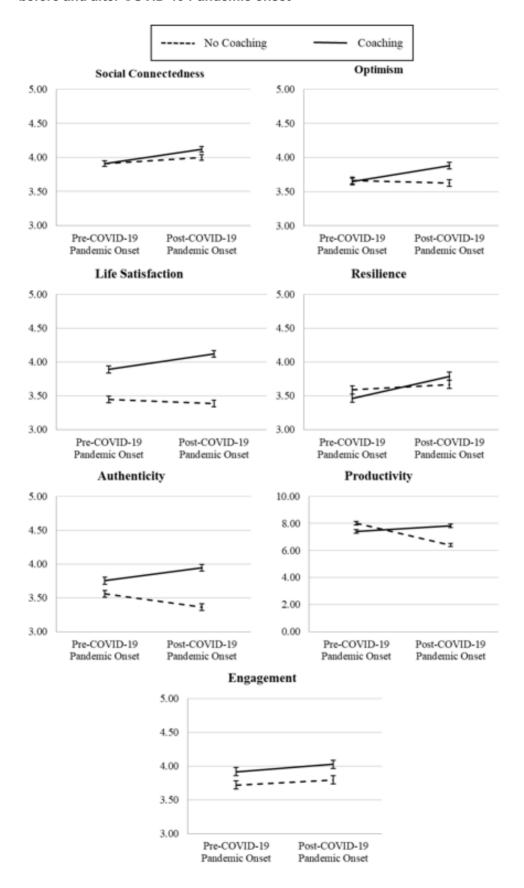|	Authenticity			Productivity			Engagement		
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	3.66	3.61 – 3.72	<0.001	7.68	7.55 – 7.81	<0.001	3.87	3.82 – 3.92	<0.001
Pre/Post COVID-19 Onset	0.01	-0.03 – 0.06	0.626	-0.5	-0.65 – -0.34	<0.001	0.1	0.06 – 0.15	<0.001
Random Effects									
σ2	0.27			3.28			0.16		
τ00 (ID)	0.45			0.95			0.34		
ICC	0.62			0.23			0.67		
N(ID)	1005			1005			706		
Observations	2010			2010			1412		
Marginal R2	0			0.014			0.005		

Table 4. Results for Linear Mixed Effects Models of Changes after COVID-19 Onset with Coaching as a Moderator

	Social Connectedness			Optimism			Life Satisfaction			Resilience		
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	3.91	3.85 – 3.97	<0.001	3.66	3.58 – 3.74	<0.001	3.44	3.37 – 3.52	<0.001	3.59	3.50 – 3.68	<0.001
Pre/Post COVID-19 Onset	0.09	0.04 – 0.15	0.001	-0.04	-0.10 – 0.03	0.288	-0.06	-0.13 – 0.00	0.064	0.09	0.00 – 0.17	0.041
Coaching	0	-0.08 – 0.08	0.969	-0.02	-0.12 – 0.09	0.754	0.44	0.34 – 0.55	<0.001	-0.13	-0.24 – -0.01	0.04
Pre/Post X Coaching	0.12	0.05 – 0.19	0.001	0.27	0.18 – 0.36	<0.001	0.29	0.20 – 0.38	<0.001	0.24	0.13 – 0.35	<0.001
Random Effects												
σ2	0.17			0.26			0.25			0.4		
τ00 (ID)	0.24			0.47			0.48			0.51		
ICC	0.58			0.64			0.66			0.56		
N(ID)	1005			1005			1005			1001		
Observations	2010			2010			2010			2002		
Marginal R2	0.019			0.015			0.115			0.016		

Table 4 cont. Results for Linear Mixed Effects Models of Changes after COVID-19 Onset with Coaching as a Moderator

	Authenticity			Productivity			Engagement		
Predictors	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*	*Estimates*	*CI*	*p*
(Intercept)	3.56	3.48 – 3.63	<0.001	8.01	7.83 – 8.19	<0.001	3.72	3.61 – 3.83	<0.001
Pre/Post COVID-19 Onset	-0.2	-0.27 – -0.14	<0.001	-1.6	-1.82 – -1.39	<0.001	0.08	-0.01 – 0.16	0.088
Coaching	0.19	0.09 – 0.29	<0.001	-0.61	-0.86 – -0.36	<0.001	0.2	0.07 – 0.32	0.002
Pre/Post X Coaching	0.39	0.30 – 0.48	<0.001	2.04	1.75 – 2.34	<0.001	0.03	-0.07 – 0.13	0.496
Random Effects									
σ2	0.25			2.77			0.16		
τ00 (ID)	0.42			1.17			0.33		
ICC	0.63			0.3			0.67		
N(ID)	1005			1005			706		
Observations	2010			2010			1412		
Marginal R2	0.065			0.084			0.022		

Figure 1. Plots of interactions between groups who received or did not receive coaching before and after COVID-19 Pandemic onset

Overall, Hypothesis 2 was partially supported. There was a significant moderation effect such that the decreases in optimism, life satisfaction, authenticity, and productivity experienced by the non-coached group were not experienced by the coached group (Table 3 & 4). Further, in contrast to our hypothesis, participants in the coached group significantly grew across the entire set of outcome variables despite the extensive deleterious effects of the COVID-19 pandemic. Specifically, the coached group experienced gains in social connection, optimism, life satisfaction, resilience, authenticity, productivity, and engagement. In comparison, the non-coached sample either remained relatively stable or experienced a decrease across the majority of outcome variables. The largest decreases for the non-coached group were for authenticity and productivity. Engagement was the only variable in which there was not a significant moderating effect of coaching. Both the coached and non-coached group grew in engagement to a similar degree.

Post-hoc comparisons indicated that before the onset of COVID-19 the coached group was significantly higher in life-satisfaction, authenticity, and engagement than the non-coached group, and the non-coached group was significantly higher in resilience and productivity (see Table 5). There was no difference in social connection or optimism at time 1. In contrast, right after the onset of COVID-19 the coached group was significantly higher in social connection, optimism, life satisfaction, authenticity, productivity, and engagement, and there was no longer a significant difference between groups in resilience. Overall, the results of our analyses suggest that access to coaching had a positive impact for participants during the COVID-19 pandemic by not only preventing detrimental decreases in beneficial and protective factors, but by also facilitating growth in these areas that will provide beneficial psychological resources to help alleviate the long-term effects of the global pandemic.

Table 5. Results for Post Hoc Analyses

Social Connectedness					
Time point	*Estimates*	*SE*	*DF*	*t*	*p*
Pre	0.000	0.040	1501	0.008	0.994
Post	-0.117	0.040	1501	-2.904	0.004
Optimism					
	Estimates	*SE*	*DF*	*t*	*p*
Pre	0.017	0.054	1421	0.314	0.754
Post	-0.254	0.054	1421	-4.684	<0.0001
Life Satisfaction					
	Estimates	*SE*	*DF*	*t*	*p*
Pre	-0.445	0.054	1401	-8.260	<0.0001
Post	-0.737	0.054	1401	-13.687	<0.0001
Resilience					
	Estimates	*SE*	*DF*	*t*	*p*
Pre	0.125	0.060	1520	2.074	0.038
Post	-0.114	0.060	1520	-1.885	0.060
Authenticity					
	Estimates	*SE*	*DF*	*t*	*p*
Pre	-0.193	0.052	1440	-3.721	0.000
Post	-0.584	0.052	1440	-11.259	<0.0001
Productivity					
	Estimates	*SE*	*DF*	*t*	*p*
Pre	0.611	0.126	1843	4.860	<0.0001
Post	-1.434	0.126	1843	-11.407	<0.0001
Engagement					
	Estimates	*SE*	*DF*	*t*	*p*
Pre	-0.197	0.063	972	-3.132	0.002
Post	-0.231	0.063	972	-3.685	0.000

Note: Tukey corrected contrast tests between group with coaching and group without coaching at each time point. Group without coaching is the comparison point, meaning negative estimate values are indicative of the group without coaching being lower than the group with coaching

Discussion

COVID-19 has presented unprecedented challenges for organisations and individuals alike (e.g., Trougakos, Chawla, & McGarthy, 2020; Lin, Shao, Li, Guo, & Shan, 2021). We explored external, virtual coaching as one possible intervention for mitigating some of the potential adverse effects of crisis and uncertainty. A pre-post (onset) quasi-experimental design allowed us to compare change in well-being (life satisfaction, resilience, optimism), relational behaviour (feelings of authenticity and social connectedness), and work outcomes (engagement & productivity) for individuals who received coaching, with those who had not received coaching. While we hypothesised that work and well-being outcomes would decrease after the onset of the pandemic, we only found partial support for this hypothesis. While we found that across groups, productivity declined, authenticity remained the same, and engagement, life satisfaction, optimism, resilience, and social connectedness surprisingly increased after the onset of the COVID-19 crisis.

However, in support of our second hypothesis, we found that coaching acted as a significant buffer on the negative impact of the COVID-19 pandemic. Specifically, those who received coaching experienced positive gains in optimism, life satisfaction, authenticity, and productivity while those who did not receive coaching experienced a decline in those outcomes. Further, those who received coaching experienced larger growth in resilience and social connection compared to those who did not receive coaching. Changes in engagement did not appear to differ by group, indicating that there were similar degrees of positive changes for those who received and did not receive coaching. These results indicate that external, virtual coaching can be an effective solution in supporting employees through times of crisis and change.

Theoretical and practical implications

This research contributes to our understanding of the effect of coaching on the impact of a global crisis. First, our results provided initial evidence of COVID-19 pandemic-related changes in employee work engagement, productivity, relational behaviour, and well-being. The pre-post design allowed for a rare view of the immediate changes in these outcomes related to the pandemic. The detrimental effect of the early stages of the pandemic was primarily experienced by those individuals without access to coaching. This finding provides encouraging evidence that the COVID-19 pandemic may not be universally detrimental to the studied outcomes and individuals with access to consistent virtual coaching can still experience substantial growth despite crisis and uncertainty in the macro-environment. This may be attributable to skills often supported through coaching such as reframing and self-compassion. Second, this is the first research to our knowledge that has explored extant, external, 1:1 virtual coaching as an intervention that can support employee well-being through crisis or organisational upheaval requiring massive shifts to the way of work. These results lend further support to recent work on the effectiveness of group coaching during COVID-19 (Jarosz, 2021) and findings from Irving (2021) that provide evidence supporting the value of coaching in times of societal turbulence, which may create atypical practice norms.

From a practical standpoint, our research suggests that external, virtual coaching can be an effective solution in supporting employees personal and professional lives through times of crisis and change. Organisational leaders might consider coaching as an intervention in response to crisis but might also consider using coaching as an ongoing prevention tool to help employees be prepared for major disruption and challenge. Further, the format and type of coaching, virtual and external, seems particularly well-suited for times of crisis and change given previous evidence that coachees may feel more comfortable with the confidentiality of an external coach (Jones, Woods, and Zhou, 2018) and the versatility of virtual coaching to occur where and when works best for the employee.

Limitations and future research

This quasi-experimental research on the effectiveness of coaching during the COVID-19 pandemic was possible due to serendipitous timing of a stream of unrelated research and the continuous collection of product data. We were able to leverage these data to examine important questions about extant, virtual coaching as a useful tool for supporting employees through crisis and challenge using a large sample size and wide breadth of outcomes in comparison to most coaching studies. That said, this work has limitations that should be noted. First, there are measurement factors present such as use of a single-item measure for productivity, one multi-item measure having low reliability, and reliance on self-report (see Paulhous & Vazire, 2007 for more information on benefits and drawbacks of self-report methodology).

Secondly, our groups were non-equivalent with no random assignment, preventing us from drawing causal conclusions. There is potential that the differences we saw between groups could be due to a factor unrelated to coaching. For example, it may be that employees who come from organisations that are in a position to purchase coaching, have systematic differences compared to those who do not belong to such organisations, such as higher organisational support. In addition, it is unknown whether systematic individual differences exist between groups in part because due to privacy law compliance, the demographics of the coached group are unknown. While the above limitations have implications regarding the internal validity of the findings of the study, it is worth noting that nearly all these trade-offs were made because data were partly being collected from a live, coaching platform (i.e., practical limitations related to survey length and privacy concerns). Participants in the coaching group were actively involved in coaching and development for reasons unrelated to the study, providing high confidence in the external validity of findings, particularly for that group.

Third, while this work illustrated the effectiveness of coaching on employee outcomes, we cannot speak to how these effects were realised. Past research has suggested several mechanisms such as coaching enabling more specific goal setting, more solicitation of feedback from others, and improved navigation through stages of change (Smither, Longon, Flautt, Vargas, & Kucine, 2003). Recent work has also suggested that psychological capital can play a mediating role, such that coaching can boost psychological capital which subsequently boosts other outcomes (Fontes & Russo, 2020). We suspect during a time of crisis - in particular one which limits normal social behaviour - coaching may operate through improving social support with the coach and others, enabling more creative and agile thinking about how to maintain health and work behaviours under new and unusual circumstances, improving self-awareness, and bolstering self-efficacy in navigating changes. However, it is unclear with the present data to know why and how coaching led to the observed effects. Future research should specifically measure such mechanisms. Additionally, we focused on psychological and behavioural outcomes. However, given the improvements in key areas like resilience and optimism and past evidence on connections between variables such as optimism and resilience with physical health, there may be physical health benefits that resulted from these psychological improvements (e.g., Rasmussen, Scheier, & Greenhouse, 2009; Nath & Pradhan, 2012). Future research might explore the link between coaching and physical health during times of crisis. Lastly, these data were collected primarily from US employees. It will also be important to continue this line of research to understand how coaching may operate under different cultural and macro-environmental contexts.

Conclusion

In conclusion, this study shows notable COVID-19 pandemic-related changes in employee work engagement, productivity, relational behaviour, and well-being. We saw overall declines in productivity, stability in feelings of authenticity while surprisingly, engagement, life satisfaction, optimism, resilience, and social connectedness all improved on average. However, the direction and magnitude of these effects were not uniform across all workers. Rather, beneficial

effectiveness and well-being outcomes were exclusively limited to employees who received virtual coaching bridging the pre- and post-crisis onset. Counteracting the negative impact of the COVID-19 crisis on optimism, life satisfaction, authenticity, and productivity for non-coached employees, those receiving virtual coaching experienced no such declines. Further, those who received coaching improved to a higher degree in resilience and social connection than the non-coached employees. In the context of crisis, virtual coaching as a worker-centric intervention largely mitigated employee declines in well-being. In parallel, coached employees bolstered their relational and resilience reserves to withstand future cycles of intense change and personal-professional turmoil.

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