Coaching for Primary Care Physician Well-Being: A Randomized Trial and Follow-Up Analysis

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Heidi Duskey, Nancy Gertz, Lisa Prior, Marianne Roy, and Nancy Yahanda were coaches for this study (listed in alphabetical order). Leslie Schwab was the Principal Investigator for this study and managed ethics approval, budget, recruitment, enrollment, and follow-up with participants. Alyssa McGonagle assisted with the grant application, designed the study methods, analyzed the data, and drafted the current manuscript. In addition to providing coaching, Nancy Yahanda and Heidi Duskey assisted with the grant application and drafting the current manuscript. All authors assisted in revising the current manuscript.

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Abstract

Primary Care Physicians (PCPs) are integral to the health of all people in the U.S. Many PCPs experience burnout, and declines in well-being. We conducted a randomized controlled trial of a six-session positive psychology-based coaching intervention to improve PCP personal and work-related well-being and decrease stress and burnout. Fifty-nine U.S.-based PCPs were randomized into a primary ($n=29$) or a waitlisted control group ($n=30$). Outcome measures were assessed pre-intervention, post-intervention, and at three and six months post-intervention. Hypotheses 1a-1h were for a randomized controlled trial test of coaching on PCP burnout (a), stress (b), turnover intentions (c), work engagement (d), psychological capital (e), compassion (f), job self-efficacy (g), and job satisfaction (h). Results from 50 PCPs who completed coaching and follow-up assessments indicated significantly decreased burnout (H1a) and increased work engagement (H1d), psychological capital (H1e), and job satisfaction (H1h) for the primary group from pre- to post-coaching, compared to changes between comparable time points for the waitlisted group. Hypotheses 2a-2h were for stability of positive effects and were tested using follow-up data from participants in the primary and waitlisted groups combined. Results from 39 PCPs who completed the intervention and the six-month follow-up indicated that positive changes observed for H1a, H1d, H1e, and H1h were sustained during a six-month follow-up (supporting H2a, H2d, H2e, and H2h). Results indicate that coaching is a viable and effective intervention for PCPs in alleviating burnout and improving well-being. We recommend that employers implement coaching for PCPs alongside systemic changes to work factors driving PCP burnout.

Keywords: primary care physicians, burnout, coaching, positive psychology

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Burnout, which often manifests in the face of ongoing work stress, is characterized by emotional exhaustion, depersonalization, and reduced perceptions of personal efficacy and accomplishment (Maslach & Jackson, 1984). Burnout and other indicators of poor well-being are, unfortunately, common among physicians in the United States (U.S.). In 2011, Shanafelt and colleagues began documenting rates of U.S. physician burnout using large representative samples, with updates every three years. The authors found that physicians reported significantly greater burnout symptoms than the general U.S. population in 2011, 2014, and 2017. Percentages of physicians reporting high levels of emotional exhaustion and/or depersonalization were 45%, 54%, and 44% in 2011, 2014, and 2017, respectively (Shanafelt et al., 2012; 2015; 2019). Physician specialties with the highest burnout rates were those in the front lines of care, including primary care (family medicine and internal medicine) and emergency medicine (Shanafelt et al., 2012). In the current study, we focus on mitigating burnout and promoting well-being in one of these most vulnerable physician groups, Primary Care Physicians (PCPs). We provide an evaluation of an individual coaching intervention to mitigate burnout and promote well-being in PCPs.

PCP burnout has negative implications for multiple layers of society. First, PCP burnout levels predict subsequent PCP turnover (Willard-Grace et al., 2019), which affects not only their employing organizations, but also the well-being of the population that relies on their care. PCPs who experience high levels of burnout are more likely to plan to leave their current practice within the next two years (Sinsky et al., 2017). This is especially problematic when considering the critical role PCPs play in individual and population health (Shi, 2012), alongside the current and projected shortage of PCPs. In 2018, the U.S. had an estimated shortfall of 13,800 PCPs, and this shortfall is expected to increase to up to 49,300 by 2030 (Association of American Medical Colleges, 2018).

Physician burnout is also linked to medical errors (Hall et al., 2016), decreased patient safety (Welp et al., 2015), and diminished patient satisfaction and perceptions of care quality (Salyers et al., 2017). Burnout is further associated with substance use issues, health problems, marital discord (Krasner et al., 2009), and is a contributing factor to physician suicidal ideation (Shanafelt et al., 2011). This evidence clearly indicates a need to address physician burnout (Shanafelt & Noseworthy, 2017).

Literature on physician burnout highlights several contributing factors, including lack of control over workload, poor teamwork, lack of adequate time for documentation, chaotic work environment, lack of value alignment with leadership, and required time to use electronic health systems at home (Olson et al., 2019). In a survey of practicing PCPs, Gregory (2015) identified excessive workload, lack of control, and values incongruence as strong drivers of burnout. Additional factors include capped salaries and diminished status (Cassatly & Bergquist, 2011), excessive administrative demands, extended hours, on-call schedules, and work-life conflict (Dyrbye et al., 2013; Nedrow et al., 2013; Rosenstein, 2012; Shanafelt et al., 2012). Anecdotally, PCPs also report increasingly burdensome documentation requirements, shifting reimbursement models, public reporting of care metrics, denser/quicker appointment schedules, larger patient loads, more at-risk patients, and isolation from colleagues as contributing to burnout. Although the literature currently includes more studies illustrating the problem of burnout and key drivers, there is an emerging body of evidence that intervening to foster physician autonomy, self-awareness, and reflection to enhance meaningfulness can improve physician satisfaction and decrease burnout (Shanafelt, 2009).

Existing Interventions

The issue of PCP burnout is not only pressing, but also multifaceted. As such, successful intervention requires intervention at various levels – targeting organizational level issues such as work culture and environment, leadership, workflows and structure, and team dynamics, as well as

individual issues related to, for instance, coping, stress management, and communication. West and

colleagues (2016) summarized 52 intervention studies to address physician burnout. At the

organizational level, the authors found that effective physician interventions involved changes in

duty hour requirements and work processes. At the individual level, effective interventions included

mindfulness training, small group communication training, and stress management training. Notably,

none of the included individual intervention studies examined one-on-one coaching (West et al.,

2016). Further, although randomized controlled trials (RCT's) are commonly considered a gold

standard for intervention study design, only 15 of the 52 studies in West et al. (2016) used an RCT

design, and only five of those 15 RCTs included follow-up analyses.

Panagioti and colleagues (2017) identified 20 interventions to decrease physician burnout.

Twelve of these were individual interventions and included training in mindfulness, communication,

stress management, self-care and coping (again, none studied coaching). Organizational level

interventions included workload reductions, workflow adjustments, and schedule changes. Individual

interventions and organizational interventions were associated with small and medium decreases in

burnout scores, respectively (Panagioti et al., 2017). Interestingly, the authors found interventions

targeting PCPs to be more effective than those targeting other physician specialties (perhaps due to

the generally higher relative levels of burnout for PCPs).

Clough and colleagues (2017) identified 23 studies of psychosocial interventions for stress or

burnout in physicians. The majority of these interventions were group sessions focused on stress

management and coping training, mindfulness training, communication training, and reviewing

clinical cases. Only 12 of the 23 included studies reported pre- to post- intervention evaluation, only

11 of these 12 reported intervention effect sizes, and most did not follow participants after the post-

intervention assessment (Clough et al., 2017). Fox and colleagues (2018) identified 22 intervention

studies to promote physician resilience, including stress management and coping training and mindfulness training. No included studies addressed organization-level issues and only one – a qualitative study by Schneider et al. (2014) used coaching to improve physician resilience. Although the authors found improvements in physician resilience, they did not address burnout. Like authors of preceding reviews, the authors also comment on the low levels of methodological rigor in the included studies; issues included weak designs (lack of control groups), small sample sizes, and insufficient detail in describing the interventions (Fox et al., 2018).

To summarize, none of the intervention studies across three recent systematic reviews quantitatively assessed a one-on-one coaching intervention to alleviate physician burnout. Noted methodological issues for existing studies include a lack of assessment of change, lack of control groups, and lack of post-intervention follow-up assessments. In the current study, we add to the literature by providing an evaluation of a largely omitted individual-level intervention – one-on-one coaching – designed to promote PCP well-being and alleviate burnout. We also explicitly address known methodological limitations to existing physician burnout intervention studies by using a rigorous RCT design with follow-up assessments at both three and six months post-intervention.

Coaching as an Intervention

What is coaching? Coaching is a one-on-one intervention between a coach and individual coachee that is systematic, collaborative, future-focused, and goal-focused, and is meant to help coachees attain valued professional or personal development outcomes (Grant, 2003; Grant et al., 2010; Smither, 2011). Coaching can be used for many purposes, for example leadership development, career development, and achieving health goals (Segers et al., 2011), and coaching sessions can be conducted via telephone, online, or face-to-face (Grover & Furnham, 2016).

How does coaching differ from other helping interventions? Although coaching and *psychotherapy or psychological counseling* are both one-on-one interventions, coaching is generally future-oriented, goal-oriented, and is more focused on behavior (rather than the root causes of behaviors) and maximizing client effectiveness in the chosen context (Zeus & Skiffington, 2002). Coaching is also different from *mentoring* (Athanasopoulou & Dopson, 2018; Salter, 2014), in that mentors are more experienced individuals who provide advice and guidance to mentees (Feldman & Lankau, 2005; Jones et al., 2016). Instead of giving advice and directive guidance (as mentors do), coaches listen to coachees and ask questions to help them gain awareness (Salter, 2014). Finally, coaching is different from *training* interventions, which rely on pre-determined standardized curricula and common goals. Instead, coaches encourage their individual clients to set goals and establish session agendas, and learning occurs within its context (Kimsey-House et al., 2011).

Is coaching effective? In one meta-analysis of coaching's effectiveness, Theeboom et al. (2014) identified 18 studies of work-related coaching and found that coaching had beneficial effects on coachee performance and skills, well-being, coping, work attitudes, and goal-directed self-regulation. Jones et al. (2016) identified 17 workplace coaching studies and found significant positive effects on all study variables, including employee affective (attitudinal and motivational), skill-based (e.g., leadership and technical skills), and results-based (performance) outcomes. The authors also found that coaching modality (face-to-face or a combination of face-to-face and e-coaching) did not make a difference in terms of coaching's effectiveness. Grover and Furnham (2016) found that many coaching studies reported changes in self-efficacy, psychological factors (anxiety, stress, depression, resilience, and well-being), satisfaction, and performance, yet the authors declined to judge the effectiveness of coaching due to a lack of methodologically rigorous study designs. Similarly, while Blackman et al. (2016) generally found that coaching was "effective across a range of different

outcomes" (p. 474) in their review, the authors note that results were limited to coachee self-evaluations and most lacked randomization and a control group.

In one coaching RCT, Grant et al. (2009) found that a four-session coaching intervention for executives was associated with increased goal attainment, resilience, and work-related well-being, and decreased stress and depressive symptoms. Dyrbye et al. (2019) also conducted a randomized study of a coaching intervention for physicians in family medicine and pediatrics and found improvements in overall burnout, emotional exhaustion, quality of life, and resilience; yet no significant benefits were observed for depersonalization, job satisfaction, engagement, or meaning.

What are specific advantages of coaching over other interventions? As noted, interventions for physician burnout are typically group trainings on topics such as communication and stress management. One-on-one coaching is different from group sessions and trainings in important ways. First, the one-on-one nature of coaching allows it to be contextualized to an individual's role and workplace, the challenges they experience, and the meaning they derive from work, which should lead to higher levels of participant buy-in and engagement. Having one-on-one, confidential discussions with a coach may help facilitate more awareness and growth as PCPs may be less concerned with the professional image displayed to others in a group setting. Group sessions also cannot provide a level of one-on-one reflection that coaching can provide. Training typically includes a pre-determined agenda, which may lead trainees to feel that the employing organization is providing training for them to better serve the organization. In contrast, coaching's open-ended, client-driven agenda may be viewed as serving the individual coachee in personal growth and development. According to perceived organizational support theory, such signals that organizations send about care for their employees' well-being and development may engender positive emotion and work-related attitudes (Eisenberg & Stinglhamer, 2011; Shanock et al., 2019).

Coaching uses client-centered goal setting, a motivational practice that has been effective in enhancing goal attainment (Grant, 2014; Grant et al., 2009). Coaching also draws from literature on individual change and acknowledges and accepts resistance and ambivalence (Kimsey-House et al., 2011), which may be ignored in standardized training programs. Losch et al. (2016) found that individual coaching was better for helping participants achieve and sustain their goals, whereas a group training helped participants acquire necessary knowledge. The authors concluded that group training is appropriate when employees need to learn standardized content, yet one-on-one coaching is superior for achieving individual goals and when aspects of the working environment differ between coachees. Vanhove et al. (2016) found initial evidence that one-on-one interventions, including coaching, were more effective than group-based interventions. Yet, the authors note that the sample size was small and. results should be interpreted with caution.

How does coaching "work"? Although few coaching studies test theoretical mechanisms of change (Feldman & Lankau, 2005), Grant et al. (2009) posit that social support can relieve stress, and that setting and achieving goals during coaching can help to build self-efficacy. Additionally, Joo (2005) posits that learning and self-awareness are key drivers of coaching success. Similar to Dyrbye et al. (2019), we propose that coaching should be helpful for PCPs in terms of accessing personal resources ("strengths and skills;" p. E2) and handling work-related stressors, which should help promote well-being and decrease vulnerability toward and experiences of burnout.

Theoretical Framework

Positive psychology was initially introduced as the study of valued subjective experiences, positive individual traits, and positive institutions, in order to "catalyze a change in the focus of psychology from preoccupation only with repairing the worst things in life to also building positive qualities" (Seligman & Csikszentmihalyi, 2000, p. 5). This definition later included **P**ositive emotion,

Engagement, and **M**eaning (Seligman, 2007), which were incorporated into the broader construct of well-being when two additional measures – Positive **R**elationships and **A**chievement –were added (Seligman, 2012). Together, these five elements are the PERMA model (Seligman, 2012). We used positive psychology coaching methods, including a PERMA tool in the current study.

Fredrickson's broaden-and-build theory (2001) states that positive emotions such as joy, interest, and contentment momentarily *broaden* how individuals think and identify actionable opportunities (as opposed to negative emotions, which narrow focus). Frequent positive thought-action patterns *build* more enduring personal resources that, in turn, contribute to well-being (Fredrickson, 2001). In other words, positive emotions allow people to make higher-level connections and consider a wider range of ideas, which can lead to more enduring personal resources (Fredrickson et al., 2008). Individuals may draw upon these personal resources to manage future threats (Fredrickson, 2001); in this way, personal resources contribute to well-being and resilience. For example, Fredrickson et al. (2008) found that a meditation practice led participants to experience more positive emotion, which in turn, led to increased social support (personal resource), and ultimately better life satisfaction (well-being).

Building personal resources is often a goal of coaching as well (e.g., Greif, 2007; Moen & Skaalvik, 2009; Vanhove et al., 2016; Weinberg, 2016). For example, McGonagle et al. (2014) proposed that coaching would boost coachees' levels of personal resources and lead to improved work ability and reduced burnout in workers with chronic illnesses. The authors found evidence for indirect effects of coaching on work ability and exhaustion burnout through personal resources of job self-efficacy, core self-evaluations, resilience, and mental resources (McGonagle et al., 2014).

We propose that a positive psychology coaching intervention will promote positive emotional states in PCPs, which will improve their levels of personal resources and well-being. We

selected personal and work-related outcomes of coaching that align with our theoretical framework and are indicators of well-being across different PCPs, despite variation in individual PCPs' goals: psychological capital, sense of compassion, job self-efficacy, job satisfaction, work engagement, job stress, burnout, and turnover intentions. We propose that, through evoking experiences of positive emotion, coaching will build PCPs personal resources, leading to well-being and lower burnout. For each outcome, we provide a description and general link to coaching; more specific tools used in this coaching intervention and their linkages to study outcomes are in the Online Supplement.

Psychological capital refers to an overarching positive personal psychological resource that includes the inter-related dimensions of efficacy, hope, optimism, and resilience (Luthans et al., 2007). Psychological capital predicts positive job attitudes and job performance (Avey et al., 2011). Psychological capital is built by agentic conation (agency and control over goal striving), positive cognitive appraisals, positive emotions, and social mechanisms (Luthans & Youssef-Morgan, 2017). As described by Luthans and Youssef-Morgan (2017), coachee-centered goal setting and striving would likely positively influence psychological capital. Further, reframing negative situations, as is common in coaching, helps coachees generate positive appraisals and build psychological capital.

Sense of compassion for others is a critical work-related outcome and component of quality patient care for physicians (e.g., Gleichgerrcht & Decety, 2013), yet "the very act of being compassionate and empathic extracts a cost under most circumstances" (Figley, 2002, p. 1434). Compassion includes empathy, or perspective taking of the other, along with a desire to help the other (Fernando III & Consedine, 2014). Compassion fatigue, which can reduce one's desire and/or ability to display empathy for suffering individuals (Figley, 2002), is a sub-type or manifestation of burnout in physicians. Compassion interventions for physicians typically promote mindfulness, self-awareness, and communication skills (Fernando III & Consedine, 2014). We propose that self-

awareness and personal resources gained through coaching will help PCPs be better positioned to offer compassion to others. Coaching may help build compassion by creating opportunities for self-reflection, including ability to see the impact that the coachee has on others. This may lead the coachee to empathize with and consider ways they can offer greater compassion to others.

Job self-efficacy represents one's beliefs about their capabilities to exhibit required job behaviors and perform well at work (Chen et al., 2004). As a motivational construct, job self-efficacy is an important individual resource that affects outcomes, including job performance and health (Lubbers et al., 2005), through increasing effort and persistence on tasks (Bandura, 1997). Self-efficacy may be increased though mastery experiences, social modeling, verbal persuasion, and emotional arousal (Bandura, 1977). Coaches commonly help coachees reframe situations for which they feel a lack of competence or control, which may increase coachees' confidence and help them see possibilities for action.

Job satisfaction refers to an employee's overall evaluation of the favorability of their job, including their thoughts and feelings about their job (Judge & Kammeyer-Mueller, 2012). Coaching helps coachees identify, focus on, and increase opportunities for what brings them joy and sustained interest in their work. This awareness supports a broadened perspective on what is possible and where there are opportunities for coachees to take action to sustain and build satisfaction.

Work engagement refers to "high levels of personal investment in the work tasks performed on a job" (Christian et al., 2011, p. 89). Engagement involves allocating one's physical, emotional, and cognitive resources to work (Rich et al., 2010). Work engagement predicts both task and contextual job performance incrementally, above job satisfaction, organizational commitment, and job involvement (Christian et al., 2011). Predictors of engagement include positive job characteristics, leadership, and personality (Christian et al., 2011), job crafting (Hakanen et al.,

2018), and strengths use (Bakker et al., 2019). Positive psychology coaching encourages coachees to identify and use their strengths to reframe challenging situations, recognize areas for job crafting aligned with their strengths, and increase work flow, a highly-focused mental state of deep absorption (Csikszentmihalyi et al., 2014). Since deploying one's strengths in the job is a key component of employee engagement (Miglianico et al., 2019), it follows that positive psychology coaching should not only encourage personal growth but also work engagement.

Job stress is a cognitive appraisal resulting from a situation or event being perceived as possibly or actually threatening to an individual's goal attainment, combined with a perception of one's resources to handle or cope with that event or situation to be lacking (Lazarus, 1991). The former perception is a primary appraisal, and the latter is a secondary appraisal (Lazarus, 1991). Coaching may affect both primary and the secondary appraisal processes. For primary appraisal, coaching can help coachees reframe some situations as less threatening. In terms of secondary appraisal, building personal resources (e.g., psychological capital, job self-efficacy) may help coachees better cope with threating appraisals. For example, a PCP with higher levels of psychological capital who has an overload of patients on a given day would be likely to cope more effectively with the overload (e.g., delaying non-essential tasks, approaching a supervisor to discuss the overload, or enlisting help from others).

*Burnout i*s a type of strain outcome of ongoing stress (Shirom, 2003). Coaching should help alleviate coachee burnout through the aforementioned exercises that build PCP resources, craft their jobs, and promote positive emotion (see also Dyrbye et al., 2019). Further, with a reduction of primary and secondary stress appraisals as described above, reductions in burnout should follow.

Turnover intentions, or intentions to leave an organization, are the strongest predictor of employee turnover (Rubenstein et al., 2018), and stress and burnout are drivers of turnover intentions

in physicians (Moreno-Jiménez et al., 2012; Shanafelt & Noseworthy, 2017; Tziner et al., 2015). By building job satisfaction and alleviating burnout, coaching may help alleviate turnover intentions.

Hypotheses 1a-1h are for RCT results of coaching on study outcomes, and Hypotheses 2a-2h are for examining combined effects of coaching on outcomes over time to assess stability of effects.

H1a-h: Following participation in a coaching program, PCPs will report decreased levels of (a) burnout, (b) stress, and (c) turnover intentions, as well as increased levels of d) work engagement, (e) psychological capital, (f) compassion, (g) job self-efficacy, and (h) job satisfaction as compared to baseline values prior to coaching and to a control group.

H2a-h: Improved post-coaching levels of (a) burnout, (b) stress, (c) turnover intentions, d) work engagement, (e) psychological capital, (f) compassion, (g) job self-efficacy, and (h) job satisfaction will remain stable three- and six-months following coaching.

Method

Participants and Procedure

The study received IRB approval from [redacted for blind peer review]. Participants were recruited from four medical practices in a large city in the northeastern U.S. (both community and hospital-based settings). Inclusion criteria were currently working at least part-time as a PCP (0.5 FTE clinical practice), having 25 years or less of experience as a PCP, and not planning to retire within two years, as early and mid-career clinicians experience greater discontent and have a higher risk for turnover than more senior physicians (Dyrbye et al., 2013). Potential participants were screened for psychological distress using the SCL-10 (Nguyen et al., 1983). We used the cutoff score determined by Müller et al. (2010) of 4.0 to indicate those with high levels of psychological distress and we retained a licensed mental health professional to speak with those who reported a level of distress ≥ 4.0. All participants attained scores < 4.0.

We used the software G*Power to conduct an a priori power analysis to determine required sample size, using effect sizes from a published coaching study of the same duration that also included burnout as an outcome variable (McGonagle et al., 2014). We used a an average of all effect sizes to calculate sample size needed to attain power of .95 for between-within interactions assuming an alpha level of .01 and moderate correlations among repeated measures (.40). A sample size of $N = 44$ was attained. We over-recruited, anticipating attrition, and ended up with $N = 59$. Due to attrition, we used 50 participants to test Hypotheses 1a-1h and 39 participants to test Hypotheses 2a-2h.

The Principal Investigator (PI) contacted leaders at each medical practice and, upon agreement to host the study, secured IRB approval from each. The PI then contacted chairs of primary care departments, outlining the purposes and structure of the proposed study. In some cases, the PI met in smaller divisions directly with PCPs. The PI distributed a document outlining the essentials of participation and contact information at these meetings or via email to eligible PCPs. Interested PCPs contacted the PI for a scripted recruitment interview. PCPs agreeing to participate were sent written consents, returned and kept by the PI, and received a participant code.

Eligible participants then completed an initial survey assessing all outcome measures, and were randomized using a coin flip into either an immediate start coaching group (primary) or waitlisted control group with a six-month delay. Five coaches provided coaching for this study and were assigned coachees alternately – Coach A was assigned Participant #1, Coach B was assigned Participant #2, and so on. Each participant entered their non-identifiable code at the start of each survey to link their responses over time while preserving confidentiality.

All data were collected using online surveys; links to surveys were emailed to participants as follows: (a) six months pre-intervention (waitlisted group only), (b) three months pre-intervention (waitlisted group only), (c) immediate pre-intervention, (d) immediate post-intervention, (e) three

months post-intervention, and (f) six months post-intervention. Participants received coaching at no charge and a $50 incentive upon completion of each of the final two surveys after coaching ended ($100 total). No other monetary incentives were provided. Figure 1 shows participant flow and Figure 2 shows survey assessments used in analysis for each hypothesis by group. Initially, 29 participants were randomized to a primary group and 30 were randomized to a waitlisted group.

Table 1 contains participant demographics. In both groups, participants averaged in their early 40's in terms of age ($M = 43.41$, $SD = 8.76$ for primary group and $M = 41.83$, $SD = 7.42$ for waitlisted group). They had an average of 7.60 ($SD = 6.32$; primary) and 6.10 ($SD = 5.64$; waitlist) years of organizational tenure and 12.12 ($SD = 7.40$; primary) and 10.05 ($SD = 7.47$; waitlist) years of tenure as a PCP. Both groups were predominately female (72.4% primary; 86.2% waitlist). More than half of each group reported being the primary breadwinner in their household (65.2% primary; 51.7% waitlist). No demographic variables were significantly different between the primary and waitlisted groups.

Hypothesis 1 testing. Of the 29 primary group participants who completed the baseline survey, 26 completed the immediate post-coaching survey and were included in Hypothesis 1 testing. Of the initial 30 in the waitlisted group, one failed to complete the pre-coaching surveys and five failed to complete the three months pre-coaching survey, for a total of 24 waitlisted participants included in Hypothesis 1 testing of coaching's effectiveness.

Hypothesis 2 testing. We used a combined sample of primary and waitlisted participants who completed coaching and the follow-up surveys ($n = 39$) in order to maximize our sample for testing stability of coaching effects over time.

Study Intervention

Structure. Participants received six coaching sessions over a three-month period, with one session approximately every two weeks. The first session was 60 minutes long and focused on creating the coaching alliance, assessing strengths, and setting client-centered goals. The five remaining sessions were 30 minutes long and focused on specific topics and tools, using a client-centered action plan created in the first session. The first session was conducted face to face and the remainder were conducted by phone to accommodate the PCPs' clinical schedules. Pre-work was identified at the end of each session in preparation for the next.

Sequence. Prior to the first coaching session, participants completed the Workplace PERMA Profiler (Butler & Kern, 2016) which measures the five pillars of PERMA and workplace well-being. The individual's PERMA results were shared by the coach at the first session as a standardized focus for that first conversation. The last coaching session focused on assessing progress, defining ways to sustain success, and conducting a gratitude reflection. The second through fifth sessions utilized participant-chosen topics and a toolbox of evidence-based positive psychology coaching exercises, designed to be used flexibly based on client goals and learning preferences.

Tools. Validated tools included Workplace PERMA Profiler; VIA Character Strengths Assessment, Using Strengths in New Ways, Best Self, Mindfulness Reflections, Reframing, Social Flow, and Gratitude Reflections. Tools were selected based on their fit with the pillars of the PERMA model and research validating their effectiveness in enhancing well-being (Bolier et al., 2013; Seligman et al., 2005; Sin & Lyubomirsky, 2009). Using Kolb's learning style framework (Kolb, 1984), we selected tools that described participants' experiences both concretely (e.g., reframing) and through abstract conceptualization (e.g., best self). We also included behavior-change tools based on active experimentation (e.g., social flow) and reflective observation (e.g., mindful

reflections). Time horizons varied as well; tools focused on the past (e.g., gratitude), the present

moment (e.g., mindfulness, reframing exercises), and future possibilities (e.g., best self).

Gratitude reflection. As one example, the gratitude reflection tool had participants reflect on

positive events and associated shifts toward positive mood. Its goals are to help promote more

positive events and associated mood in the future. It included three exercise options, each of which

included a script and instructions for the coaches. For the first option, coachees were instructed to set

aside ten minutes at the end of each day for two weeks to think about and write three things that went

well and why they went well. Coaches asked participants to bring their lists to their next coaching

session to reflect on the experience. The second option was similar to the first, but rather than having

the participant write down their daily positive reflections, the coach started the session by asking the

participant to elaborate on something positive that happened since the last session (or in a shorter

timeframe). The coach followed up with questions to probe what was positive about it and what the

coachee's role was in making it happen. The third option was writing a gratitude letter. Participants

were asked to think about one person or group of people for whom they were particularly grateful

and to write a letter to that person/group, making concrete statements about how that person/group

made them feel and the impact they had on the participant's life. The participant was asked to read

the letter aloud in the next coaching session and reflected on the experience (the participant decided

whether or not to deliver the letter to person/group).

Coach backgrounds. While the five study coaches differed in terms of specific degrees and

certifications attained, all agreed on the coaching format, philosophy, and tools used in this study.

Coaches had between 11 and 25 years of professional coaching experience, and all previously

coached healthcare personnel. All held post-graduate degrees, including a doctorate in organizational

behavior and master's degrees in health psychology, human resource management, mental health

counseling, anthropology, adult and organizational learning, and health education. Credentialing organizations included the Center for Credentialing and Education, the Center for Creative Leadership, International Coach Federation, Coaches Training Institute, and Wellcoaches.

Consistency of coaching. Coaches took several steps to ensure consistency in approach. Two primary coaches who were initially part of the study planning process conducted an extensive interview process to select three additional coaches to assure fidelity to the study orientation and model. Then, the five coaches standardized the protocol before coaching began. Coaches used a standard toolbox for coaching, which contained exercises that they could use with coachees. The toolbox contained notes about how and when to use certain tools, and each tool had standardized, instructions. Before coaching started, coaches went through documentation of shared tools, revising them to add detail to directions to ensure clarity. In addition to following a common coaching model, sequence, and set of tools, the coaches discussed their work on a regular basis via conference calls. These discussions included questions about the approach, key learnings, successes and challenges, and comparison of notes to ensure consistency. If a question came up, the coach posed it to the rest of the group and everyone contributed responses. One challenge was to ensure a clear process for using each of these tools, while also allowing for individualization with each coachee. Individualization, therefore, rested mainly on the *choice of tools used*, rather than how each tool was used. The coaches were not mandated to use all of the tools available to them or the order in which they were used. This allowed for flexibility and adaptability based on individual clients' needs, goals, and work context.

Measures

The measures described below were used for both the primary and waitlisted groups. Coefficient alphas were calculated using the combined baseline survey data ($n = 59$). Mean composite scores were computed for each scale and used in analysis.

Burnout. The 22-item Maslach Burnout Index (Maslach et al.,1996) measures emotional exhaustion, depersonalization and reduced personal accomplishment on a response scale ranging from 0 (*never*) to 6 (*every day*). Internal consistency reliability (coefficient alpha; α) was .86.

Work stress. The 15-item Stress in General Scale (Stanton et al., 2001) measures pressure and threat using a response scale ranging from 0 (*no*) to 3 (*yes*). Participants rated the extent to which a series of adjectives described their job (e.g., "demanding"); $\alpha = .87$.

Turnover intentions. A three-item turnover intentions scale (Hanisch & Hulin, 1990) measured the extent to which participants thought about leaving their job, tried to find another job, and made plans to leave their job on a scale from 1 (*never or almost never*) to 4 (*often*); $\alpha = .84$.

Engagement. A 17-item engagement scale (Rich et al., 2010) measured work engagement. Respondents indicated their level of agreement with each statement (e.g., "I am enthusiastic in my job") on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*); $\alpha = .86$.

Psychological capital. The 24-item Psychological Capital Questionnaire (Luthans et al., 2007), was used, which includes items measuring hope, resilience, self-efficacy, and optimism. The response scale ranged from 1 (*strongly disagree*) to 7 (*strongly agree*); $\alpha = .94$.

Compassion. We used the five-item Santa Clara Brief Compassion Scale (Hwang et al., 2008); e.g., "I often have tender feelings toward people (strangers) when they seem to be in need." The response scale ranged from 1 (*not at all true of me*) to 7 (*very true of me*); $\alpha = .86$.

Job self-efficacy. We used a seven-item job self-efficacy scale (Chen et al., 2004). A sample item is, "I can successfully overcome obstacles at work." The response scale ranged from 1 (*strongly disagree*) to 5 (*strongly agree*); $\alpha = .86$.

Job satisfaction. We used three items from Cammann et al. (1983) to measure general job satisfaction. A sample item is, "All in all, I am satisfied with my job." The response scale ranged from 1 (*strongly disagree*) to 5 (*strongly agree*); $\alpha = .91$.

Coaching fidelity. We included six questions in the post-coaching survey to assess whether the intervention was consistent with a coaching framework (as opposed to a training or mentoring framework). These were, "Who set the coaching meeting agenda for the majority of your coaching sessions? Who did most of the talking during the coaching sessions? Did your coach tell you how to behave or what to do? Did your coach check in to see whether the session met the goals you had for the session? Did you have a "homework assignment" to do between sessions? Did your coach review your homework at the subsequent session?"

Data Analysis Procedures

Randomization check. We first used chi-square tests and *t*-tests to evaluate differences between the two groups on demographics and baseline outcome measures to determine success of randomization (equivalence at baseline). For hypothesis testing, we did not impute missing data in order to avoid chance findings; yet we used all available measures, regardless of compliance.

Hypothesis 1 testing. After conducting a repeated measures MANOVA to check for a significant omnibus *F*-test for hypothesized outcomes overall, we used repeated measures analysis of variance (ANOVA) tests for RCT tests. Statistically significant group (primary vs. waitlisted) x time (baseline/+ three months) interactions on outcomes would indicate support for Hypotheses 1a-h. In order to control for increased risk of Type 1 error given the number of tests conducted, we used a modified *p*-value of .03 to determine significance of each univariate test (additional information available from the first author). We present effect sizes (partial eta squared; η_p^2) to interpret findings in light of Cohen's (1988) recommendations (.01 = small, .06 = medium, .14 = large).

Hypothesis 2 testing. For each variable that demonstrated significant improvement from baseline to post-coaching for the primary group compared to the waitlisted group, we then examined stability via results of repeated measures ANOVAs for all participants who completed coaching and follow-up measures (immediate pre-coaching to immediate post-coaching, to three months post-coaching, to six months post-coaching).

Attrition analysis. We then ran attrition analyses (chi square tests and *t*-tests) with the goal of determining whether those who dropped out of the study were different from those who completed coaching in terms of demographics or baseline measures.

Results

Baseline Analysis

Table 1 displays results of independent *t*-tests and chi square analyses to test for differences between the immediate and waitlisted coaching groups in demographics and baseline measures. No statistically significant differences were evident for any demographic variables, so we did not include demographics as covariates in subsequent analyses. However, for baseline outcome measures, we observed a significant difference between the groups in job satisfaction: the waitlisted group had significantly higher levels of job satisfaction than the primary group at baseline, $t = -2.50$, $p < .05$. Therefore, we urge caution in interpreting these results.

Fidelity of Coaching

Table 2 contains descriptive results of responses to questions about coaching fidelity. Overall, responses indicated that the intervention was consistent with characteristics of coaching.

Effectiveness of Coaching (Hypotheses 1a-1h)

Results of a MANOVA with all eight outcome variables yielded a statistically significant Time x Group interaction *F*-test, Wilks' Lambda = .67, $F(8, 41) = 2.49$, $p = .026$, multivariate

$\eta_p^2 = .327$. As displayed in Table 3, univariate within-subjects time X group interaction ANOVA

tests yielded statistically significant interactions for burnout $F(1, 48) = 9.82$, $p = .003$, $\eta_p^2 = .075$,

engagement $F(1, 48) = 5.49$, $p = .023$, $\eta_p^2 = .103$, psychological capital $F(1, 48) = 10.39$, $p =$

$.002$, $\eta^2 = .178$, and job satisfaction $F(1, 48) = 5.74$, $p = .021$, $\eta_p^2 = .107$. However, no

statistically significant interactions were found for job stress $F(1, 48) = 3.26$, $p = .077$, $\eta_p^2 = .064$,

turnover intentions $F(1, 48) = 3.65$, $p = .062$, $\eta_p^2 = .071$, compassion $F(1, 46) = 0.08$, $p = .784$,

$\eta_p^2 = .002$, or job self-efficacy $F(1, 48) = 0.25$, $p = .62$, $\eta_p^2 = .005$. Hypotheses 1a, 1d, 1e, and 1h

were supported by the results, but Hypotheses 1b, 1c, and 1f, and 1g were not supported. Time

by group effect sizes were moderate-to-large for burnout (H1a), engagement (H1d), and job

satisfaction (H1h), and large for psychological capital (H1e).

Stability of Results (Hypotheses 2a-2h)

We then combined survey results from all study participants who completed coaching

and examined change trajectories in outcome variables from immediate pre-coaching through six

months post-coaching. We used repeated measures ANOVAs, which use listwise deletion to

handle missing data. Results are in Tables 4 and 5. Table 4 contains means for each time point

and multivariate, linear, and quadratic F-tests to provide an overview of trajectories and omnibus

testing prior to examining multiple comparisons. Table 5 contains multiple comparison t-test

results for: a) immediate pre- to immediate post-coaching, b) immediate post-coaching to three

months post-coaching, and c) immediate post-coaching to six months post-coaching for H2a-h.

As displayed in Table 4, we observed significant quadratic effects for psychological

capital, job satisfaction, job stress, turnover intentions, and job self-efficacy, in addition to

significant linear effects (except for turnover intentions, which lacked a significant linear effect).

Examination of the means revealed that, after an improvement in the variable from pre-coaching

to post-coaching, the variable leveled off. Multiple comparison test results in Table 5 indicate that there were no significant declines between the immediate post-coaching assessment and the three months post-coaching assessment for any variables. However, significant changes between immediate post-coaching and six months post-coaching were observed for turnover intentions (which increased) and compassion (which also unexpectedly increased during that time).

As displayed in Table 5, burnout, turnover intentions, and job stress significantly decreased from immediate pre- to immediate post-coaching while engagement, psychological capital, job satisfaction, and job self-efficacy significantly increased during the same period as expected. Compassion, however, remained stable during this time. As noted, there were no significant differences between immediate post-coaching and three months post-coaching for any variable. In addition, variable scores remained stable for an additional three months (i.e., six months post-coaching) for burnout, engagement, psychological capital, job satisfaction, job stress, and job self-efficacy. This provides evidence for stability of effects post-coaching. In order to report conservatively, we considered only variables that demonstrated statistically significant improvement by group over time from Hypothesis 1 (burnout, engagement, psychological capital, and job satisfaction) for Hypothesis 2. Accordingly, we found support for Hypotheses 2a (burnout), 2d (engagement), 2e (psychological capital), and 2h (job satisfaction).

Although turnover intentions did not decrease from immediate pre-coaching to immediate post-coaching when compared to the control group for H1c testing, it did show a significant decline overall during this period for all people who completed coaching as noted and this decline remained constant from immediate post-coaching to the three-month follow-up. However, turnover intentions then showed a significant unexpected increase three months later,. As noted, compassion levels did not improve from immediate pre-coaching to immediate post-

coaching compared to the waitlisted group; nor did they increase from immediate pre-coaching to immediate post-coaching as noted in Table 5. Yet, compassion levels did significantly increase later, between the three-month and six-month post-coaching follow-up.

Attrition Analyses

As noted, we used 50 participants for Hypothesis 1a-h and 39 participants for Hypotheses 2a-h). Of the 29 individuals enrolled in the primary coaching group, 28 completed the full coaching intervention. One participant dropped out during the coaching and an additional three left after completing coaching. Of the 30 individuals enrolled in the waitlisted group, five (16.7%) attrited during the waitlist period, an additional four (13.3%) dropped out during the coaching engagement, and three more (10%) left after completing coaching. Overall, 16 of the 59 participants dropped out (27%), four of 29 (13.8%) from the primary group and 12 of 30 (40%) from the waitlisted group. We compared attriters and completers on baseline outcomes and demographics, and no differences emerged between them on any of those measures.

Supplemental Results

The Online Supplement contains a full correlation matrix with alphas at each time point, along with a table with results of intent-to-treat analyses. We re-analyzed the data using Full information maximum likelihood (FIML) and imputing missing data, and results were similar for all outcomes except for job satisfaction, which became non-significant.

Discussion

Study results demonstrated that coaching is a helpful intervention for improving PCP burnout, engagement, and psychological capital. We found improvements to each of these variables for a primary coaching group from pre- to post-coaching when compared to the same time points for a waitlisted control group, and improvements were sustained at follow-up three-

and six-months post-coaching. These findings underscore our proposition that positive psychology coaching builds internal client resources that foster positive emotion, resilience and well-being by providing space and support for client reflection, goal directed behavior, and personal growth. Yet, we did not find unequivocal support for coaching having benefits for job satisfaction, job stress, turnover intentions, compassion, or job self-efficacy.

Coaching as a Unique Intervention

The one-on-one nature of coaching means that it is individualized for a specific coachee's work-related issues and context. This was important, because coachees in this study worked in a variety of settings and brought different issues with them into coaching. In contrast, coachees would likely see a one-size-fits-all training approach as not reflective of their experiences. Coaching also is coachee-driven, which is important for promoting feelings of empowerment and efficacy. As described in the Results, we found support for our intervention being consistent with coaching (as opposed to mentoring or training). Coachees mainly reported that they set agendas for sessions or co-set agendas with coaches, that they talked as much or more as the coach during sessions, and that their coach did not give them advice or direction.

Although we posit that coaching would be more effective than other types of interventions for the purposes of promoting well-being and alleviating burnout in PCPs, we cannot test that in this study. Studies assessing relative effectiveness of coaching versus other interventions are rare (Blackman et al., 2016). We suggest future research in this area, concurring with Smither (2011, p. 140) who states, "Especially given the expense associated with executive coaching, it is important that research shows that it is more efficacious than widely available (and sometimes less expensive) alternatives such as formal training and on-the-job coaching

from the executive's manager." Yet, we note that in health care settings such as in this study, it is unlikely managers would be able to devote the time necessary to provide such coaching.

Recap of Hypothesis Testing Results

Our findings that coaching helps with physician *burnout* align with those of Dyrbye et al. (2019), who reported improvements in overall physician burnout after coaching. Interestingly, the authors did not find improvements in engagement or job satisfaction; in contrast, we did find full support for engagement and limited support for job satisfaction, as we discuss in detail below. We proposed that coaching would alleviate PCP burnout by helping to build personal resources, reframe situations, see opportunities to craft their jobs, and promote positive emotion. While we found support for coaching being associated with decreased burnout, we are unable to test specific mechanisms of change with the current study, so we do not know *how* coaching helps to diminish burnout. We suggest that researchers propose and test these in future studies.

As noted, we did observe a significant effect of coaching on *psychological capital*, which is a specific personal resource that may help PCPs manage stress and prevent or alleviate burnout. This aligns with findings from Roche et al. (2014) who found a negative relationship between psychological capital and burnout in four samples of leaders. Despite calls for coaching for psychological capital (Peterson et al., 2008), we were only able to find one other study that examined psychological capital as an outcome of coaching (Sherlock-Storey et al., 2013); the authors found that coaching improved three of four components of psychological capital (resilience, hope and optimism - but not efficacy). Our study contributes to the literature as one of the first to test the effects of coaching on psychological capital.

We proposed that coaching would positively affect PCP *engagement* through focusing on strengths and crafting their work. Through boosting relational aspects of their work and/or

changing the tasks to focus more on strengths, PCPs may actively help create conditions in which they can feel engaged at work. Although we found support for coaching positively affecting engagement, and the literature touts the effectiveness of some forms of job crafting for worker engagement more generally (Kuijpers et al., 2019), we cannot say whether coaching actually caused coachees to craft their jobs, and that crafting improved engagement. We encourage future researchers to measure this possible mechanism of change in future studies.

As noted, our study variables did not unequivocally improve as hypothesized, and our transparency in reporting these outcomes is important, as publication bias may exist in the coaching literature (Athanasopoulou & Dopson, 2018). Although we observed a significant increase in *job satisfaction* for the primary group compared to the waitlisted group, we noted caution in interpreting this because of the difference between the two groups at baseline and the lack of statistical significance in our supplemental analyses. On the other hand, job satisfaction did demonstrate significant improvements from immediate pre- to immediate post-coaching for all participants combined, and these improvements were sustained during follow up.

By reflecting on what brings them joy at work and working to increase opportunities for joy, coaching should help participants be happier in their jobs. Yet, we also note that coaching cannot change structural aspects of the job or working environment that may contribute to job (dis)satisfaction. Along with Dyrbye et al. (2019), we urge organizations to include coaching alongside structural changes to work and the work environment to promote well-being in PCPs. Although combined individual and organizational/structural interventions seem especially promising, no intervention studies have addressed both (Panagioti et al., 2017; West et al., 2016). We urge future researchers to consider both when designing intervention studies.

As noted, individuals who feel supported by their organizations that are providing them with coaching (thus signaling care for their well-being and development) will likely experience positive work-related attitudes (satisfaction and commitment) and be less likely to want to leave the organization (Eisenberg & Stinglhamer, 2011). However, because coaching in this study was provided by the study sponsor and not the employing organizations, this benefit was not able to be realized. One possible avenue for future research, therefore, is whether sponsorship of coaching (employing organization or not) makes a difference in coaching's effectiveness on job satisfaction, organizational commitment, and turnover intentions.

Evidence from the literature supports this assertion. Linzer and colleagues (2015) examined improved communication between clinical team members, changes in workflow, and targeted quality improvements (QI) as helping to reduce burnout, dissatisfaction, and intent to leave. They found that workflow interventions and QI projects led to reductions in burnout, while changes in workflow and team communication contributed to clinician satisfaction and reduced intention to leave the practice. In addition, West et al. (2016) concluded from their literature review that both individually focused interventions and those involving structural and/or organizational change led to meaningful reductions in physician burnout.

Although *compassion* did not significantly increase from pre- to post-coaching, it did significantly increase from immediate post-coaching to the six-month follow up. This is unexpected, though interesting and could possibly suggest a delayed effect of coaching on other-focused outcomes as opposed to more personal, self-focused well-being outcomes. It is possible that coaching has a more immediate effect on proximal self-focused states and a delayed effect on how clients interact with and perceive others. We interpret this result with caution because the

group x time differences were non-significant for compassion. Yet, we believe this is worthy of further exploration and suggest this as a future research direction for the coaching literature.

The reader might ask why we observed significant time-by-group interaction effects for psychological capital and burnout, which also contain self-efficacy items, yet not for the job self-efficacy measure itself. One possible reason for this is that burnout and psychological capital measures are broad and include other components. For burnout, exhaustion and cynicism are also included; for psychological capital, hope optimism, and resilience are also included. The job self-efficacy scale is, in contrast, specific to the job itself and includes such items as "I can successfully overcome obstacles at work" (Chen et al., 2004). It is possible that PCPs feel efficacious while simultaneously feeling exhausted, depleted, and lacking in engagement. It is also possible that job self-efficacy requires the procurement of resources (e.g., staffing) not realistically within the PCP's agency. Further, we speculate that improving job self-efficacy might have required a specific focus of coaching to help coachees identify and accept where they do and do not have agency in re-configuring their jobs. This is another possible direction for future research.

Temporal Effects of Coaching Benefits

We note there are likely temporal aspects to the benefits of coaching. It could be, for instance, that, as a personal resource, psychological capital improves more proximally, and that this improvement to psychological capital is later followed by improvements to more distal work-related outcomes, such as burnout and engagement. This makes sense conceptually because improvements to proximal psychological capital could lead to changes in work behaviors (e.g., more effective coping or job crafting), which may, in turn, ultimately affect more distal work-related outcomes (i.e., burnout and engagement). Theoretically, this also aligns with the broaden-and-build theory (Fredrickson, 2001), which states that positive emotions broaden

individuals' awareness, which predict improvements to personal resources, and in turn, improvements to well-being. We suggest that future research identify proximal and distal outcomes of coaching and build study designs to capture potential temporal processes.

Summary of Empirical Contributions

Overall, our study contributes to the relatively small literature base on interventions to address both personal and work-related outcomes for PCPs, and is one of the only to test the effects of coaching on psychological capital. In addition, we built our study methods to address common criticisms in the literature of existing interventions for physician burnout. Notably, we used a randomized design with a control group, which despite being a rigorous design is rare (Jones et al., 2016); and was only found in 29% of physician burnout intervention studies (West et al., 2016). Coaching studies in general, are also often criticized for their lack of long-term follow-up (e.g., Athanasopoulou & Dopson, 2018), and reviews of physician interventions share this finding (Clough et al., 2017; West et al., 2016). Our study responded to this criticism by incorporating six months of follow-up into the design. By doing so, we were able to demonstrate that measured outcome improvements during coaching remained stable over the course of six months post-intervention, along with a delayed effect of coaching on PCP compassion as noted.

Practical Implications

We offer some practical recommendations based on our experiences in this study. First, in terms of working with PCPs, coaches should strive to make coaching as user-friendly as possible, since PCPs are often overworked. For example, make the sessions relatively brief (ours were 30 minutes), conduct them by phone, and offer convenient times (e.g., early morning and late evening). In terms of topics, coaches for PCPs should expect to discuss common issues around practice efficiency, delegation, and working with a team. Some coachees voiced a desire

for a longer coaching intervention (i.e., they wanted to continue beyond six sessions to seven

sessions or more). Although we did not continue coaching beyond six sessions for study

participants, we offer a suggestion for future research to examine length of coaching. Theeboom

et al. (2014) did not find an effect of number of coaching sessions on outcomes; neither did Jones

et al. (2016).

Burnout may be considered a significant clinical issue, and this intervention was not

meant to address clinical issues. Green et al. (2006) found clinically significant levels of distress

in 52 percent of their coachees, suggesting that it is important for all coaches to be aware of and

plan for clinical referrals (Grant, 2010). As noted, we assessed participants' psychological distress

at screening; we encourage future researchers and practitioners to do the same and to differentiate

coaching from clinical care at the start of coaching. Future research may find that coaching is

effective for other physicians facing high levels of burnout (e.g., emergency medicine and

OB/Gyn; Peckham, 2018). Some of the coaches who worked on this study have anecdotally

observed benefits of a similar positive psychology coaching approach with orthopedists,

radiologists, pathologists, and anesthesiologists.

Limitations and Additional Directions for Future Research

Despite its strengths, our study is not without limitations. First, although we assert that

coaching for PCP well-being is best implemented alongside broader organizational change

efforts, we do not have data to corroborate this assertion. Therefore, one area for future research

is to empirically test the additive and/or moderating effects of organizational change and

supervisor/leader support for PCP well-being alongside coaching. A second limitation is our sole

use of participant self-report outcome measures. We excluded physiological measures of stress

responses and health indicators, others' (supervisor, patient, or coworker) reports. We did this

purposely to make the study convenient and to protect PCPs privacy, yet such measures may be useful in future studies. Objective outcome measures (productivity or clinical quality metrics) may also be appealing to potential coaching sponsors. Third, although we took care to standardize coaching delivery, we did not collect data on coaches' adherence to protocol and the specific tools used for each participant, and recommend future researchers consider this.

In terms of sample representativeness, our participants were primarily female, and future researchers should make efforts to recruit male participants. Our sample average age was 42.62 (*SD*=8.08) and average tenure as PCPs was 11.09 years (*SD* = 7.44). We do not have adequate data to test whether coaching "works" differently to reduce burnout and improve well-being by career stage, but we suggest this as an area for future research. For example, if coaching was offered to early career PCPs, would it help prevent or reduce later burnout?

Attrition could also have caused sample bias that affected our study results; it is possible that if attritors had completed the intervention, they would not have done as well as those who stayed. We initially excluded attritors (per protocol analysis); however, as noted, we re-ran the analyses using an intent-to-treat framework and found similar results except for job satisfaction.

Sample bias could have also occurred because PCPs self-selected into the intervention; we would expect coaching to be more effective for PCPs who are motivated to participate. Blackman et al. (2016) note that some studies found coachee motivation to enhance coaching effectiveness (e.g., Audet & Couteret, 2012). Yet, as most participants are motivated, restricted variability in coaching motivation limits the conclusions that can be drawn about its effects (Blackman et al., 2016). Grover and Furnham (2016) found inconsistent evidence for the effects of pre-coaching motivation. Bozer et al. (2014) found that coachee pre-coaching motivation was associated with a stronger relationship between coachee learning goal orientation and self-

reported job performance; yet Sonesh et al. (2015) found that coachee motivation was not related to insight and goal attainment outcomes in executives. In sum, we cannot test whether coaching had better effects on those who were motivated, and the research base for this is inconsistent. Yet, we think that readers should keep motivation and attrition in mind when interpreting results.

Conclusion

Our findings suggest that coaching is an effective intervention to promote psychological capital and engagement and address burnout in PCPs. We recommend that organizations make coaching available to help promote PCP well-being. We also recommend that organizations implement broader supportive systemic changes to job design, workflow, and work environment alongside individual coaching.

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Table 1

Participant Demographics, Measures at Baseline, and Coefficient Alphas

	Primary Group (*n* = 29)	Waitlisted Control (*n* = 29)		All Combined (*n* = 58)
Measures (Demographic)	Mean (SD)	Mean (SD)	*t* or X^2	Scale α
Age	43.41 (8.76)	41.83 (7.42)	0.74	--
Hours Worked per Week (Intervals)[a]	5.03 (1.32)	4.59 (1.30)	1.30	--
Organizational Tenure	7.60 (6.32)	6.10 (5.64)	0.95	--
Tenure as a Primary Care Physician	12.12 (7.40)	10.05 (7.47)	1.06	--
Gender (Female)	72.41%	86.21%	1.68	--
Breadwinner Status	65.52%	51.72%	1.14	--
Responsible for any Children at Home	51.72%	68.97%	1.80	--
Responsible for any Dependent Adults	27.59%	20.69%	0.89	--
Measures (Study Outcomes)	Mean (SD)	Mean (SD)	*t*	Scale α
Burnout	2.44 (0.74)	2.36 (0.69)	0.42	.86
Job Stress	2.10 (0.76)	2.16 (0.48)	-0.39	.87
Turnover Intentions	2.16 (0.95)	1.90 (0.76)	1.18	.84
Work Engagement	5.65 (0.80)	5.89 (0.82)	-1.11	.86
Psychological Capital	4.03 (0.67)	4.24 (0.65)	-1.21	.94
Sense of Compassion	5.39 (0.97)	5.54 (1.03)	-0.60	.86
Job Self-Efficacy	3.73 (0.64)	3.47 (0.68)	1.49	.86
Job Satisfaction	3.51 (0.93)	4.01 (0.57)	-2.50*	.91

Note. α = coefficient alpha. [a]Categorized as < 10 (1); 11-20 (2); 21-30 (3); 31-40 (4); 41-50 (5); 51-60 (6); 61-70 (7); 71-80 (8); >80 (9). The one variable with significant baseline differences between groups in participant demographics or measures at baseline at *p* < .05 is job satisfaction (as indicated by *). The waitlisted group had significantly higher levels of job satisfaction than the primary group at baseline.

Table 2

Participant Responses to Coaching Fidelity Questions

Who set the coaching meeting agenda for the majority of your coaching sessions?	47.5% "about half and half"	23.7% "I mainly set the agenda"	6.8% "the coach mainly set the agenda"	
Who did most of the talking during the coaching sessions?	49.2% "about half and half"	25.4% "I talked more"	3.4% "the coach talked more"	
Did your coach tell you how to behave or what to do?	40.7% "not at all"	28.8% "a little bit"	1.7% "a moderate amount"	6.8% "a lot of the time"
Did your coach check in to see whether the session met the goals you had for the session?	69.5% "every session"	5.1% "more than half the sessions"	1.7% "about half the sessions"	1.7% "not at all"
Did you have a homework assignment to do between sessions?	66.1% "between every session"	11.9% "once or twice"		
Did your coach review your homework at the subsequent session?	62.7% "every session"	13.6% "more than half the sessions"	1.7% "about half of the sessions"	

Note: N = 38.

Table 3

Group x Time Differences between Primary and Waitlisted Groups

Outcome Measures		Primary Group (n = 26) Mean (SD)	Waitlisted Group (n = 24) Mean (SD)	F	p	Partial η²
Burnout				9.82**	.003	.075
	Pre	2.32 (0.68)	2.37 (0.71)			
	Post	1.97 (0.72)	2.45 (0.72)			
Job Stress				3.26	.077	.064
	Pre	2.04 (0.77)	2.13 (0.45)			
	Post	1.72 (0.76)	2.09 (0.57)			
Turnover Intentions				3.65	.062	.071
	Pre	2.05 (0.91)	1.75 (0.67)			
	Post	1.82 (0.85)	1.76 (0.76)			
Engagement				5.49*	.023	.103
	Pre	5.73 (0.78)	5.87 (0.88)			
	Post	6.06 (0.68)	5.92 (0.68)			
Psychological Capital				10.39**	.002	.178
	Pre	4.08 (0.69)	4.23 (0.68)			
	Post	4.63 (0.68)	4.39 (0.74)			
Compassion				0.08	.784	.002
	Pre	5.47 (0.93)	5.48 (0.99)			
	Post	5.63 (0.83)	5.58 (1.01)			
Job Self-Efficacy						
	Pre	3.78 (0.66)	3.46 (0.72)	0.25	.62	.005
	Post	4.01 (0.60)	3.61 (0.70)			
Job Satisfaction				5.74*	.021	.107
	Pre	3.59 (0.95)	4.11 (0.54)			
	Post	3.91 (0.80)	4.04 (0.53)			

Note. *$p < .03$. ** $p < .01$. Because job satisfaction was significantly higher for the waitlisted group at baseline, this result should be interpreted with caution.

Table 4

Effects over Time for All Participants who Completed Coaching and Follow-Up Surveys

		Pre-Coaching	Post Coaching	3 mo. Post-Coaching	6 mo. Post-Coaching	Multi-variate F-Test	Contrast F Linear Effect	Linear Effect Size	Contrast F Quadratic Effect	Quadratic Effect Size
Measure	*n*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*F(sig)*	*F(sig)*	*Partial η^2*	*F(sig)*	*Partial η^2*
Burnout	39	2.39 (0.67)	2.10 (0.62)	2.08 (0.66)	2.08 (0.80)	5.22**	10.12**	.210	7.19	.016
Engagement	38	5.77 (0.68)	6.00 (0.55)	5.95 (0.59)	6.02 (0.62)	3.82*	5.57*	.131	3.31	.082
Psych. Capital	39	4.18 (0.63)	4.56 (0.62)	4.64 (0.54)	4.54 (0.61)	14.75**	19.24**	.336	40.08**	.513
Job Satisfaction	38	3.69 (0.81)	4.01 (0.66)	3.95 (0.56)	3.85 (0.80)	5.15**	1.06	.028	13.37**	.265
Job Stress	38	2.14 (0.65)	1.84 (0.63)	1.87 (0.63)	1.97 (0.64)	5.12**	4.32*	.105	12.88**	.258
Turnover Intentions	38	2.00 (0.87)	1.79 (0.70)	1.78 (0.71)	2.05 (0.93)	4.76**	0.35	.009	13.93**	.274
Compassion	39	5.53 (0.96)	5.53 (0.88)	5.69 (0.92)	5.86 (0.97)	3.82*	8.02**	.17	0.27	.049
Job Self-Efficacy	38	3.67 (0.62)	3.95 (0.57)	3.83 (0.55)	3.90 (0.61)	6.00**	6.06*	.141	4.54*	.110

Note. Italicized measures were found to have significant improvements from baseline (pre-coaching) to post-coaching in time x group interaction tests for Hypothesis 1 and are used for Hypothesis 2 testing. Results for other variables are displayed here for completeness. *$p< .05$, **$p < .01$.

Table 5

Multiple (Paired) Comparisons Testing for Pre- versus Post-Coaching, Post-Coaching to +3 Months, and Post-Coaching to +6 Months

Measure	n	Pre-Coaching Mean (SD)	Post Coaching Mean (SD)	Pre- v. Post-Coaching Mean Diff. (sig)	3 mo. Post-Coaching Mean (SD)	Post-Coaching v. + 3 Months Mean Diff. (sig)	6 mo. Post-Coaching Mean (SD)	Post-Coaching v. +6 Months Mean Diff. (sig)
Burnout	39	2.39 (0.67)	2.10 (0.62)	.282**	2.08 (0.66)	.027 (*ns*)	2.08 (0.80)	.028 (*ns*)
Engagement	38	5.77 (0.68)	6.00 (0.55)	-.228*	5.95 (0.59)	.039 (*ns*)	6.02 (0.62)	-.020 (*ns*)
Psych. Capital	39	4.18 (0.63)	4.56 (0.62)	-.386**	4.64 (0.54)	-.079 (*ns*)	4.54 (0.61)	.025 (*ns*)
Job Satisfaction	38	3.69 (0.81)	4.01 (0.66)	-.316*	3.95 (0.56)	.061 (*ns*)	3.85 (0.80)	.158 (*ns*)
Job Stress	38	2.14 (0.65)	1.84 (0.63)	.302*	1.87 (0.63)	-.025 (*ns*)	1.97 (0.64)	-.132 (*ns*)
Turnover Intentions	38	2.00 (0.87)	1.79 (0.70)	.211*	1.78 (0.71)	.009 (*ns*)	2.05 (0.93)	-.263*
Compassion	39	5.53 (0.96)	5.53 (0.88)	-.001 (*ns*)	5.69 (0.92)	-.154 (*ns*)	5.86 (0.97)	-.325**
Job Self-Efficacy	38	3.67 (0.62)	3.95 (0.57)	-.283**	3.83 (0.55)	.125 (*ns*)	3.90 (0.61)	.049 (*ns*)

Note. N= 39 completed all follow-up surveys; one participant failed to complete measures for engagement, job stress, job satisfaction, turnover intentions and job self-efficacy at three-months post-coaching. Italicized measures were found to have significant improvements from baseline (pre-coaching) to post-coaching in time x group interaction tests for Hypothesis 1 and are used for Hypothesis 2 testing. Results for other variables are displayed here for completeness. **p< .05, **p < .01.*

Figure 1. CONSORT Participant Flow Diagram

Primary Group

Coaching Intervention

| Baseline Survey | → | Post-coaching survey | → | Follow-up Survey 1 | → | Follow-up Survey 2 |

3 mths.   *3 mths.*   *3 mths.*

Hypotheses 1 a-h
(primary vs. waitlist groups)

Hypotheses 2 a-h
(combined primary & waitlist groups)

Waitlisted Group

Coaching Intervention

| Pre-baseline Survey | → | Baseline Survey | → | Post-coaching Survey | → | Follow-up Survey 1 | → | Follow-up Survey 2 |

3 mths.   *3 mths.*   *3 mths.*   *3 mths.*

Hypotheses 1 a-h
(primary vs. waitlist groups)

Hypotheses 2 a-h
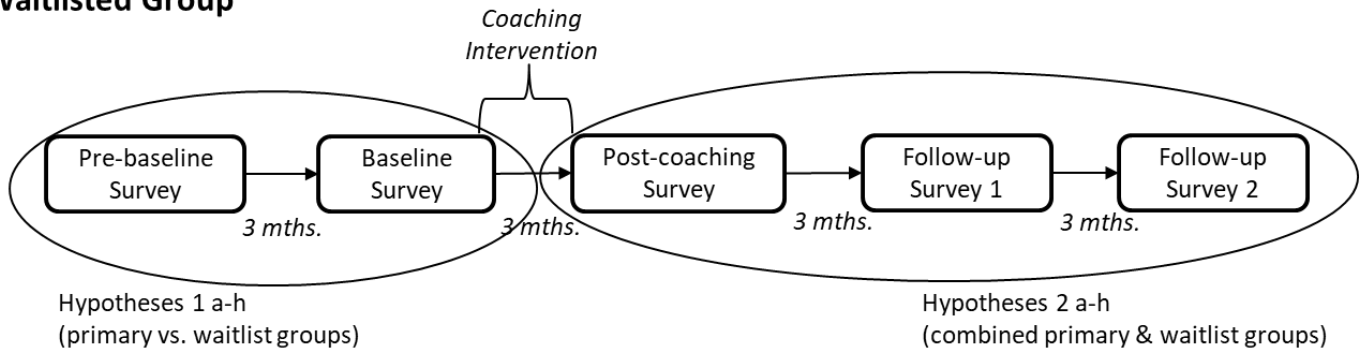(combined primary & waitlist groups)

Figure 2. Study Assessments used for Hypothesis Testing

Online Supplemental Information

Coaching Elements and Tools and Rationales

Coaching Element or Tool	Rationale(s)
Coaches helped reframe negative situations or situations for which coachees felt a lack of competence or control	• Positive appraisals build personal resources (Fredrickson, 2001). • Stepping back and seeing alternate ways to view existing situations can result in seeing problems as opportunities, weaknesses as strengths, or long-term options as nearer-term possibilities. This may have effects on work engagement, psychological capital, and job self-efficacy. • May increase coachees' confidence (Bandura, 1977) and help them see possibilities for action, improving self-efficacy and engagement. • Some situations may be perceived as less threatening; increased personal resources generated may lead to decreased stress (Lazarus, 1991).
Coachee-centered goal setting	• Agentic conation builds psychological capital (Luthans & Youssef-Morgan, 2017). • Goal setting and achievement can enhance self-efficacy.
Coachees walk through work work-related scenarios with the coach	• Helps build a sense of mastery that is important for self-efficacy (Bandura, 1977).
Mindfulness tool: recognizing and reflecting on one's internal experience - observing breathing patterns, internal dialogue, and reflections	• Enables clients to be more fully aware and present in the current moment and less reactive to stress.
Coachees reflected on recent experiences that brought them joy (e.g., mentoring others), and described ways to increase the frequency of these experiences at work	• Increased awareness of joyful experiences supports a broadened perspective on what is possible and where there are opportunities for action to sustain and build on their job satisfaction. Knowing possibilities can help spur engagement.
Gratitude Tools: these tools are described in the manuscript text	• Helping coachees identify and increase joyful experiences and pausing to be grateful helps build job satisfaction and engagement.
Various Strengths-based tools • PERMA Profiler: provided a snapshot of coachees' strengths • Best Self tool: encourages coachees to tap into their best self (including values and strengths) to identify what they do when they are at their best • Values in Action (VIA) assessment: identifies coachees' strengths and helps them focus on what they can do to leverage their strengths in greater ways at work (Peterson & Seligman, 2004) • Using Strengths in New Ways tool: coachees selected a top strength and found a designated time to exercise the strength in a new way	• Reminding coachees of their strengths helps promote self-efficacy (Bandura, 1977). • Helps to increase positive emotion, control, and optimism when faced with difficult situations, high expectations and competing demands (see Carrillo et al., 2019) • Lays groundwork for coachees to redesign their roles to focus more on strengths, delegate those responsibilities that are not within their strengths, or work within a team in which people collaborate to address these issues. By recognizing strengths and applying them to redesign work, coaching should improve satisfaction and engagement. • Helps coachees expand capacity and skills in new ways or in new situations, increasing self-efficacy and psychological capital.

Online Supplemental Information

Correlations and Coefficient Alphas at Baseline, Post-Coaching, Three Month and Six Month Follow-Up

		1	2	3	4	5	6	7	8
1	Burnout [T1]	(.89)							
2	Engagement [T1]	-.344*	(.94)						
3	Psychol.Capital [T1]	-.678**	.595**	(.94)					
4	Job Satisfaction [T1]	-.578**	.498**	.723**	(.85)				
5	Stress [T1]	.679**	-.089	-.535**	-.472**	(.88)			
6	Turnover Intention [T1]	.263	-.276*	-.424**	-.686**	.417**	(.86)		
7	Compassion [T1]	-.166	.438**	.244	.135	.095	.014	(.87)	
8	Job Self-Efficacy [T1]	-.549**	.463**	.718**	.402**	-.459**	-.221	.163	(.86)
9	Burnout [T2]	.696**	-.157	-.505**	-.543**	.464**	.238	.188	-.338*
10	Engagement [T2]	-.320*	.809**	.446**	.379**	-.048	-.249	.259	.324*
11	Psychol. Capital [T2]	-.483**	.443**	.760**	.560**	-.327*	-.340*	.054	.515**
12	Job Satisfaction [T2]	-.418**	.317*	.400**	.559**	-.332*	-.376**	.007	.305*
13	Stress [T2]	.476**	.121	-.377**	-.485**	.617**	.322*	.225	-.282
14	Turnover Intention [T2]	.214	-.210	-.306*	-.560**	.226	.787**	.023	-.118
15	Compassion [T2]	-.270	.474**	.294*	.273	.127	-.112	.708**	.141
16	Job Self-Efficacy [T2]	-.473**	.504**	.692**	.558**	-.287	-.287	.020	.688**
17	Burnout [T3]	.710**	-.227	-.510**	-.474**	.539**	.204	.137	-.424**
18	Engagement [T3]	-.269	.652**	.379*	.303*	-.023	-.141	.401**	.419**
19	Psychol. Capital [T3]	-.461**	.343*	.675**	.407**	-.282	-.121	.133	.577**
20	Job Satisfaction [T3]	-.546**	.310*	.470**	.623**	-.463**	-.493**	.095	.329*
21	Stress [T3]	.600**	.193	-.305*	-.426**	.759**	.368*	.132	-.153
22	Turnover Intention [T3]	.174	-.160	-.333*	-.596**	.301*	.828**	.046	.049
23	Compassion [T3]	-.165	.428**	.207	.194	.245	.026	.746**	.070
24	Job Self-Efficacy [T3]	-.458**	.429**	.723**	.467**	-.216	-.249	.077	.705**
25	Burnout [T4]	.703**	-.045	-.450**	-.326*	.460**	.149	.232	-.412**
26	Engagement [T4]	-.248	.648**	.398**	.215	.144	.049	.382*	.448**
27	Psychol. Capital [T4]	-.481**	.310*	.651**	.386*	-.299	-.186	-.034	.509**
28	Job Satisfaction [T4]	-.352*	.113	.409**	.435**	-.329*	-.374*	-.166	.381*
29	Stress [T4]	.521**	.196	-.274	-.282	.723**	.325*	.393**	-.184
30	Turnover Intention [T4]	.192	.057	-.334*	-.510**	.387*	.773**	.335*	-.239
31	Compassion [T4]	-.306*	.445**	.318*	.252	.182	-.024	.653**	.135
32	Job Self-Efficacy [T4]	-.470**	.465**	.664**	.362*	-.219	-.194	.039	.767**

Notes. T1=Baseline (pre-coaching; *n*= 54); T2=immediately post-coaching (*n*= 47); T3=3 months post-coaching (*n* = 44); T4=6 months post-coaching (*n*= 43). * *p* < .05; ** *p* < .01; *** *p* < .001. Coefficient alphas along diagonal.

Online Supplemental Information, continued

Correlations and Coefficient Alphas at Baseline, Post-Coaching, Three Month and Six Month Follow-Up

		9	10	11	12	13	14	15	16
1	Burnout T1								
2	Engagement T1								
3	Psychol.Capital T1								
4	Job Satisfaction T1								
5	Stress T1								
6	Turnover Intention T1								
7	Compassion T1								
8	Job Self-Efficacy T1								
9	Burnout T2	(.86)							
10	Engagement T2	-.258	(.93)						
11	Psychol. Capital T2	-.563**	.581**	(.94)					
12	Job Satisfaction T2	-.452**	.489**	.584**	(.84)				
13	Stress T2	.628**	-.043	-.529**	-.462**	(.78)			
14	Turnover Intention T2	.341*	-.321*	-.373**	-.583**	.368*	(.83)		
15	Compassion T2	-.145	.494**	.341*	.127	.053	-.071	(.85)	
16	Job Self-Efficacy T2	-.622**	.539**	.720**	.563**	-.470**	-.387**	.193	(.86)
17	Burnout T3	.803**	-.366*	-.594**	-.448**	.576**	.321*	-.049	-.642**
18	Engagement T3	-.184	.837**	.551**	.476**	-.035	-.228	.513**	.537**
19	Psychol. Capital T3	-.534**	.456**	.810**	.407**	-.424**	-.245	.202	.707**
20	Job Satisfaction T3	-.487**	.534**	.629**	.761**	-.491**	-.563**	.327*	.466**
21	Stress T3	.556**	.008	-.307*	-.350*	.708**	.338*	.011	-.268
22	Turnover Intention T3	.196	-.262	-.401**	-.490**	.295	.832**	-.081	-.240
23	Compassion T3	-.097	.403**	.237	.048	.105	.009	.851**	.115
24	Job Self-Efficacy T3	-.469**	.474**	.679**	.322*	-.311*	-.254	.169	.773**
25	Burnout T4	.815**	-.291	-.536**	-.423**	.593**	.291	-.063	-.536**
26	Engagement T4	-.189	.860**	.498**	.303	.006	-.020	.442**	.534**
27	Psychol. Capital T4	-.575**	.568**	.863**	.486**	-.515**	-.360*	.078	.677**
28	Job Satisfaction T4	-.548**	.345*	.680**	.789**	-.609**	-.556**	.021	.603**
29	Stress T4	.574**	-.032	-.379*	-.293	.728**	.348*	.152	-.271
30	Turnover Intention T4	.387*	-.074	-.429**	-.505**	.561**	.817**	.126	-.410**
31	Compassion T4	-.175	.501**	.281	.159	.062	-.126	.793**	.188
32	Job Self-Efficacy T4	-.502**	.643**	.663**	.322*	-.345*	-.258	.223	.796**

Notes. T1=Baseline (pre-coaching; *n*= 54); T2=immediately post-coaching (*n*= 47); T3=3 months post-coaching (*n* = 44); T4=6 months post-coaching (*n*= 43). * *p* < .05; ** *p* < .01; *** *p* < .001. Coefficient alphas along diagonal.

Online Supplemental Information, continued

Correlations and Coefficient Alphas at Baseline, Post-Coaching, Three Month and Six Month Follow-Up

		17	18	19	20	21	22	23	24
1	Burnout T1								
2	Engagement T1								
3	Psychol.Capital T1								
4	Job Satisfaction T1								
5	Stress T1								
6	Turnover Intention T1								
7	Compassion T1								
8	Job Self-Efficacy T1								
9	Burnout T2								
10	Engagement T2								
11	Psychol. Capital T2								
12	Job Satisfaction T2								
13	Stress T2								
14	Turnover Intention T2								
15	Compassion T2								
16	Job Self-Efficacy T2								
17	Burnout T3	(.89)							
18	Engagement T3	-.406**	(.91)						
19	Psychol. Capital T3	-.725**	.541**	(.91)					
20	Job Satisfaction T3	-.587**	.543**	.529**	(.81)				
21	Stress T3	.621**	-.042	-.369*	-.546**	(.81)			
22	Turnover Intention T3	.233	-.148	-.180	-.544**	.425**	(.86)		
23	Compassion T3	-.020	.504**	.222	.206	.093	.065	(.85)	
24	Job Self-Efficacy T3	-.645**	.511**	.826**	.446**	-.272	-.158	.147	(.86)
25	Burnout T4	.818**	-.195	-.560**	-.563**	.527**	.177	.002	-.558**
26	Engagement T4	-.387*	.872**	.559**	.404**	.015	.089	.480**	.593**
27	Psychol. Capital T4	-.690**	.462**	.872**	.586**	-.364*	-.281	.107	.718**
28	Job Satisfaction T4	-.463**	.298	.480**	.764**	-.383*	-.563**	-.087	.415**
29	Stress T4	.591**	.004	-.347*	-.585**	.795**	.414**	.250	-.190
30	Turnover Intention T4	.270	.002	-.218	-.408**	.362*	.781**	.238	-.284
31	Compassion T4	-.180	.516**	.369*	.291	.009	.010	.860**	.338*
32	Job Self-Efficacy T4	-.639**	.577**	.770**	.506**	-.288	-.098	.233	.902**

Notes. T1=Baseline (pre-coaching; n= 54); T2=immediately post-coaching (n= 47); T3=3 months post-coaching (n = 44); T4=6 months post-coaching (n= 43). * $p < .05$; ** $p < .01$; *** $p < .001$. Coefficient alphas along diagonal.

Online Supplemental Information, continued

Correlations and Coefficient Alphas at Baseline, Post-Coaching, Three Month and Six Month Follow-Up

		25	26	27	28	29	30	31	32
1	Burnout [T1]								
2	Engagement [T1]								
3	Psychol.Capital [T1]								
4	Job Satisfaction [T1]								
5	Stress [T1]								
6	Turnover Intention [T1]								
7	Compassion [T1]								
8	Job Self-Efficacy [T1]								
9	Burnout [T2]								
10	Engagement [T2]								
11	Psychol. Capital [T2]								
12	Job Satisfaction [T2]								
13	Stress [T2]								
14	Turnover Intention [T2]								
15	Compassion [T2]								
16	Job Self-Efficacy [T2]								
17	Burnout [T3]								
18	Engagement [T3]								
19	Psychol. Capital [T3]								
20	Job Satisfaction [T3]								
21	Stress [T3]								
22	Turnover Intention [T3]								
23	Compassion [T3]								
24	Job Self-Efficacy [T3]								
25	Burnout [T4]	(.92)							
26	Engagement [T4]	-.296	(.88)						
27	Psychol. Capital [T4]	-.657**	.534**	(.94)					
28	Job Satisfaction [T4]	-.609**	.300	.624**	(.92)				
29	Stress [T4]	.603**	.013	-.448**	-.538**	(.85)			
30	Turnover Intention [T4]	.383*	.066	-.331*	-.712**	.484**	(.90)		
31	Compassion [T4]	-.223	.536**	.270	.078	.127	.081	(.88)	
32	Job Self-Efficacy [T4]	-.607**	.652**	.754**	.477**	-.301*	-.294	.352*	(.89)

Notes. T1=Baseline (pre-coaching; *n*= 54); T2=immediately post-coaching (*n*= 47); T3=3 months post-coaching (*n* = 44); T4=6 months post-coaching (*n*= 43). * *p* < .05; ** *p* < .01; *** *p* < .001. Coefficient alphas along diagonal.

Online Supplemental Information, continued

Results of Intent to Treat Analysis (Robustness Checks for Hypotheses 1a-1h)

Outcome	Predictor	FIML Analysis		Multiple Imputation	
		b	p	b	p
Burnout (T2)	Group	.51	< .001	.52	< .001
	Burnout (T1)	.59	<.001	.59	<.001
Job Stress (T2)	Group	.34	.018	.36	.011
	Job Stress (T1)	.59	<.001	.58	<.001
Turnover Intentions (T2)	Group	.21	.080	.21	.088
	Turnover Intentions (T1)	.88	<.001	.88	<.001
Engagement (T2)	Group	-.24	.015	-.22	.026
	Engagement (T1)	.61	<.001	.62	<.001
Psychological Capital (T2)	Group	-.37	.003	-.35	.008
	Psychological Capital (T1)	.62	<.001	.63	<.001
Sense of Compassion (T2)	Group	-.02	.913	-.01	.974
	Sense of Compassion (T1)	.71	<.001	.70	<.001
Job Self-Efficacy (T2)	Group	-.24	.075	-.23	.071
	Job Self-Efficacy (T1)	.59	<.001	.60	<.001
Job Satisfaction (T2)	Group	-.20	.167	-.15	.256
	Job Satisfaction (T1)	.57	<.001	.58	<.001

Note. $N = 59$. Unstandardized regression coefficients provided. Group coded as 1 = Primary and 2 = Waitlist. T1 = Time 1 and T2 = Time 2. FIML = Full information maximum likelihood. Consistent with recommendations of Bodner and Bliese (2018), we used general linear mixed models where the time 2 outcomes were regressed on group (waitlist versus primary), along with the outcomes at time 1. We used Full Information Maximum Likelihood (FIML) to estimate results using all 59 respondents in MPlus version 7.4. In order to do so, we imputed missing data for time 1 variables for one respondent who failed to complete the baseline survey because FIML does not allow missing data on exogenous variables. For this one respondent, we computed the variable means, similar to Dimoff and Kelloway (2019). We also imputed missing data for all outcome variable missing data using MPlus version 7.4 and again used general linear mixed models.