The relationship between supervisors' coaching leadership style and doctoral students' self-efficacy: A cross-cultural analysis among UK, Israel, and China

Yi-Ling Lai, University of Southampton, UK (0000-0002-2161-6686)

Qing Wang, East China Normal University, China (0000-0002-9369-945x)

Gil Bozer, Sapir Academic College, Israel (0000-0002-6337-2165)

Darren van Laar, University of Portsmouth, UK (0000-0002-4424-0124)

Andrew Marren, University of Winchester, UK (0000-0003-1863-3917)

Corresponding Author:

Qing Wang (qwang@psy.ecnu.edu.cn)

Abstract

This study extends coaching relationships to higher education by examining the impact of principal supervisors' coaching leadership on doctoral students' self-efficacy. A survey of 657 doctoral students from the UK, Israel, and China was conducted to validate the relationship between supervisors' coaching behaviours, working alliance, and students' self-efficacy. Results indicate that supervisors' coaching skills and a strong working alliance enhance students' self-beliefs in their academic pursuits. Additionally, cross-cultural analysis reveals that perceptions of power and uncertainty influence supervisory relationships. This research shifts the focus from challenges in doctoral students' well-being to positive professional relationships.

Introduction

The supervision process is a crucial factor in influencing the motivation of doctoral students (Mackie & Bates, 2019). However, existing research has primarily focused on problematic/dark sides, such as misuse of power, abuse, exploitation, and bullying (e.g., Cohen & Baruch, 2022; Meng *et al*., 2017). A recent systematic review on students' motivation and well-being (Watson & Turnpenny, 2022) has highlighted the potential role that interventions and practices can play in fostering a better working relationship between doctoral students and their supervisors. Whereas both mentoring and coaching approaches are widely applied in the doctoral degree supervision processes (Lee, 2008, 2018), we adopt coaching in the present study given that the modern doctorate study focuses on a transformational process (Fillery-Travis et al., 2017), including seeking for employability outside academia and knowledge creations (Lee, 2018). Hence, a more explicit goal-oriented and collaborative professional relationship, such as coaching (Campbell & Wiernik, 2015), has been advocated in recent doctoral supervision literature and developmental programme (Lee, 208; Metcalfe et al., 2018).

Adhering to research evidence in the workplace coaching relationship (Bozer & Jones, 2018; Gan & Chong, 2015; Lai & Smith, 2021), several contributing factors, such as trust and transparent learning contract, have been identified to yield a greater coach-coachee working alliance. Hence, our study aims to examine whether these factors can similarly benefit the doctoral study process. We recognise the significant impact that power dynamics can have on the supervisory relationship (Cohen & Baruch, 2022). Therefore, we utilise Hofstede's Cultural Dimensions (1980) to evaluate doctoral students' perceptions of their working relationships with their supervisors in the UK, Israel, and China. These countries represent differing levels of power distance, providing a cross-cultural perspective to our analyses.

Overall, the study results confirm the positive associations between supervisors' coaching style and attributes and their working relationship with students. Furthermore, we found certain elements related to goal setting and process management to have exceptional effects on doctoral students' confidence in overcoming challenges and completing their doctoral degree. The study also highlights those doctoral students in the three countries had unique perspectives on supervisory relationships. By incorporating theoretical foundations in positive psychology, such as self-efficacy (Baourda et al., 2024), this study adds to the existing literature on the supervisory relationship in doctoral programs and proposes a framework for the training and development of future doctoral supervisors.

This paper commences with a discussion of the literature on the relations between doctoral degree supervisory relationships and students' well-being, and the role coaching style leadership (CSL) plays in facilitating doctoral students' self-efficacy, along with our research hypotheses. The research design, process, and findings are followed. Finally, we discuss the theoretical contributions and practical implications of this study.

Theoretical background

The relations between doctoral students' well-being and supervisory relationship

Research has indicated that doctoral students can suffer from psychological discomforts as a result of frequent evaluations, paper deadlines, and toxic professional relationships with their supervisory team (Schmidt & Hansson, 2018). In general, thirty-two percent of doctoral students potentially have developed or are developing depression and anxiety (Byrom *et al.*, 2022; Metcalfe *et al.*, 2018), with more than half of them considering dropping out at some point during their studies due to issues with their psychological well-being (Anttila *et al.*, 2015; Stubb *et al.*, 2012). Hence, well-being and motivation is

recognised as an essential research topic in higher education institutions (HEIs), despite most research focusing on undergraduate students (Watson & Turnpenny, 2022).

Studies scrutinising doctoral students' mental health and well-being have suggested that social support, including from their spouse and family, peers, and supervisors in their research community, is key to help them successfully navigate their study journey (Ryan *et al*., 2022). In particular, the working relationship with the principal supervisor (hereafter supervisor) was seen to have an immediate impact on doctoral students' study life. Doctoral students generally consider their supervisor as a partner to discuss the research progress, to acquire knowledge and experience, and a leader to offer them guidance and performance feedback (Gruzdev *et al*., 2020; Vähämäki *et al*., 2021). Nevertheless, Cohen and Baruch (2022) argued that the angle of 'leadership' should be stressed in the supervision process in light of power inequality within the supervisory team (Ashforth, 1994). Whereas extant literature has laid emphases on abuse and exploitation in the doctoral degree supervisory relationship over perceptions of power (e.g., Cohen & Baruch, 2021; Meng *et al*., 2017), we contend that it is essential to incorporate positive propositions and investigate effective approaches to facilitate effective supervision processes (Watson & Turnpenny, 2022).

All social interactions and professional relationships involve implicit or explicit power dynamics (Ali *et al*., 2016; Louis & Fatien Diochon, 2018). In a doctoral degree supervision, the perceived power inequality between the student and supervisor can often be exacerbated due to the exploitation of referent power (e.g., the supervisor's scholarly reputation and connections) and expert power within their research field (Twale & De Luca, 2008). However, when power is misused, it can lead to psychological distress and even higher dropout rates (Cohen & Baruch, 2022). Given that perceptions of power hold a central position in mediating the relationship between the doctoral student and supervisor, we recognise that an equal and open working relationships for the development of all team

members (Kim, 2014), could offer a positive approach in facilitating an effective doctoral degree supervision process.

Coaching plays an important role in the modern doctoral supervisory relationship

Contemporary literature in doctoral supervisory relationship mainly falls into the mentoring or coaching discipline (Nichol et al., 2022). To make a clarity of our research aspect in coaching, it is essential to conduct a comparative analysis between these two professional helping approaches.

Whereas the coaching and mentoring approach share similar features like one-to-one conversation or interactions to enhance a person's professional development (Feldman & Lankau, 2005), mentoring is usually more people-focused with informal meeting arrangements between a senior manager/peer and a junior peer (Passmore et al., 2013). There is often no formal contracting process in the mentoring relationship but spontaneous knowledge and experience exchanges within the mentoring dyad (Bachkirova, 2008). Instead, coaching stresses on open, goal and action-oriented discourses to stimulate the coachee's self-awareness for their own development (Passmore & Fillery-Travis, 2011).

Recent literature has indicated the coaching approach corresponds greater with the modern doctoral degree supervisory relationship considering that supervisors hold important responsibilities for developing a mutually agreed contract with the student as well as empowering the student's critical thinking (e.g., Nichol et al., 2022). The collaborative actions in the doctoral supervisory relationship, including setting appropriate goals, developing explicit plans and offering feedback for reflective learning (Cook, 2011) share more similar characteristics in a coaching process. For instance, coaching approaches generally involve structured, focused interactions and appropriate strategies to help the coachee achieve an identified set of goals in their professional domain (Bachkirova et al.,

2010; Kilburg, 1996). Accordingly, our study intends to unpack how supervisors' coaching style leadership and behaviours make impacts on the working relationship with their students.

The coaching style leadership (CSL) and doctoral students' self-efficacy

The coaching style leadership (CSL) indicates that a leader or manager employs coaching approaches or conversations to facilitate the recipient's goal achievement and long-term development (Campbell & Wiernik, 2015). Contemporary research has indicated that doctoral degree supervisors' coaching attributes/behaviours when interacting with students, such as showing an interest in the student's research, providing timely and high-quality feedback, and maintaining healthy two-way communication, can lead to promoting a successful supervisory relationship and study outcome (Ali *et al.*, 2016; Woolderink *et al.*, 2015). This high-quality working relationship (i.e., a working alliance) and interpersonal interactions have also been confirmed as playing essential roles in generating greater coaching outcomes, such as self-efficacy (Graßmann *et al.*, 2020).

Self-efficacy is rooted in the social cognitive theory and recognised as a central mechanism for the self-belief in one's ability to accomplish a given task or challenge (Bandura, 1997). The development of self-efficacy relies on four primary resources: enactive mastery experiences, vicarious experiences, verbal persuasion, and physical arousal (Bandura, 1997). Coaching can support self-efficacy development by facilitating intrapersonal (enactive experiences and physical arousal) and interpersonal sources (vicarious experiences and social persuasion). For example, coaching can help an individual reflect on their past success, observe effective behaviours from others and learn from them, accept others' feedback and encouragement, become more aware of feelings aroused, and learn to apply their emotions in appropriate contexts (Lai, 2015; Passmore & Fillery-Travis, 2011). Empirical studies have consistently shown that coaching can enhance individuals' general

perceived self-efficacy, and domain-specific efficacy in educational and occupational contexts (e.g., Peng & Wang, 2019; Wang *et al*., 2022).

Essential factors to facilitate an effective doctoral supervisory relationship through the CSL

Working alliances, as part of a professional helping relationship, are traditionally described as a directionally influential helping dynamic established between two psychological entities, such as coach and coachee or supervisor and student (Flückiger et al., 2018). Some studies have suggested that such working alliances in a coaching context leads to a safe and supportive environment where fears and anxieties can be discussed in a positive and supportive context (Bozer & Jones, 2018). Subjective matching, where the coach and coachee meet and interact with each other (either online or in-person) have been identified as critical to the success of the working relationship (de Haan *et al*., 2013). Previous research in coaching has indicated explicit factors contributing to the working relationship and coaching recipient's motivation to change, including trust building, a transparent contracting process, coaches' approachable manners and constructive and timely feedback (Boyce *et al*., 2010; Gan & Chong, 2015; Lai & Smith, 2021). Accordingly, this study attempts to investigate whether contributing elements derived from supervisors' attributes or behaviours facilitate students' perceived working alliance and self-efficacy. The development and explanation of study hypotheses are discussed below.

Trust Building

Social exchange theory (SET), which highlights social interactive behaviours between two entities as a cost-benefit analysis to determine risks and gains, has been drawn upon in the study of trust in leader-follower relationships (Cropanzano et al., 2017). According to SET, followers view their relationship with their leader as a psychological commitment based on trust and mutual obligations rather than an economic contract (Rousseau, 1995). The

evidence consistently indicates that trust also plays a vital role in the coaching relationship as a significant mediator in this psychological commitment and exchange process. For instance, when working with a coach, the coachee is more likely to engage in vulnerable behaviours, including disclosing honest feelings and thoughts and sharing sensitive information and their development barriers in a trusting working relationship (e.g., Alvey & Barclay, 2007; Bozer & Jones, 2018). Meanwhile, the trusty working relationship has been examined as an essential moderator for employees' self-efficacy and workplace outcomes (Ozyilmaz et al., 2018). Therefore, this study aims to examine whether doctoral degree supervisors' behaviours of honesty and openness during the supervision process (Vitae, 2018; Woolderink *et al*., 2015) can enhance students' perceived working relationships and self-efficacy.

Conducting a transparent and mutually agreed contracting process

In line with Bordin's working alliance framework (1979), establishing a clear mutual agreement about goals, action plans, roles, and responsibilities at the outset provides the best opportunity for an effective working relationship and, *inter alia,* a foundation for trust building (Lai & Smith, 2021). In addition, the process of contracting and process management shapes the working relationships between all involved parties (Louis & Fatien Diochon, 2014). Indeed, the concept of a contractual solution has been applied to support *'difficult students'* by creating an arena of shared meanings (Hockey, 1996). Whereas a formal contractual solution has been criticised as inflexible and threatening to a student, at its best it can inflexible and threatening to a student, it can initiate a transparent and mutual understanding between the supervisory dyad (Schmidt & Hansson, 2018). Moreover, a transparent working relationship which encourages communication flows ultimately promotes the individual's self-efficacy (Lai & Smith, 2021). Hence, this study aims to evaluate whether initiating an open discussion on explicit objectives, accountabilities, available resources, and evaluation methods at the early stage of doctoral degree supervision

contributes to students' perceived working relationship and self-confidence in completing their studies.

Supervisor's approachable and responsive manner

Interpersonal interactions form the basis of social relationships between individuals (Burgoon *et al.*, 1995). Xu *et al.* (2012) have recognised that leaders who are approachable, friendly, and supportive can enhance team members' intrinsic motivation and in-role performance by involving all team members in decision-making processes. Similarly, research on coaching relationships found that reciprocal friendliness expressions contributed to working alliance quality. Additionally, maintaining approachability and responsiveness was essential in facilitating coachees' engagement and self-efficacy (Ianiro *et al.*, 2015). Given that doctoral students expect their supervisors to be affectionate, sincere, and approachable (Ali *et al.*, 2016), this study proposes investigating hypotheses concerning supervisors' approachable manners during supervision.

Offering constructive and timely feedback

Feedback refers to evaluative information about a person's actions, the performance of a task or activities, and it is a core element in most helping relationships, such as counselling, coaching, and mentoring (Dyason *et al.*, 2020). Providing appropriate and balanced feedback has been identified as an essential activity in the coaching process, given that the ultimate purpose is to facilitate the coachees' learning, development, and work-life well-being (e.g., Bozer & Jones, 2018). A cross-analytic study demonstrated that both doctoral degree supervisors and students highly valued feedback: students expected high-quality and timely feedback from supervisors, while supervisors appreciated students being open to feedback (Woolderink *et al.*, 2015). An integrative literature review of doctoral students' well-being outlined that students' stress and anxiety levels diminished (Schmidt & Hansson, 2018) along with increased self-efficacy (Dimotakis et al., 2017) while receiving sufficient high-quality

feedback. Thus, we to examine constructive feedback's role in facilitating doctoral students' perceived positive working relationships and their confidence in accomplishing identified goals.

Summarising from the literature discussion above, two hypotheses are outlined:

H1: Supervisors' coaching attributes and behaviours have positive associations with doctoral students' perceived working alliance and self-efficacy.

H2: Doctoral students' perceived working alliance with their supervisor positively affects their self-efficacy.

Cultural differences in doctoral degree supervision process and outcomes

The supervision processes for doctoral students have become more dynamic and complex because of the increasing diversity among students' cultural backgrounds and research environments (Green, 2002). Effective supervision processes share fundamental common elements regardless of cultural differences, including clear supervisory feedback, students' engagement in the supervision process, and adequate supervision time (Kilminster & Jolly, 2000). Nevertheless, research evidence also indicated that social and contextual aspects significantly shape professional help relationships (e.g., Bozer & Delegach, 2019; Bozer *et al*., 2022). For instance, in Western research settings, such as Australia and the USA, supervisors typically maintain the relationship boundary within the research study by offering primary academic feedback and advice (Arambewela & Hall, 2008). On the contrary, doctoral students in China tend to expect further personal relationships and long-term career support from their supervisors (Leong, 2010). Explicitly, supervisors are no longer merely serving the role of academic experts who share knowledge and experiences with students in the Eastern culture. They play other significant roles that vary slightly depending on the culture. Hence, cultural differences regarding expectations and preferences

may be reflected in doctoral degree supervisory relationships. Given that perceptions of power have been examined as the important mediator of the supervisory relationship, we consider doctoral students' cultural backgrounds and study environments to shape their views on supervisors' coaching attributes/ behaviours, working relationships, and self-efficacy. This study aims to cross-analyse doctoral students' perceived working relationships with their supervisors in three countries that represent a high, medium, and low level of power distance based on Hofstede's Cultural Dimensions (1980), including China, the UK, and Israel.

H3: Doctoral students in the UK, Israel, and China demonstrate different perceived working alliance with their supervisors and self-efficacy.

Materials and Method

Sample and procedure

This study aimed to examine how doctoral degree supervisors' coaching attributes and behaviours can enhance self-efficacy and positive working alliance as perceived by their students from a cross-cultural perspective. To achieve this, a quantitative online survey in English was administered to cross-validate supervisors' coaching behaviours and doctoral students' perceived working alliance and self-efficacy. A convenient sampling method was adopted, and the participants included doctoral students from universities in the UK, Israel, and China through all authors' professional networks. They were recruited by directly responding to the advertisement on an official research site developed by the authors. A total of 769 responses were received however, 112 responses were removed due to incomplete or missing information. When removing the missing data, a listwise deletion method was used due to the extent of the missing data within the data set, e.g., the majority of items being nonresponses across the three different scales. The final data set included 657 participants from doctoral programs in the UK (N= 462), Israel (N= 145), and China (N= 50), all of

whom had completed at least one year of their doctoral study. The research was approved by the Ethics Committee of funding academic institution.

Measures

Participants were asked to fill out three sets of questionnaires based on their principal supervisor's behaviours, perceived working relationship, and self-efficacy during their study period.

Working Alliance Inventory

This study modified Kokotovic and Tracey's (1990) Working Alliance Inventory (WAI)-Short Form by embedding a doctoral degree supervision context to evaluate the working relationship in the supervisory dyad. The working alliance, which emphasises relationship factors (such as mutual trust, empathy, and respect) as well as links to positive outcomes (clear mutually agreed goal and action plans), optimises the bond in the process of certain psychological helping interventions (e.g., counselling, therapy, and coaching) and facilitates the joint purposive goal to be perfectively achieved (O'Broin & Palmer, 2010). Kokotovic and Tracey's (1990) WAI-Short Form incorporates the concept of working alliance (Bordin, 1979), which addresses the combination of a client and facilitator agreement: (a) goals, (b) how to achieve the goals, and (c) the development of a personal bond between the participants. We adopted six items from the validated WAI- Short Form that applies to doctoral degree study, including "My supervisor and I agree about the things I will need to do to complete my studies". Responses were collected in a 5-point Likert scale ranging from 1 = *definitely disagree* to 5 = *definitely agree.*

Self-efficacy Scale

The self-belief of doctoral students in their personal capabilities, motivation, and behaviours needed to complete their studies were measured by the Self-Efficacy Scale (SES)

by Wood and Bandura (1989). There are three key dimensions of self-efficacy beliefs: (a) level or magnitude (particular level of task difficulty), (b) strength (certainty of successfully performing a particular level of task difficulty), and (c) generality (the extent to which magnitude and strength beliefs generalise across tasks and situations) (Bandura,1997). Self-efficacy has been used as a key variable to predict coaching outcomes in contemporary empirical studies (Wang *et al.*, 2022). In addition, self-efficacy has been tested to have positive relations with individuals' well-being (e.g., Cobo-Rendón *et al.*, 2020). Hence, we adopted six items from SES related to the doctoral degree supervision process to understand students' motivation. An example item is "I believe I will be able to achieve the goals that I have set for myself during my study". The 5-point Likert scale ranged from 1 = *definitely disagree* to 5 = *definitely agree*.

Supervisors Coaching Attributes and Behavioural Sets

Five sets of coaching attributes and behaviours adapted from previous coaching alliance studies (Ianiro et al., 2015; Lai & Smith, 2021) were constructed for doctoral students to rate their principal supervisor's facilitating and leadership style, including constrictive and timely feedback and transparent contracting process discussed in the literature review. Some example items are "In general, my supervisor has provided a good level of feedback about my work" and "My supervisor effectively established the format of our relationship such as boundaries, terms and conditions". The 5-point Likert scale ranged from 1 = *definitely disagree* to 5 = *definitely agree*.

Data analyses

We conducted preliminary data analyses. Univariate descriptive statistics were computed for sample demographic characteristics. Frequency distributions, percentages, means, and standard deviations were computed for the study variables (see Table 1 and Table

2). Bivariate statistical analyses were employed to examine the relevant associations between variables.

Results

The data analyses confirmed the positive effect of supervisors' coaching attributes and behaviours on doctoral students' perceived working alliance and self-efficacy. In addition, differences in supervisors' coaching attributes and behaviours between doctoral students in the UK, Israel, and China reveal the impact of cultural background on preferred coaching behaviours from supervisors. The data indicated good internal reliability scores for all three scales: Working alliance inventory (Cronbach's $\alpha = 0.90$), Self-efficacy scale (Cronbach's $\alpha = 0.93$), and Coaching behaviour sets (Cronbach's $\alpha = 0.91$). During the normality testing, the large data set and the three different samples (e.g., from each country, UK, Israel, and China) demonstrated a non-normal data distribution. Additionally, across the three scales, there was a heavy negative skew (Table 2), with the distribution being highly skewed toward the 4 and 5 points. The influence of non-normal distributions had a larger impact on SEM when analysing small samples, but violations of normality are not hugely impactful on Model Fit or factor loading (Hua & Marsh, 2004). As such, the SEM analysis was seen as appropriate despite the non-normal distribution of the data. Similarly, when preparing the analysis for the cultural aspects of the data, ANOVA's were used as non-normality does not invalidate the statistical procedure (Blanca *et al*., 2017), especially when using a large data set (Sainani, 2012). As such, despite the non-normal distribution of the data, the statistical testing used to analyse the data was seen to be appropriate for the hypothesis testing.

[Insert Table 1. here]

[Insert Table 2. here]

No significant differences were observed for student's perceptions of coaching behaviour in the demographic data of Gender and Age (Table 3) or study data, Study Format (Face to face, Distance), Years of Study, and Study Mode (Part Time, Full Time (Table 4).

[Insert Table 3 here.]

[Insert Table 4 here.]

Hypotheses Testing

To explore the relationship among coaching behaviours, working alliance, and self-efficacy, doctoral students' scores across the three countries were analysed in a structural model (Figure 1). The Confirmatory Model tested the goodness of fits for the predictive pathways from doctoral students' perception of their supervisor's coaching attributes/behaviours toward working alliance and self-efficacy. The pathways were designed to follow the literature, whereby the supervisor's coaching attributes/behaviours were hypothesised to affect doctoral students' perception of working alliance and self-efficacy positively. To explore the relationship, all of the data was used for the analysis, and the cultural variable (e.g. categorical country, UK, Israel, China) was not included in the pathway analysis. This was due to the overarching aim of the analysis to explore the overarching pathways.

[Insert Figure 1 here]

The model fit indicators demonstrated a good fit for the data into the analysed model (Table 5). As is usual with this type of data, a significant chi-square score for the model was initially found (Ullman & Bentler, 2012). Further model testing was undertaken, and a CFI score of 0.94 illustrated a good model fit, with a score over 0.90 being the cut-off (Hopper *et al*., 2007). An RSMR score of 0.04 was observed, which is well fit within the quality

threshold of a maximum of 0.08 (Hu & Bentler, 1999). Finally, the RMSEA score, which is ideally at or lower than 0.10 (Browne & Cudeck, 1992) was found to be 0.10, which narrowly achieved the recommended threshold. The Confirmatory Factor Analysis demonstrated good factor loading of the items in the model onto their constructs (Table 6); a standard cut of point of 0.70 was used and all items achieved such loadings. Overall, the model fit indications were good, demonstrating the data fitted the model tested.

[Insert Table 5 here.]

[Insert Table 6 here.]

The pathway coefficients (Figure 2) indicate a positive predictive relationship was observed between doctoral students' perception of their supervisor coaching attributes/ behaviours and working alliance (B = 0.87, SE = 0.03, β = 0.97). Similarity, a strong positive predictive relationship between doctoral students' perception of their supervisor coaching attributes/behaviours and self-efficacy (B = 0.56, SE = 0.03, β = 0.69), supporting H1. A strong positive association was observed between work alliance and self-efficacy (r = .67, p < .001), supporting H2.

[Insert Figure 2 here.]

To explore the impact of each coaching behaviour, a mutiple regression analysis was conducted to examine the relationship between each coaching behaviour and self-efficacy (Table 7). The model indicated that each coaching behaviour accounted a small amount of the variance in self-efficacy (R = 0.59, R^2 = 0.34, p <.001). Both perceived supervisor's trust and approachable manners were not significantly predictive of self-efficacy amongst doctoral students. Offering timely and constructive feedback (B = 0.23, SE = 0.04, β = 0.32) had the strongest predictive relationship with self-efficacy, followed by contracting (B = 0.15, SE = 0.03, β = 0.24). Furthermore, all coaching attributes/ behaviours significantly affected

doctoral student's perceived working alliance and accounted for a large amount of the variance in working alliance self-perceptions ($R = 0.87$, $R^2 = 0.76$, $p < .001$) (Table 8).

The SEM and regression analysis demonstrate a positive relationship between coaching attributes/behaviours, self-efficacy, and working alliance. Furthermore, within the full model (Figure 2), coaching attributes/behaviours strongly influence doctoral students' self-efficacy and working alliance.

[Insert Table 7 here.]

[Insert Table 8 here.]

The final analysis investigated the effect of cultural background on supervisor coaching attributes/behaviours, working alliance, and self-efficacy (Table 9). One-way between subjects' ANOVA analysis revealed a highly significant difference in doctoral students' perceptions of their supervisor's coaching attributes/behaviours across all three countries, supporting H3. Doctoral students in the UK rated highest on coaching attributes/behaviours (M = 4.44, SD = 0.80), follow by China (M = 3.96, SD = 1.05) and Israel (M = 3.48, SD = 0.90). Moreover, students in the UK rated self-efficacy (M = 4.35, SD = 0.68) and working alliance (M = 4.40, SD = 0.83) significantly higher than the students from the other two countries, whereas there are no significant differences rated by students in China and Israel.

[Insert Table 9 here.]

Result summary

The structural model analysis indicated a strong predictive relationship between coaching attributes/behaviours, self-efficacy, and working alliance across three contries. Nevertheless, the relationship between the approachable and responsive manner and self-efficacy was rejected. While UK students were found to have significantly higher self-

efficacy and working alliance scores than the other countries, there was no significant difference between Israel and China.

The research results support our main hypotheses that supervisors' coaching attributes/behaviours adequately predict doctoral students' perceived working alliance and self-efficacy (H1). The regression analyses showed that constructive and timely feedback from the supervisor and being approachable and responsive are the two strongest antecedents of doctoral students' perceived working alliance. In terms of students' self-efficacy, again, we found feedback and a clear and mutually agreed contract to play key roles in facilitating their confidence in tackling challenges in their study process. This finding suggests that "goal-oriented" and "process" related elements appear to take a more critical role in a professional helping relationship (Keane, 2016). Meanwhile, doctoral students' perceived working alliance and self-efficacy are positively correlated (H2). This is consistent with existing literature that the support from the supervisor, particularly an empowering supervision process, is critical for doctoral students to develop a sense of competence and confidence in their research (e.g., Ali *et al.*, 2016; Woolderink *et al.*, 2015). We did not analyse the *degree* of coaching attributes/behaviours' impact on self-efficacy and working alliance in the three countries because the numbers of samples varied widely in our current data. Overall, H3 is supported given that supervisors' coaching attributes/ behaviours are influenced by their cultural backgrounds, and then the working relationship and students' self-efficacy are impacted, respectively.

Discussion

Theoretical contributions and practical implications

Our study provides valuable insights into the doctoral degree supervisory relationships in several ways. First, our analysis furthers existing literature by incorporating

theoretical underpinnings in positive psychology (Seligman & Csikszentmihalyi, 2000), such as coaching and self-efficacy (Bandura, 2011; Van Zyl *et al*., 2020), to address doctoral students' motivation and well-being related issues. By enhancing our understanding of the significant gap in determining how successful (or unsuccessful) interventions and institutional changes have been in the doctoral degree supervision process, our study inistially confirms that a coaching approach that emphasises an individual's strengths, optimal functioning, and personal philosophy (e.g., students' self-efficacy) facilitates a positive doctoral study process via coaching style discourses between the supervisor and student.

The identified framework (Figure 3), which incorporates social relations and process management aspects, has been ascertained to enhance the working alliance, doctoral students' motivation, and self-efficacy in this study. In particular, our analyses demonstrated that goal-focused and process management-related elements, such as constructive feedback and a transparent contracting process, strengthened students' self-confidence in tackling challenges and accomplishing their doctoral degrees. This finding is consistent with the core theoretical underpinning of working alliance (Bordin, 1979), which suggests that a professional helping relationship, unlike friendship, should contain goals and productivity as possible outcomes (Lai & Smith, 2021). Given that the ultimate purpose of a doctoral study is to accomplish a research project on a designated topic independently and to produce a publication-worthy thesis (Wilson, 2002), the supervisor-student working relationship goes beyond emotional support. Although emphasising the interpersonal relationship in a professional setting facilitates the bonding between supervisor and supervisee, no direct effect on outcome-related indicators was found. Accordingly, our study expands the extant lens from describing problematic issues to acknowledging optimal human strengths. Specifically, the identified framework suggests that an effective supervisory relationship is built upon the

counterbalance between interpersonal support (e.g., being approachable and responsive) and goal-oriented processes (e.g., offering constructive feedback) (Lai & Smith, 2021).

[Insert Figure 3 here.]

Similarly, our study sheds light on the contractual solution in the doctoral degree study process by indicating a proper supervision contract as the optimistic and forward-looking relationship boundary between the supervisor and student (Stubb *et al.*, 2012). While communication, transparency, mindfulness, and gratitude have all been emphasised in the doctoral degree supervisory relationship (Green & Bowden, 2012; Howells *et al.*, 2017), the contracting process has remained under-studied. The supervision contract serves as an arena for shared meaning-making between the supervision dyad (Stubb *et al.*, 2012). Hence, our research findings are distinct from the more pessimistic view of contracting in doctoral degree study (avoiding conflicts and misunderstandings) (Hockey, 1996). Instead, this research reveals that explicit objectives, accountability, learning resources, and evaluation methods are the solid foundation of trust-building (Graßmann *et al.*, 2020). Whereas the coachee did not favour a highly structured process in some coaching studies (Bachkirova *et al.*, 2015), our framework stresses procedure fairness in the contracting process. Explicitly, a more transparent and empowering approach in which two parties act equally in the negotiation or discussion course generally dissolves the psychological barrier and encourages communication flows between the supervision dyad (Lai & Smith, 2021). Hence, this empowering contracting process is open-ended as students' development is evolving and ongoing. There is a need to be made explicit by negotiations and renegotiations in various phases of the doctoral degree study process. Our study strengthens relevant literature by highlighting formalised supervision terms and psychological commitments as influential underpinnings in an effective supervision contract. Moreover, an empowering and transparent contracting process is the key to fostering a strong rapport and alliance.

Moreover, our study offers a new angle of cultural differences in the doctoral degree supervisory relationship. The study results revealed that coaching style supervision in the higher power distance culture (e.g., China) is less prevalent than in lower power distance societies (e.g., UK). According to Hofstede (1985), power distance is *"the extent to which the members of a society accept that power in institutions and organisations is distributed unequally"* (p. 347). Explicitly, the decision-making process is mainly determined by the power authority (i.e., supervisor) instead of policy or protocol in a society with higher power distances. Overall, *guanxi* practices, building and maintaining special personal relationships that *"make exchanges, or accomplish tasks"* (Guthrie, 1998, p. 266), hold an influential function in Chinese society. Given this cultural orientation, the counterbalance professional relationship between interpersonal support and explicit supervision contract may not be commonly acknowledged. In addition, the ongoing negotiation and renegotiation process along with regular feedback, may not be highly regarded in societies with a high degree of uncertainty avoidance, such as Israel (Masry-Herzallah & Da'as, 2021) due to fluctuating plans. Our study enhances our understanding of cultural differences and the doctoral degree supervisory relationship. Although we investigated in this study the benefits of a certain coaching attributes/behaviours as reflected in greater working alliance and enhanced doctoral students' self-efficacy, it is still necessary to be mindful that one size does not fit all. The specific cultural context must be considered, and adjustments may be necessary.

Practical implications

Regarding practical implications, the present framework provides supervisors and HEIs a roadmap to facilitate a greater doctoral degree supervision process and students' self-confidence. Interpersonal and process management skills have been identified as essential in the doctoral degree supervision process but are often neglected in the existing training curriculum (Upton, 2023). Therefore, we recommend that mandatory training for both

doctoral students and their supervisors should include attributes/behavioural sets, as outlined in this framework. In addition, some elements in this framework, such as developing a mutually agreed supervision contract and offering constructive and timely feedback, should be explicitly addressed in the doctoral degree supervision ethics guidelines for both supervisors and students (Cohen & Baruch, 2022). Given that the misconduct of power in the doctoral degree supervisory relationship has caused considerable negative impacts on students' motivation and future careers (Schmidt & Hansson, 2018), it is essential to establish an explicit learning contract be implemented for all doctoral students.

In addition, the diverse results among three countries also offer supervisors, who will be/are supporting students from different cultural backgrounds, a guidance for trust building, learning contract development and study suggestions. A cross-cultural based doctoral degree supervision training should be included for supervisors.

Limitations, future research directions and conclusion

This study takes a pioneering step in incorporating theories of positive psychology (e.g., optimising students' self-efficacy) into the doctoral degree supervisory power relationship. The study results spell out four attributes/behavioural sets for supervisors to reduce the power distance. The data analyses distinguish goal-focused and process management-related coaching attributes/behaviours content students' psychological needs and intrinsic motivation. Hence, applying coaching style supervision generally yields a greater working relationship between the supervisory dyad and students' self-efficacy. In addition, our study indicates that doctoral students registered in Eastern countries usually stress their interpersonal relationships with supervisors. This may result in adverse effects on their study outcome. Nevertheless, this study has several limitations. First, the data collection was based on doctoral students' cross-sectional perspectives. It is insufficient to address the long-term impacts of a coaching style in the supervision of doctoral degrees. Second, the

study is limited given that the proportion of participation sample from three countries was unbalanced. The participation rate could be explained by the fact that fewer students in Israel and China were willing to respond to surveys in English. A future study which considers participants' cultural context and language may increase their responsive rate (Booker et al., 2021). Moreover, students living in cultures with a high degree of power distance, which supports rank and authority (Hofstede, 1985), tend to decline the type of study containing "evaluation" of their teacher or supervisors (Cortina *et al*., 2017). A longitudinal examination between supervisors with and without coaching style supervision training may offer a more evident correlation between these attribute/behavioural sets and the doctoral degree supervision process. In general, the findings of this study can be helpful as a starting point in re-evaluating existing research and supervision policies in HEIs and developing more comprehensive training for doctoral degree supervisors.

References

Ali, P., Watson, P. & Dhingra, K. (2016). Postgraduate research students' and their supervisors' attitudes towards supervision. *International Journal of Doctoral Studies, 11*, 227-241.

Alvey, S. & Barclay, K. (2007). The characteristics of dyadic trust in executive coaching. *Journal of Leadership Studies, 1*(1), 18–27.

Anttila, H., Lindblom-Ylänne, S., Lonka, K. & Pyhältö, K. (2015). The added value of a PhD in medicine - PhD students' perceptions of acquired competences. *International Journal of Higher Education, 4*(2), 172-180.

Arambewela, R. & Hall, J. (2008). An empirical model of international student satisfaction. *Asian Pacific Journal of Marketing and Logistics, 21*(4), 555-569.

Ashforth, B. E. (1994). Petty tyranny in organizations. *Human Relations, 47*(7), 755-778.

Bachkirova, T. (2008). Role of coaching psychology in defining boundaries between counselling and coaching. In Palmer S. and Whybrow A. (Eds.), Handbook of Coaching Psychology: A Guide for Practitioners. (2nd ed), (pp. 351-366)

Bachkirova, T. Cox, E. and Clutterbuck, D. (2010). The Complete Handbook of Coaching. London: Sage.

Bachkirova, T., Sibley, J. & Myers, A. C. (2015). Developing and applying a new instrument for microanalysis of the coaching process: The coaching process Q-set. *Human Resource Development Quarterly, 26*(4), 431–462.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Blanca, M. J., Alarcón, R., Arnau, J., Bono, R. & Bendayan, R. (2017). Non-normal data: Is ANOVA still a valid option? *Psicothema, 29*(4), 552-557.

Booker, Q. S., Austin, J. D., & Balasubramanian, B. A. (2021). Survey strategies to increase participant response rates in primary care research studies. *Family Practice, 38*(5), 699-702.

Bordin, E. S. (1979). The generalizability of the psychoanalytic concept of the working alliance. *Psychotherapy: Theory, Research & Practice, 16*(3), 252-260.

Boyce, L. A., Jackson, R. J. & Neal, L. J. (2010). Building successful leadership coaching relationships: Examining impact of matching criteria in a leadership coaching program. *Journal of Management Development, 29*(10), 914-931.

Bozer, G. & Delegach, M. (2019). Bringing context to workplace coaching: A theoretical framework based on uncertainty avoidance and regulatory focus. *Human Resource Development Review, 18*(3), 376–402.

Bozer, G., Delegach, M. & Kotte, S. (2022). The influence of organizational coaching context on pre-coaching motivation and the role of regulatory focus: An experimental study. *Human Resource Development Quarterly, 33*(4), 383-403.

Bozer, G. & Jones, R. J. (2018). Understanding the factors that determine workplace coaching effectiveness: A systematic literature review. *European Journal of Work and Organizational Psychology, 27*(3), 342–361.

Browne, M. W. & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods & Research, 21*(2), 230-258.

Burgoon, J. K., Buller, D. B., Dillman, L. & Walther, J. B. (1995). Interpersonal deception: IV. Effects of suspicion on perceived communication and nonverbal behavior dynamics. *Human Communication Research, 22*(2), 163-196.

Byrom, N. C., Dinu, L., Kirkman, A. & Hughes, G. (2022). Predicting stress and mental wellbeing among doctoral researchers. *Journal of Mental Health, 31*(6), 783-791.

Campbell, J. P. & Wiernik, B. M. (2015). The modeling and assessment of work performance. *Annual Review of Organizational Psychology and Organizational Behavior, 2*(1), 47–74.

Cohen, A. & Baruch, Y. (2022). Abuse and exploitation of doctoral students: A conceptual model for traversing a long and winding road to academia. *Journal of Business Ethics, 180*(2), 505–522.

Cook, J. (2011). *The effect of coaching on the transfer and sustainability of learning: coaching for leaders, a collaborative action research study* (Doctoral dissertation, Oxford Brookes University).

Cortina, K. S., Arel, S. & Smith-Darden, J. P. (2017). School belonging in different cultures: The effects of individualism and power distance. *Frontiers, 2*(56), 1-12.

Cropanzano, R., Anthony, E. L., Daniels, S. R., & Hall, A. V. (2017). Social exchange theory: A critical review with theoretical remedies. *Academy of management annals*, *11*(1), 479-516.

de Haan, E., Duckworth, A., Birch, D. & Jones, C. (2013). Executive coaching outcome research: The contribution of common factors such as relationship, personality match, and self-efficacy. *Consulting Psychology Journal: Practice and Research, 65*(1), 40–57.

Dimotakis, N., Mitchell, D., & Maurer, T. (2017). Positive and negative assessment center feedback in relation to development self-efficacy, feedback seeking, and promotion. *Journal of Applied Psychology*, *102*(11), 1514.

Dyason, K. M., Shanley, D. C., O'Donovan, A. & Low-Choy, S. (2020). Does feedback improve psychotherapy outcomes compared to treatment-as-usual for adults and youth? *Psychotherapy Research, 30*(3), 310-324.

Feldman, D. C., & Lankau, M. J. (2005). Executive coaching: A review and agenda for future research. *Journal of management*, *31*(6), 829-848.

Fillery-Travis, A., Maguire, K., Pizzolatti, N., Robinson, L., Lowley, A., Stel, N., ... & Lee, A. (2017). Insights from practice: A handbook for supervisors of modern doctorate candidates.

Flückiger, C., Del Re, A. C., Wampold, B. E., & Horvath, A. O. (2018). The alliance in adult psychotherapy: A meta-analytic synthesis. *Psychotherapy*, *55*(4), 316.

Gan, G. C. & Chong, C. W. (2015). Coaching relationship in executive coaching: A Malaysian study. *Journal of Management Development, 34*(4), 476–493.

Graßmann, C., Schölmerich, F. & Schermuly, C. C. (2020). The relationship between working alliance and client outcomes in coaching: A meta-analysis. *Human Relations, 73*(1), 35-58.

Green, H. (2002). The quality agenda: The UK experience. In M. Kiley & G. Mullins (Eds.), *International Quality in Postgraduate Research Conference* (pp. 4-22). Adelaide, SA.

Green, P. & Bowden, J. (2012). Completion mindsets and contexts in doctoral supervision. *Quality Assurance in Education, 20*(1), 66-80.

Gruzdev, I., Terentev, E. & Dzhafarova, Z. (2020). Superhero or hands-off supervisor? An empirical categorization of PhD supervision styles and student satisfaction in Russian universities. *Higher Education, 79*, 773-789.

Guthrie, D. (1998). The declining significance of guanxi in China's economic transition. *The China Quarterly, 154*, 254-282.

Hockey, J. (1996). A contractual solution to problems in the supervision of PhD degrees in the UK. *Studies in Higher Education, 21*(3), 359-371.

Howells, K., Stafford, K., Guijt, R. & Breadmore, M. (2017). The role of gratitude in enhancing the relationship between doctoral research students and their supervisors. *Teaching in Higher Education, 22*(6), 621–638.

Hofstede, G. (1985). The interaction between national and organizational value systems [1]. *Journal of Management Studies, 22*(4), 347-357.

Ianiro, P. M., Lehmann-Willenbrock, N. & Kauffeld, S. (2015). Coaches and clients in action: A sequential analysis of interpersonal coach and client behavior. *Journal of Business and Psychology, 30*(3), 435-456.

Keane, M. (2016). Coaching interventions for postgraduate supervision courses: Promoting equity and understanding in the supervisor–student relationship. *South African Journal of Higher Education, 30*(6), 94-111.

Kilburg, R. R. (1996). Toward a Conceptual Understanding and Definition of Executive Coaching. *Consulting Psychology Journal: Practice and Research, 48(2)*, 134-144.

Kilminster, S. M. & Jolly, B. C. (2000). Effective supervision in clinical practice settings: A literature review. *Medical Education, 34*(10), 827–840.

Kim, S. (2014). Assessing the influence of managerial coaching on employee outcomes. *Human Resource Development Quarterly, 25*(1), 59–85.

Kokotovic, A. M. & Tracey, T. J. (1990). Working alliance in the early phase of counseling. *Journal of Counseling Psychology, 37*(1), 16-21.

Lai, Y. L. & Smith, H. (2021). An investigation of the three-way joint coaching alliance: A social identity theory perspective. *Applied Psychology: An International Review, 70*(2), 489-517.

Lee, A. (2008). How are doctoral students supervised? Concepts of doctoral research supervision. *Studies in Higher education*, *33*(3), 267-281.

Lee, A. (2018). How can we develop supervisors for the modern doctorate?. *Studies in Higher Education*, *43*(5), 878-890.

Leong, S. (2010). Mentoring and research supervision in music education: Perspectives of Chinese postgraduate students. *International Journal of Music Education, 28*(2), 145–158.

Louis, D. & Fatien Diochon, P. (2014). Educating coaches to power dynamics: Managing multiple agendas within the triangular relationship. *Journal of Psychological Issues in Organizational Culture, 5*(2), 31–47.

Louis, D. & Fatien Diochon, P. (2018). The coaching space: A production of power relationships in organizational settings. *Organization, 25*(6), 710–731.

Mackie, S. A. & Bates, G. W. (2019). Contribution of the doctoral education environment to PhD candidates' mental health problems: A scoping review. *Higher Education Research & Development, 38*(3), 565-578.

Masry-Herzallah, A. & Da'as, R. A. (2021). Cultural values, school innovative climate and organizational affective commitment: A study of Israeli teachers. *International Journal of Educational Management, 35*(2), 496-512.

Meng, Y., Tan, J. & Li, J. (2017). Abusive supervision by academic supervisors and postgraduate research students' creativity: The mediating role of leader–member exchange and intrinsic motivation. *International Journal of Leadership in Education, 20*(5), 605-617.

Metcalfe, J., Wilson, S. & Levecque, K. (2018). *Exploring wellbeing and mental health and associated support services for postgraduate researchers*. Vitae: The Careers Research and Advisory Centre (CRAC). https://www.vitae.ac.uk/doing-research/wellbeing-and-mentalhealth/HEFCE-Report_Exploring-PGR-Mental-health-support/view

Nichol, L., Cook, J., & Ross, C. (2022). Adopting coaching for doctoral supervision: Opportunities and challenges for HRD. *Human Resource Development International*, *25*(4), 488-499.

Ozyilmaz, A., Erdogan, B., & Karaeminogullari, A. (2018). Trust in organization as a moderator of the relationship between self-efficacy and workplace outcomes: A social cognitive theory-based examination. *Journal of Occupational and Organizational Psychology*, *91*(1), 181-204.

Passmore, J. & Fillery-Travis, A. (2011). A critical review of executive coaching research: A decade of progress and what's to come. *Coaching: An International Journal of Theory, Research and Practice, 4*(2), 70–88.

Passmore, J. Leonard, H. S., Lewis, R., Freedman, A. M., & Leonard, H. S. (Eds.). (2013). The Wiley-Blackwell handbook of the psychology of leadership, change and organizational development. John Wiley & Sons.

Peng, Y. & Wang, Q. (2019). The impact of mindful agency coaching and motivational interviewing on the development of positive learning dispositions in undergraduate students: A quasi-experimental intervention study. *Journal of Educational and Psychological Consultation, 30*(1), 63-89.

Rousseau, D. M. (1995). *Psychological contracts in organizations: Understanding written and unwritten agreements*. Sage Publications, Inc.

Ryan, T., Baik, C. & Larcombe, W. (2022). How can universities better support the mental wellbeing of higher degree research students? A study of students' suggestions. *Higher Education Research & Development, 41*(3), 867-881.

Sainani, K. L. (2012). Dealing with non-normal data. *American Academy of Physical Medicine and Rehabilitation, 4*, 1001-1005.

Schmidt, M. & Hansson, E. (2018). Doctoral students' well-being: A literature review. *International Journal of Qualitative Studies on Health and Well-Being, 13*(1), 1-14.

Seligman, M. E. P. & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*(1), 5–14.

Stubb, J., Pyhältö, K. & Lonka, K. (2012). The experienced meaning of working with a PhD thesis. *Scandinavian Journal of Educational Research, 56*(4), 439-456.

Twale, D. J. & De Luca, B. M. (2008). *Faculty incivility: The rise of the academic bully culture and what to do about it*. Jossey-Bass.

Ullman, J. B. & Bentler, P. M. (2012). Structural equation modeling. In I. Weiner & T. Florida (Eds.), *Handbook of Psychology Volume 2. Research Methods in Psychology* (pp. 661-690). John Wiley & Sons.

Upton, B. (2023). 'Keep academics without people skills away' from PhD supervision. *Times Higher Education*. https://www.timeshighereducation.com/news/keep-academics-without-people-skills-away-phd-supervision

Van Zyl, L. E., Roll, L. C., Stander, M. W. & Richter, S. (2020). Positive psychological coaching definitions and models: A systematic literature review. *Frontiers in Psychology, 11*, 793.

Vähämäki, M., Saru, E. & Palmunen, L. M. (2021). Doctoral supervision as an academic practice and leader–member relationship: A critical approach to relationship dynamics. *The International Journal of Management Education, 19*(3), 100510.

Wang, Q., Lai, Y., Xu, X. & McDowall, A. (2022). The effectiveness of workplace coaching: A meta-analysis of contemporary psychologically informed coaching approaches. *Journal of Work-Applied Management, 14*(1), 77-101.

Watson, D. & Turnpenny, J. (2022). Interventions, practices and institutional arrangements for supporting PGR mental health and wellbeing: Reviewing effectiveness and addressing barriers. *Studies in Higher Education, 47*(9), 1957–1979.

Wilson, K. (2002). Quality assurance issues for a PhD by published work: A case study. *Quality Assurance in Education, 10*(2), 71–78.

Wood, R. & Bandura, A. (1989). Social cognitive theory of organizational management. *Academy of Management Review, 14*(3), 361-384.

Woolderink, M., Putnik, K., van der Boom, H. & Klabbers, G. (2015). The voice of PhD candidates and PhD supervisors: A qualitative exploratory study amongst PhD candidates and supervisors to evaluate the relational aspects of PhD supervision in the Netherlands. *International Journal of Doctoral Studies, 10*, 217-235.

Xu, E., Huang, X., Lam, C. K. & Miao, Q. (2012). Abusive supervision and work behaviors: The mediating role of LMX. *Journal of Organizational Behavior, 33*(4), 531-543.

Figures

Figure 1. The tested Structural Pathway for Supervisor Behaviours Influence on Working
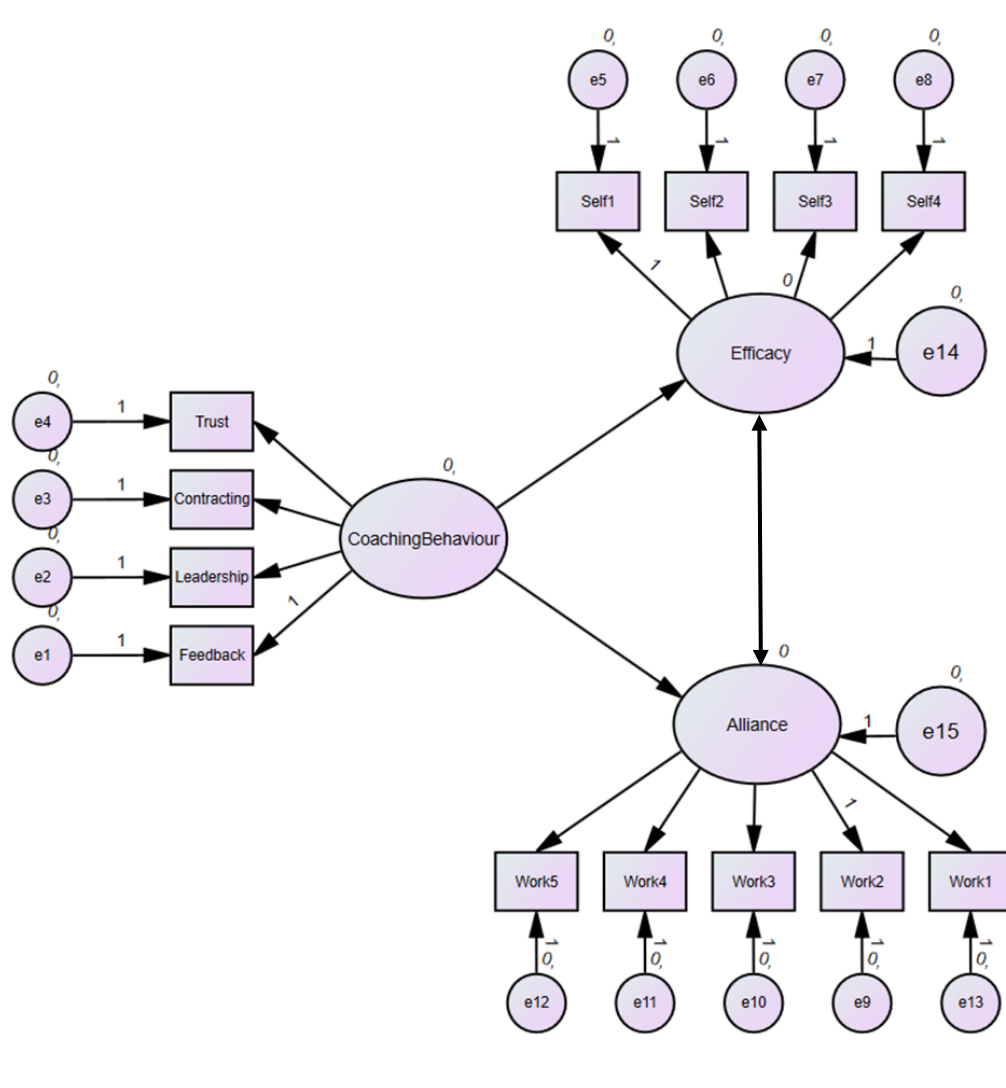Alliance and Self Efficacy

Figure 2. The Model for coaching behaviours predictive relationship with self-efficacy and working alliance.
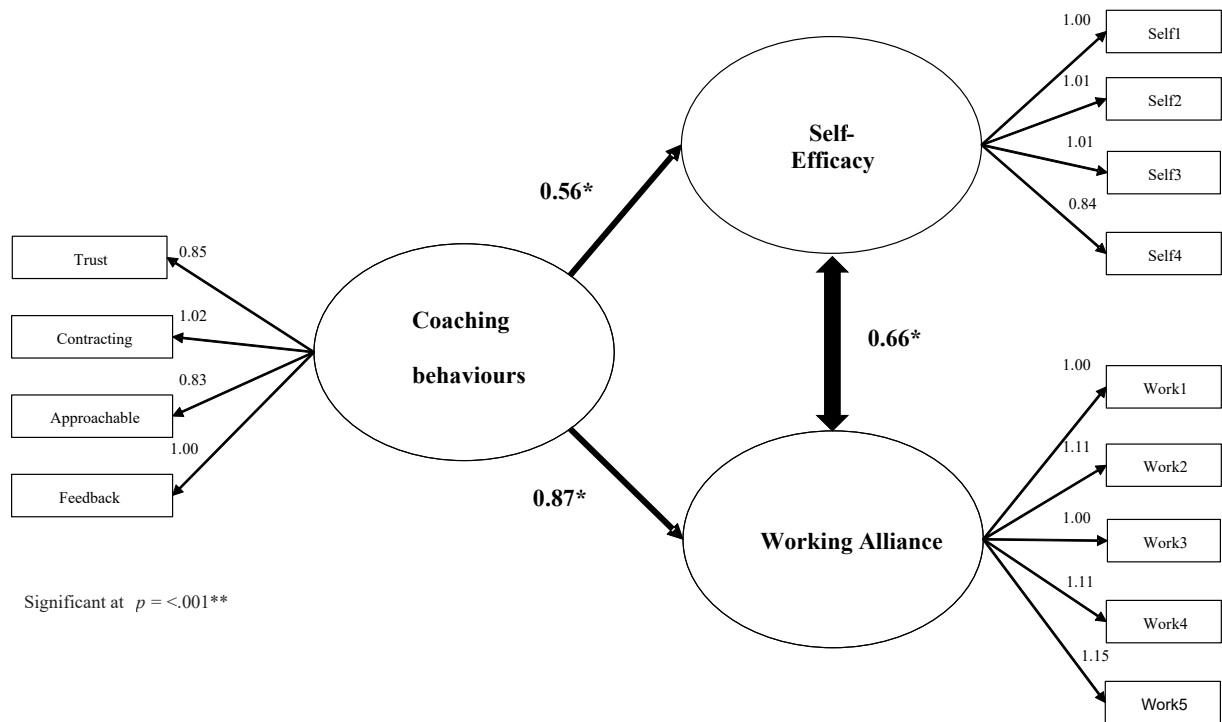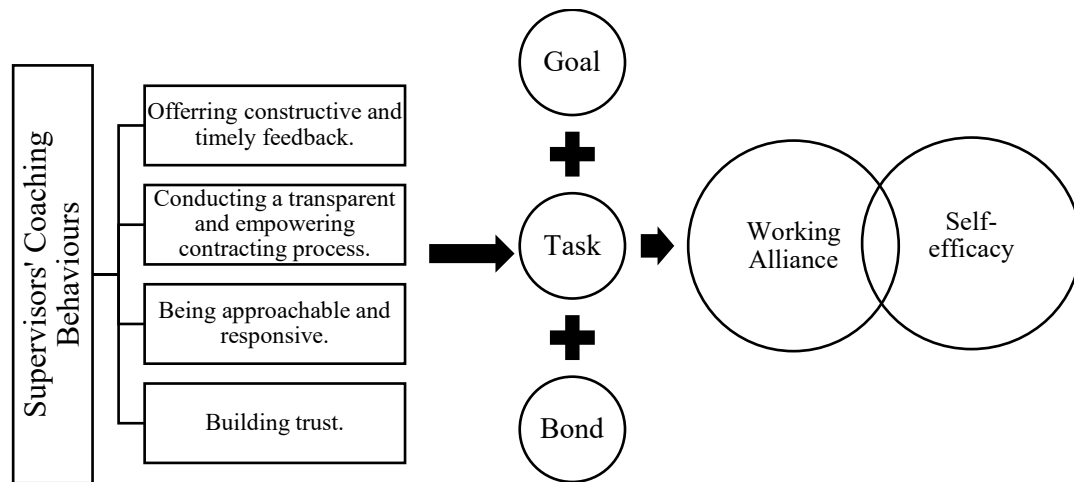

Significant at $p = <.001**$

Figure 3. The framework of coaching style supervision in doctoral degree study process.

Tables

Table 1. Participant Demographic data (total N = 657).

			Coaching Behaviour Scores	
Source		**N**	**Mean**	**SD**
Gender	Male	230	4.52	0.86
	Female	215	4.38	0.87
	Prefer not to say	12	3.97	0.92
Age	25 or Younger	77	4.34	0.72
	26-30	165	4.26	0.86
	31-35	118	4.09	0.97
	36-40	98	4.06	1.07
	41-45	55	4.26	0.95
	46-50	34	4.38	0.72
	51-55	42	4.44	0.82
	56 or Older	25	4.24	0.99
Disability	Yes	44	4.12	1.21
	No	559	4.24	0.87
	Prefer not to say	21	3.80	1.15
Study Format	Full-Time	422	4.15	0.92
	Part-Time	208	4.34	0.93
Study Mode	In Person	241	4.20	0.92
	Distance	194	4.26	0.93

Table 2. Participants Academic Demographics

			Coaching Behaviour Scores	
Source		**N**	**Mean**	**SD**
Study Format	Full-Time	422	4.15	0.92
	Part-Time	208	4.34	0.93
Study Mode	In Person	241	4.20	0.92
	Distance	194	4.26	0.93
Years of Study	1-2 Years	228	4.45	0.72
	3-4 Years	288	4.17	0.96
	5-6 Years	92	3.75	1.07
	7 or More Years	30	4.28	0.85

Table 3. The Model Fit Measurement for the coaching behaviours predictive relationship

with working alliance and self-efficacy amongst PGRs.

Measurement for Goodness of Model Fit	
Measurement	Score
CFI	0.94
RMSEA	0.10
RSMR	0.04
CHI Squared	530.78 (df = 63, p = <.001)

Note: CFI: Comparitive fit index; RMSEA; Root mean square error of approximation; RMSR: Root mean square residual.

Table 4. Regression analysis for PGR's perception of their supervisor's coaching behaviours to perceptions of working alliance.

Coaching Behaviours	Working Alliance			
	B	se	β	t
Trust	**0.13****	0.03	0.14	4.67
Contracting	**0.16****	0.02	0.21	7.50
Approachable and friendly manner	**0.26****	0.03	0.26	8.13
Feedback	**0.32****	0.03	0.36	11.56
	$R = 0.87$, $R^2 = 0.76$, p <.001			

Note: Significant at p = <.01*, Significant at p = <.001**

Table 5. Regression analysis for PGR's perception of their supervisor's coaching behaviours to perceptions of self-efficacy.

Coaching Behaviours	Self-Efficacy			
	B	se	β	t
Trust	0.03	0.04	0.04	0.73
Contracting	0.15**	0.03	0.24	5.06
Approachable and friendly manner	0.05	0.04	0.06	1.21
Feedback	0.23**	0.04	0.32	5.97
	$R = 0.59, R^2 = 0.34, p < .001$			

Note: Significant at $p = < .01*$, Significant at $p = < .001**$

Table 6. One-way ANOVA for PGR's perceptions of their supervisor's coaching behaviours, working alliance and in each country.

Source	df	F Value	UK		Israel		China	
			Mean	SD	Mean	SD	Mean	SD
Coaching Behaviours	2	72.61	4.44**	0.80	3.48*	0.90	3.96*	1.05
Self-Efficacy	2	32.55	4.35**	0.68	3.86	0.83	3.82	0.76
Working Alliance	2	26.93	4.40**	0.83	3.82	0.98	3.93	1.01

Note: Significant from all other countries at $p = < .001**$