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How personality traits affect clinician-supervisors' work engagement and subsequently their teaching performance in residency training

Renée A. Scheepers^a, Onyebuchi A. Arah^{a,b,c}, Maas Jan Heineman^{a,d} and Kiki M. J. M. H. Lombarts^a

^aProfessional Performance Research Group, Center for Evidence-Based Education, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands; ^bDepartment of Epidemiology, The Fielding School of Public Health, University of California, Los Angeles (UCLA), Los Angeles, CA, USA; ^cUCLA Center for Health Policy Research, Los Angeles, CA, USA; ^dMember of the Board of Directors, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands

ABSTRACT

Purpose: Clinician-supervisors often work simultaneously as doctors and teachers. Supervisors who are more engaged for their teacher work are evaluated as better supervisors. Work engagement is affected by the work environment, yet the role of supervisors' personality traits is unclear. This study examined (i) the impact of supervisors' personality traits on work engagement in their doctors' and teachers' roles and (ii) how work engagement in both roles affects their teaching performance.

Methods: Residents evaluated supervisors' teaching performance, using the validated System for Evaluation of Teaching Qualities. Supervisors' reported work engagement in doctor and teacher roles separately using the validated Utrecht Work Engagement Scale. Supervisors' personality traits were measured using the Big Five Inventory's five factor model covering conscientiousness, agreeableness, extraversion, emotional stability and openness.

Results: Overall, 549 (68%) residents and 636 (78%) supervisors participated. Conscientiousness, extraversion and agreeableness were positively associated with supervisors' engagement in their teacher work, which was subsequently positively associated with teaching performance.

Conclusions: Conscientious, extraverted, and agreeable supervisors showed more engagement with their teacher work, which made them more likely to deliver adequate residency training. In addition to optimizing the work environment, faculty development and career planning could be tailor-made to fit supervisors' personality traits.

Introduction

In teaching hospitals, clinician-supervisors take roles as both doctors and teachers (Kumar et al. 2011). In a continuous interaction, supervisors treat patients and at the same time, function as supervisors and role models for residents in how to treat patients (Jochimsen van der Leeuw et al. 2013). In the eyes of residents, supervisors with higher levels of work engagement are better performing teachers (Scheepers et al. 2015). Work engagement is defined as a positive work-related state of mind involving dedication (i.e. enthusiasm), vigor (i.e. energy) and absorption (i.e. concentration) (Bakker 2011). Engaged teachers are enthusiastic, energetic, focused on their work, and are more likely to perform their work professionally (Bakker & Bal 2010). Among physicians, higher levels of work engagement are associated with less medical errors (Prins et al. 2009).

Engaged professionals experience higher levels of well-being and less work stress (Bakker & Leiter 2010). Work engagement can be considered to be opposite to burnout, as work engagement involves a positive and active work-related state of mind, while burnout refers to a negative work experience involving exhaustion (González-Romá et al. 2006). Medical professors with high levels of work engagement are less likely to experience burnout (Tijdkink et al. 2014). High levels of work engagement and low levels of

Practice points

- More engaged teachers are perceived by residents as better supervisors. Engaged doctors are not necessarily better supervisors.
- Residents deserve to be trained by engaged teachers as these perform better.
- Of all personality traits, conscientiousness is most strongly associated with supervisors' engagement in both their teacher and doctor work.
- Agreeable supervisors are more engaged teachers and emotional stable supervisors are the more engaged doctors.
- Faculty development programs and career planning could be individualized based on supervisors' personality traits and work engagement.

burnout can be fostered by optimizing working conditions, i.e. job resources that stimulate personal growth, learning and development, such as performance feedback (Schaufeli & Bakker 2004). Feedback on teaching performance appears to be a key motivational factor for work engagement of supervisors (Berg et al. 2013). Also, personal resources, i.e. resiliency, have been shown to facilitate professionals in their work engagement or protect them from burnout (Xanthopoulou et al. 2009).

CONTACT Renée A. Scheepers ✉ r.a.scheepers@amc.nl Professional Performance Research Group, Center for Evidence Based Education, Academic Medical Center, University of Amsterdam, Meibergdreef 9, PO Box 22700, 1100 DE Amsterdam, The Netherlands

Supplemental data for this article can be accessed [here](#).

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In addition, certain personality traits such as emotional stability, agreeableness, conscientiousness and extraversion, showed to act as a buffer to burnout for physicians (McManus et al. 2004). It is unclear however if and how personality traits facilitate supervisors in staying or becoming more engaged in their doctor and teacher work. Following the well-validated Five Factor Model, personality traits can be categorized in five comprehensive domains: conscientiousness, agreeableness, extraversion, emotional stability, and openness (see Box 1 in Supplementary Appendix for explanations) (McCrae & Costa 1987; Ozer & Benet-Martinez 2006). In AMEE guide no. 79 on the role of personality traits in medical education and practice, conscientiousness was noted as an especially relevant trait for physicians in their roles as clinicians and educators (Hojat et al. 2013). Conscientiousness involves the qualities responsibility, dutifulness, achievement striving and self-discipline (Hojat et al. 2013). Research in other professions shows that people displaying high levels of conscientiousness are more likely to be engaged in and dedicated to their work (Kim et al. 2009; Inceoglu & Warr 2011; Rossier et al. 2012; Zaidi et al. 2013; Akhtar et al. 2015).

Regarding the other personality traits (i.e. emotional stability, extraversion, agreeableness and openness), research reported mixed findings (Langelaan et al. 2006; Kim et al. 2009; Inceoglu & Warr 2011; Rossier et al. 2012; Zaidi et al. 2013; Akhtar et al. 2015). In addition, these studies did not research work engagement of supervisors in medical education, which is particularly complex because of their roles in both patient care and residency training. Ultimately, high levels of work engagement have shown to benefit performance (Christian et al. 2011). However, it has not yet been comprehensively studied how supervisors' engagement in their doctor versus their teacher work may (i) facilitate their teaching performance and (ii) is facilitated by their personality traits. This research on personality traits will complement existing knowledge on the work environment and provide more comprehensive insight in support of supervisors' strengthened work engagement and performance in both doctor and teacher roles. In the current study, we researched if supervisors' work engagement would mediate the association between personality traits and teaching performance (Figure 1). Specifically, we investigated if and which personality traits would affect supervisors' doctor and teacher work engagement (Figure 1(A,B), respectively), and how work engagement in both these roles affected teaching performance (Figure 1(C,D)).

Methods

Study population and setting

This multicenter study involved 61 different training programs in 18 medical centers (2 academic and 16 non-academic) in the Netherlands and took place between May 2012 and January 2013. By email, we invited 819 supervisors and 815 residents to participate in this study, while emphasizing confidentiality and voluntary participation. Residents could choose which and how many supervisors to evaluate.

The institutional ethical review board of the Academic Medical Center of the University of Amsterdam waived ethical approval for this study.

Measures

We used data of an ongoing multicenter survey involving the System for Evaluation of Teaching Qualities (SETQ) instrument to measure teaching performance. The details of the instruments and system development are described elsewhere and show that the instruments provide reliable and valid evaluations of supervisors' teaching performance (Boerebach et al. 2014). The web-based SETQ system contains two measurement tools: one for resident-evaluation of supervisors' teaching performance and another for supervisors' self-evaluation. In both the resident- and self-evaluations, supervisors' teaching performance was evaluated using 23 items that clustered into five domains: learning climate, professional attitude toward residents, communication of learning goals, evaluation of residents and feedback. All items are evaluated on a 5-point scale, ranging from "totally disagree" to "totally agree".

In the self-evaluation, supervisors reported their demographics, own teaching performance, work engagement in their doctor and teacher roles, and, lastly, their personality traits. The work engagement and personality questionnaires were not a mandatory part of the teaching performance evaluation for which residency programs subscribed, as this was part of research and not of the continuous performance evaluation. A systematic review reported that physicians' self-evaluations of performance had weak associations with external observations of performance and, thus, that physicians have limited ability to self-assess their performance accurately (Davis et al. 2006). Research has extensively shown that teaching performance measures based on multiple resident ratings provide reliable psychometric properties of teaching performance (Lombarts et al. 2009; Arah et al. 2011; van der Leeuw et al. 2011; Boerebach et al. 2012, 2014). In this study, we used the residents' mean of the reported five domains to capture teaching performance.

Work engagement was measured with the 9-item version of the Utrecht Work Engagement Scale (UWES-9), which was validated in several countries for multiple occupational groups (Seppälä et al. 2009), including supervisors (Scheepers et al. 2015). The UWES-9 originally measures overall work engagement and was also validated to measure work engagement in supervisors' separate doctor and teacher roles (Scheepers et al. 2015). Specifically, principal components analysis discriminated doctor work engagement from teacher work engagement (Scheepers et al. 2015). Internal consistency of both doctor and teacher work engagement scales was high (Cronbach's alpha of 0.91 and 0.95, respectively). Role-specific work engagement was measured by providing supervisors with the possibility to report – on a 7-point scale from "never" to "always/daily" – their work engagement twice: once for their doctor role (e.g. "I am enthusiastic about my work as a doctor") and once for their teacher role (e.g. "I am enthusiastic about my work as a teacher").

Supervisors self-reported their personality traits on a 5-point scale using the 10-item version of the Big Five Inventory (BFI-10) (Rammstedt & John 2007). The BFI-10 measures personality in five domains according to the Five Factor Model: conscientiousness, agreeableness, extraversion, emotional stability, and openness. This questionnaire was previously validated in this sample of supervisors

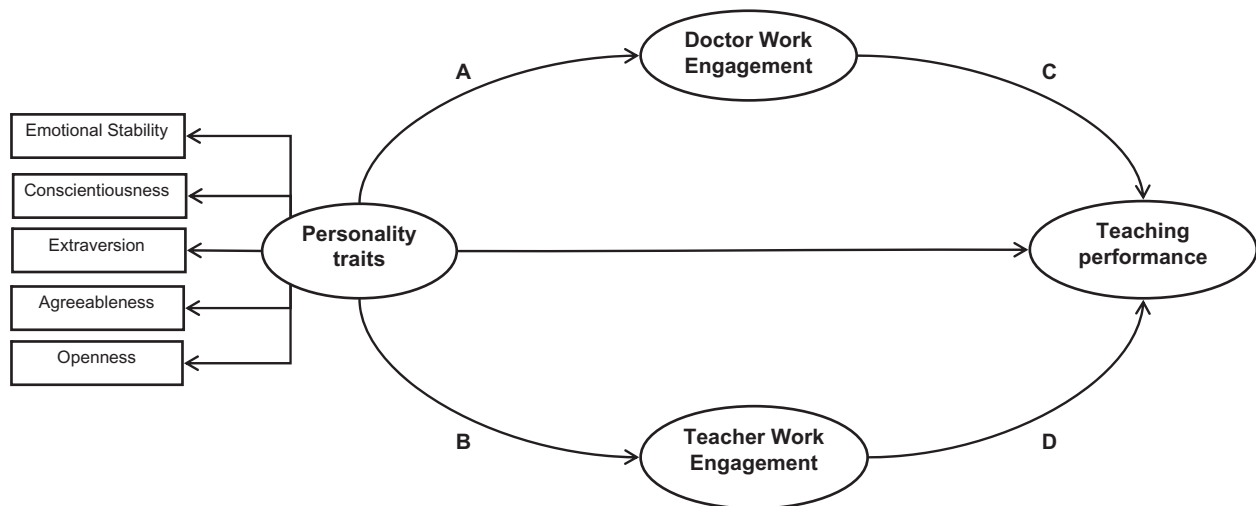


Figure 1. Conceptual model of the associations between personality traits, (doctor and teacher) work engagement and teaching performance. (A) Associations between personality traits and doctor work engagement. (B) Associations between personality traits and teacher work engagement. (C) Associations between doctor work engagement and teaching performance. (D) Associations between teacher work engagement and teaching performance.

following exploratory and confirmatory factor analysis (Scheepers et al. 2014).

Statistical analyses

First, we aggregated teaching performance evaluations of different residents on the level of individual supervisors, which resulted in average scores on teaching performance items for each physician. Following Expectation Maximization (EM) algorithms in SPSS, missing data were imputed for the supervisors who participated in the teaching performance evaluation yet not in the personality or work engagement questionnaires (14.8% of the total sample; see Table 4 in Supplementary Appendix for responder versus non-responder characteristics). After that, we performed structural equation modeling on the data in the statistical software package R. Structural equation modeling is considered as a combination of factor and regression analyses (Hox & Bechger 1998). This technique is typically suitable to test associations between the various constructs of personality traits (conscientiousness, agreeableness, extraversion, emotional stability and openness), (doctor and teacher) work engagement and teaching performance.

Using the *sem* function of the Lavaan package in R (Rosseel 2012), we first defined our measurement model including observed variables (items), latent variable indicators, co-variances, error variances, path regressions and confounders (gender and age) (Figure 1 in Supplementary Appendix). We specifically allowed for covariation of work engagement items, because these are likely to share some conceptual overlap (see Figure 1 in Supplementary Appendix) (Scheepers et al. 2015). We examined mediation by studying direct associations (path coefficients) between personality traits and teaching performance as well as indirect associations (path coefficients) between personality traits and teaching performance through work engagement. We assumed mediation when non-null associations would emerge between personality traits and work engagement as well as between work engagement and teaching performance, while reduced or null associations would emerge between personality traits and teaching performance upon conditioning on work engagement.

We assessed the overall goodness of fit of our defined model (Figure 1) using the standardized root mean square residual (SRMR, where values <0.08 indicate good fit, <0.12 indicate acceptable fit), the root mean square error of approximation (RMSEA, where values <0.06 indicate good fit, <0.10 indicate acceptable fit), the comparative fit index (CFI, where values >0.95 indicated good fit, >0.90 indicate acceptable fit), and the Tucker–Lewis index (TLI, where values >0.95 indicated good fit, >0.90 indicate acceptable fit) (Hu & Bentler 1999).

Results

In total, 549 (67%) residents filled out 4305 evaluations of 805 supervisors. Of the supervisors, 636 (78%) participated in the survey, of whom 515 self-reported their personality traits (81%) and 514 (81%) self-reported their work engagement (63% of total invited, Table 1 in Supplementary Appendix). The mean number of resident evaluations per supervisors was 5.43, meaning that criteria for reliable feedback were satisfied (Boerebach et al. 2014). Supervisors were equally distributed across academic and non-academic medical centers ($N=319$ versus $N=317$, respectively) (Table 1 in Supplementary Appendix).

The path coefficients showed that conscientiousness, extraversion and emotional stability were positively associated with doctor work engagement (Table 3 in Supplementary Appendix and Figure 2). Teacher work engagement was positively affected by conscientiousness, extraversion and agreeableness. Teacher work engagement was positively associated with teaching performance. There were no direct associations between personality traits and teaching performance, meaning that work engagement mediated, i.e. clarified most of, the association between personality traits and teaching performance. In general, conscientiousness showed large coefficients for both doctor and teacher work engagement, in comparison to associations for the other personality traits.

Overall, the goodness of fit indices demonstrated acceptable fit of our model. Specifically, good fit was suggested by the indices RMSEA (0.054) and SRMR (0.058) and acceptable fit was indicated by the CFI (0.919) and the TLI (0.910) (Table 3 in Supplementary Appendix).

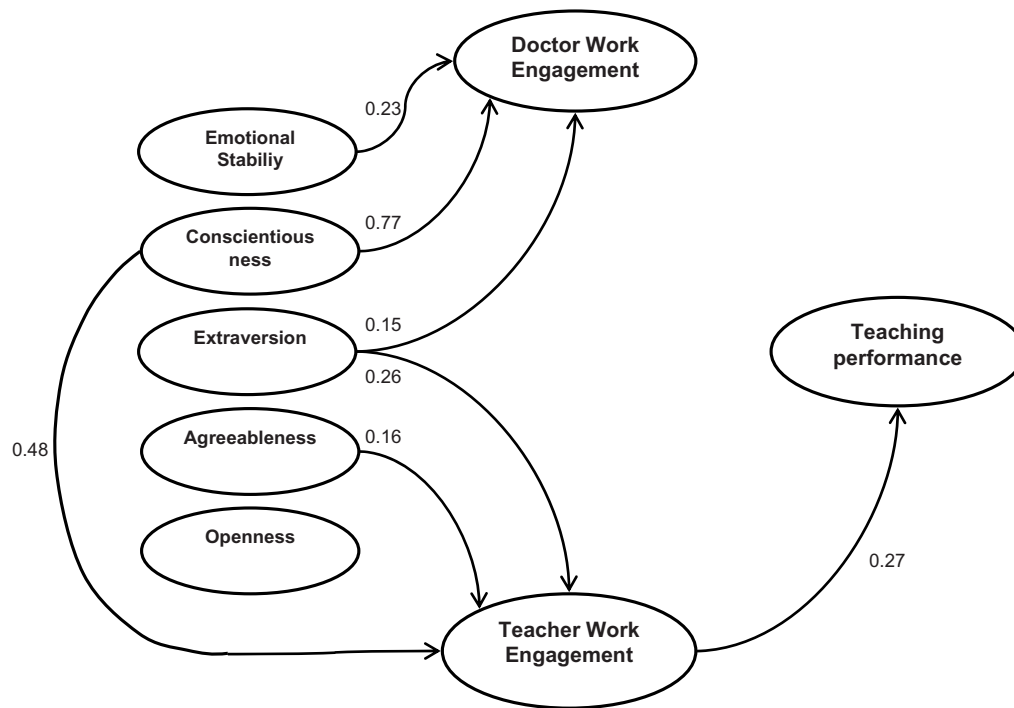


Figure 2. Final model of standardized regression coefficients (β) of (non-zero) associations between personality traits, (doctor and teacher) work engagement and teaching performance (see Table 3 in Supplementary Appendix). *All associations were controlled for supervisors' gender and age.

Discussion

Main findings

Our study findings suggest that extraverted, agreeable and particularly conscientious supervisors are more likely to be engaged with their teacher work, and their high levels of teacher work engagement ultimately made them better teachers in the eyes of residents.

Explanation of findings

Supervisors who are highly engaged with their teacher work are perceived by residents as better performing teachers. Somewhat surprisingly, supervisors who were more engaged in their doctor work were not better evaluated on their teaching performance. This suggests that, in the eyes of residents, good teaching performance is rather facilitated by supervisors' explicit engagement in teaching than in patient care. The so-called broaden-and-build-theory may help explain this. According to this theory, positive emotions typical for work engagement (i.e. enthusiasm, energy, and dedication) (Bakker & Leiter 2010), broaden people's momentary attention and stimulate flexible behaviors (Fredrickson 2001; Fredrickson & Branigan 2005). In clinical teaching, supervisors need to explore wide attention for both patients' well-being and residents' learning as well as flexibly think and act on both their demands. Accordingly, supervisors' explicit engagement and dedication to teaching may facilitate their attention for residents and optimal supervision while simultaneously faced with the various demands of daily patient care.

In their coping with the two fold responsibility for patient care and supervision, supervisors have shown to utilize different styles (Goldszmidt et al. 2015). Specifically, the empowerment style avails of strategies to integrate teaching and patient care activities targeted at optimal resident learning. Teacher-engaged supervisors, who are more

dedicated and enthusiastic for optimal supervision, may be more characterized by this style. In turn, residents may appreciate these efforts, measurable in the positive perceptions of teacher-engaged supervisors reported in this study. On the other hand, the more doctor-engaged supervisors may be more inclined to prioritize safe patient care over trainee learning, which is referred to as the direct care style (Goldszmidt et al. 2015). This could explain why residents do not necessarily evaluate doctor-engaged supervisors as better performing teachers specifically. Future research could address the question whether these doctor-engaged supervisors provide more optimal patient care.

In understanding how supervisors stay or become more engaged, the personality trait conscientiousness was indicated to contribute most. Conscientious professionals are goal- and task-directed and achievement-oriented: while striving to reach their goals, they stay concentrated and are not easily distracted (Hampson 2012). Especially within the context of modern health care the goal-directedness of conscientious supervisors may be helpful. In the current clinical context, supervisors are confronted with multiple demands following from health care reforms, high workloads and managerial requirements in service of quality purposes (Wallace et al. 2009; Mortensen et al. 2010). Under the multiple demands and distractions of modern health care, being highly conscientious may facilitate supervisors to keep their professional goals in mind and stay engaged with their daily work. This resonates with research showing that conscientiousness is positively associated with perseverance and passion for goals (Duckworth et al. 2007).

Yet, conscientiousness may not necessarily be beneficial in all cases. The goal-directed and achievement-oriented nature of conscientious physicians may lead them to set standards too high (Barrick et al. 1993). This is reflected in research showing that high levels of physicians' conscientiousness are associated with higher levels of work stress

(Rovik et al. 2007). Our study showed exclusively positive associations between conscientiousness and work engagement; nonetheless, there is more to well-being at work than work engagement, such as burnout and workaholism (Schaufeli et al. 2008). Future research should study supervisors' well-being at work comprehensively and identify optimal levels of conscientiousness. These insights could tailor individualized support for supervisors who are at risk for low levels of work-related well-being.

Limitations

Although this study involved a large sample of supervisors of 61 residency programs from 18 medical centers, we must consider potential limitations. The distribution of academic and non-academic medical centers (2/16) was unequal, yet the number of supervisors working in academic versus non-academic medical centers was equally distributed (Table 1 in Supplementary Appendix). The sample consisted of supervisors from residency programs who voluntarily participated in our periodical teaching performance evaluations. Possibly, those residency training programs that participated could be more engaged with teaching and performed better than those who refrained from continuous performance measurement. However, we expected no big differences between participating and non-participating residency programs, as it is common practice in the Netherlands to safeguard the quality of residency training through involvement in quality measurement systems. Still, future research could benefit from additional randomization of participating residency programs.

Implications

Engaged teachers are better evaluated on their teaching performance than engaged doctors. On average, however, supervisors showed more engagement for their doctor work than for their teacher work (Table 3 in Supplementary Appendix). Given the positive contribution of teacher work engagement to supervisors' performance, medical educators could study and optimize working conditions that facilitate supervisors in being more engaged in their work as teachers. Research indicates that in this case, a highly individualized approach is warranted (van den Berg et al. 2015). That is, most supervisors recognize the resourceful nature of their work including both patient care and resident supervision, however which specific working conditions are resourceful for their work engagement depends on individual characteristics and preferences (van den Berg et al. 2015). This study provides an overview of the personality traits that act as facilitators for supervisors' engagement in their doctor and teacher work. The contribution of emotional stability to doctor work engagement demonstrates the relevance of physicians' investment in their own well-being and resilience in face of work stress, also punctuated in the Professional role of the well-known Canadian Medical Education Directions for Specialist (CanMEDS) framework (Puddester et al. 2009). In addition, of all personality traits, conscientiousness showed to facilitate supervisor work engagement most. Accordingly, it is reassuring that, on an average, supervisors show relatively high levels of conscientiousness (Table 2 in Supplementary Appendix). Supervisors could consciously

benefit from qualities involved in conscientiousness to serve their engagement when at risk of low well-being in their work. Important qualities of conscientiousness involve goal-directedness and intrinsic motivation to achieve these goals. This could underscore the need for paying attention to supervisors' individual goals in professional development paths or programs. Specifically, supervisors could be guided in their personal goals and ambitions as well as increasing those resources in support of work engagement (i.e. job crafting) (Bakker et al. 2012). Increased work engagement may not only be vital for the well-being in their work, yet, as reported in this study, may also contribute to better performance. Performance improvement has been shown to benefit from supervisors' strong commitment (van der Leeuw et al. 2013). Accordingly, supervisors who are more explicitly engaged in teaching may also be more likely improve their performance when warranted.

Conclusion

Supervisors' personality traits affect their work engagement, and residents see those supervisors who are highly engaged in their teacher work as better teachers. This study adds to the existing literature on the roles of the work environment and personality traits in understanding work engagement and teaching performance of supervisors. Beyond optimizing the work environment in general, faculty development programs could be tailor-made to maximize the positive effects of supervisors' personality traits. Individualized support to increase supervisors' work engagement may ultimately result in their delivering better clinical training for residents.

Glossary

Work engagement: Work engagement is defined as a positive work-related state of mind involving dedication (i.e. enthusiasm), vigor (i.e. energy) and absorption (i.e. concentration).

Personality traits: Personality traits are relatively enduring characteristics within the individual that influence interactions with their environment. Following the well-validated Five Factor Model, personality traits can be categorized in five comprehensive domains: conscientiousness, agreeableness, extraversion, emotional stability, and openness.

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Notes on contributors

Renée Scheepers, MSc, PhD, is researcher at the Professional Performance Research Group of the Academic Medical Centre in Amsterdam, the Netherlands.

Onyebuchi Arah, MD, PhD, is Professor Epidemiology at the University of California, Los Angeles, USA.

Maas Jan Heineman, MD, PhD, is Professor Gynaecology & Obstetrics and a member of the Board of Directors at the Academic Medical Centre in Amsterdam, the Netherlands.

Kiki Lombarts, PhD, is Professor Professional Performance of the Professional Performance Research Group of the Academic Medical Centre in Amsterdam, the Netherlands.

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