



An exploration into the role of personality on the experiences of work–family conflict among the mining industry personnel in South Africa

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Orientation: Workers within the mining industry are often exposed to hazardous and strenuous working conditions that arise from the nature of their job and these demands from work tend to conflict with family demands resulting in work–family conflict (WFC). However, individuals possess different personality traits and these are assumed to play a role in the extent of the experiences of WFC.

Research purpose: The study had an objective of investigating the role of personality in the experiences of WFC among employees in the mining industry.

Motivation for the study: By understanding personality traits and their varied influences in the experiences of WFC in different individuals, steps can be taken to address WFC in a manner that meets every employee's demands instead of adopting a holistic approach.

Research design, approach and method: The quantitative discipline was adopted with the use of structured questionnaires. The study consisted of 270 respondents. Probability sampling was used to select respondents from the population. The program SPSS was used to apply linear regression analysis to examine the association between variables.

Main findings: The findings of the study showed that a negative relationship exists between personality traits and the various forms of WFC as well WFC holistically. The results also showed significant negative correlations with the different forms of WFC, with the exception of the agreeableness trait, and that personality traits combined had greater influence on the experiences of WFC than each distinctly.

Practical/managerial implications: The findings of the study assist in the implementation of procedures and policies that will help in reducing WFC and its consequences in the work environment.

Contribution/value-add: The findings confirm that personality traits influence the experiences of WFC among individuals and the study also contributes towards adding to existing knowledge and insights concerning WFC.

Keywords: work–family conflict; big five personality traits; agreeableness; conscientiousness; openness to experience; neuroticism; extraversion; mine employees.

Introduction

Workers in the mining industry across the world are prone to extremely high incidences of stress owing to the employment conditions in the industry (Liu, Wang & Chen 2014; McLean 2012; Tandon & Chawla 2018). The environment is characterised by hard physical labour with most of the jobs taking place underground where the conditions are both psychologically and physically challenging, with physical danger being an everyday fear (McTernan et al. 2016).

The psychological effect of unpleasant conditions at work may overflow and affect the home atmosphere as well in most circumstances (Liu et al. 2014). This study sought to investigate how personality may either enhance or ease the effect of the work situation on the home atmosphere and vice versa. The way that individuals react to situations differs in terms of the characteristics that each one possesses, and these characteristics are a natural part of one's makeup and cannot be separated from the workplace since emotions cannot be separated from people. Hence, it would be edifying to investigate personality and its significance on the enablement of work–family conflict (WFC). The study sought to examine the association of personality with WFC within the mining sector, and it focused on a selected mine in South Africa.

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Work–family conflict has become one of the most sought-out issues in recent times owing to the increased involvement of both men and women in the work industry. Work–family conflict has significant consequences for families, individuals and organisations (Nurak et al. 2018). It is associated with decreased levels of organisational commitment, work contentment, high absenteeism rates and also having an impact on psychological well-being (Allen et al. 2000; Kossek, Noe & DeMarr 1999; Parasuraman & Greenhaus 1997). Lower levels of family satisfaction are also linked to WFC (Eby et al. 2005). The conflict between work and family may result in some couples fighting as one partner or both may constantly be tired or facing pressures from work, hence failing to fully fulfil their matrimonial duties at home. It may also become difficult for some parents to be fully committed to parenting because of working shifts, and this may contribute to the lower levels of family satisfaction.

Work–family conflict takes various forms: time-based; strain-based; and behaviour-based conflict. Time-based conflict takes place when time set aside for one domain makes it more challenging to perform effectively in the other role (Lambert et al. 2017). Strain-based conflict transpires when strain in one role complicates the effective involvement in the other role. Behaviour-based conflict takes place where behaviour anticipated in one role is discordant with the behaviour anticipated in the other role (Buonocore & Russo 2013). To have a thorough perspective of the bearing of WFC, it is imperative to understand these various forms of WFC instead of looking at WFC as a global concept because investigating specific forms allows a detailed view into how various forms of conflict are experienced by different workers. This makes it easier to address the specific problem relevant to a particular individual instead of generalising.

Personality can be described as the combination of qualities and features of an individual (James & Mazerolle 2002; Selvarajan, Sing & Cloninger 2016). Individuals respond to situations and events differently depending on the characteristics that each possesses. The differing personalities in individuals, therefore, are assumed to trigger the extent of WFC that employees would experience.

This study focused on how personality impacts on the various forms of WFC. The focus on the various forms of WFC allowed the researcher to conduct an in-depth study of the relationship between personality and WFC. This would provide insight into how people experience WFC differently based on their particular personality. The results could indicate the mechanisms organisations should implement in order to accommodate various personalities, instead of focusing on WFC from a unionised view of individuals.

The target group of the study were employees from the mining industry. Mine employees are exposed to long hours of work, overtime, shifts (Dougherty 2011) which make their exposure to WFC higher than that of personnel in many other occupations. The South African context informed the study.

Literature review

Work–family conflict

According to Ruzungunde (2019), Lambert et al. (2017) and Mauno, Ruokolainen and Kinnunen (2015) define WFC based on the ideas of Greenhaus and Beutell (1985) who describe WFC as an inter-role conflict where the demands from both work and family domains become discordant with the one individual who is expected to fulfil them.

Work–family conflict is described based on the source responsible for the conflict, namely time, strain and behaviour (Lavassani & Movahedi 2014). Time-based conflict generally refers to a state where the time required or invested to fulfil a task makes it hard to fulfil another task (Lambert 1990). Ruzungunde (2019) states that, in comprehending time-based WFC, time should be understood as the fixed resource that it is, and consequently time spent engaging in work activities takes away from the time available for family-related activities (Steiber 2009).

Strain-based conflict arises when an individual faces high demands at work or home and is unable to cope with these demands (Kim & Hollensbe 2017). The inability to cope is usually the instance when demands are more than the available resources budgeted to fulfil those demands (Ruzungunde 2019).

According to Lambert et al. (2017), behaviour-based conflict occurs when the behaviours that are necessary for the fulfilment of one role do not match with the behaviours required for the fulfilment of another role. The conflict arises because of the clash in the expectations for separate roles that an individual is expected to fulfil. When the individual fails to adjust their behaviour to accommodate each role, dispute arises (Charkhabi, Sartori & Ceschi 2016; Ruzungunde 2019).

Personality

Personality can be described as a set of views, feelings, attitudes and behaviours that define a person and their distinctiveness (Selvarajan et al. 2016). Personality stems from within the individual and continues throughout the entire lifespan.

The most well-known definition of personality involves the Big Five personality traits model which aims to simplify the understanding of a number of traits and definitions of personality (McCrae et al. 2008). This model also aims to predict behavioural outcomes (Barrick & Mount 1991; Mount et al. 2005).

Extroversion

Extroversion is a personality trait that manifests in quickness and cleverness (Friedman et al. 2016). An extrovert derives energy from much interaction with those surrounding them and has high levels of constructive affection (Hermann & Karl-Dieter 2014). Individuals who are high in extraversion

possess great social skills, which make them easy to get along with (Friedman et al. 2016; Ruzungunde 2019).

Agreeableness

Agreeableness places people on a continuum regarding their concern for social harmony (Laney 2002). According to Ruzungunde (2019), some studies (Hermann & Karl-Dieter) have shown that highly agreeable individuals are usually more optimistic about others, hence usually considerate, kind-hearted, trusting, willing to compromise and ready to help others (Hermann & Karl-Dieter 2014). On the other hand, less agreeable individuals are usually sceptical, suspicious, unfriendly and do not cooperate easily.

Conscientiousness

According to Greenberg (2011), conscientiousness can be described as a quality that allows an individual to exercise willpower, excellence, capability and achievement. People high in conscientiousness are able to guide, manage and direct behaviour. In addition, highly conscientious people prefer to engage in thorough planning rather than to act impulsively (Ruzungunde 2019).

Neuroticism

Neuroticism is a typical character trait that has been widely studied in character studies. It is related to emotional stability (Jeronimus et al. 2014). Neurotic individuals are prone to continuous and severe negative emotions like sadness, anger and fear. Ruzungunde (2019) noted that these individuals become uncomfortable with themselves as a result of persisting negative emotions. Such individuals are usually moody, tense and have a tendency of viewing normal circumstances as threatening to them (Jeronimus et al. 2014).

Openness

Openness is a trait that describes outgoing, excited and daring individuals who love challenges (Jeronimus et al. 2014). Individuals who score high on openness desire opportunities to learn new things, explore activities that are insightful and imaginative, and have a variety of interests.

Personality and work–family conflict

According to Priyadharshini and Wesley (2014), WFC is a result of not only the work and home settings but also a function of individual differences. In this regard, personality traits have been reported in literature to either directly or indirectly affect WFC. Selvarajan et al. (2016) studied personality as a moderator of the association between support and WFC. However, Omrawo (2014) and Priyadharshini and Wesley (2014) cite personality as a distinct precursor to WFC. Personality explains how one conducts themselves both at work and at home (Omrawo 2014). This is because behaviours at work, like absenteeism, commitment, intentions to quit and loyalty, are all manifestations of one's personality (Penney, Hunter & Perry 2011). Personality traits

are understood to impact on the thoughts and discernments of work and family state of affairs and consequently have the capability to affect the degree to which one experiences WFC (Baltes, Zhdanova & Clark. 2011; Eby et al. 2005). Personality traits are also hypothesised to have an effect on individual behavioural choices, and, in turn, these behaviours may intensify or lessen the levels of WFC (Wayne, Musisca & Fleeson 2004).

Thus, most research on extraversion and WFC (Priyadharshini & Wesley 2014; Wayne et al. 2004) reports a negative relationship between the two, stating that extraversion enables better facilitation between roles. Omrawo (2014) agrees and emphasises that extroverts are more likely to accumulate social support as a resource to execute and negotiate work and family roles so as to circumvent potential spillovers and conflict than introverts.

Some researchers established a reverse relationship between agreeableness and WFC (Allen et al. 2012; Selvarajan et al. 2016; Wayne et al. 2004). Therefore, persons who score high on agreeableness are less likely to experience role conflict and negative interference. This is because agreeable individuals tend to control their emotions better than other individuals, especially when their reactions can be detrimental to their interpersonal relations (Yang & Diefendorff 2009).

Many researchers (Allen et al. 2012; Bazana & Dodd 2013; Michel, Clark & Jaramillo 2011; Selvarajan et al. 2016) agree that conscientiousness is negatively related to WFC. Michel et al. (2011) postulate that individuals high on conscientiousness exhibit problem-solving and coping behaviours and, therefore, go to great lengths to find alternative ways of dealing with the possible interference that work may have on family roles and vice versa. Furthermore, Selvarajan et al. (2016) assert that conscientious individuals are able to effectively perform multiple roles in the family and work because of the confidence they have in their personal abilities.

Some scholars have reported a positive relationship between neuroticism and WFC (Allen et al. 2012; Michel et al. 2011; Selvarajan et al. 2016). In a study by Baltes et al. (2011), neuroticism had a direct impact on the experiences of WFC, even with the existence of mediators. A study by Kinnunen et al. (2003) found neuroticism to have a curbing effect on the association between WFC and well-being. Put differently, individuals high in neuroticism experience high levels of WFC. Omrawo (2014) affirms that neurotic individuals quickly develop a bad mood as a result of a negative occurrence in either domain (work/family), and the bad mood is carried over to other domains, causing unfavourable performance and, as such, conflict.

Other literature highlights an adverse association between openness to experience and WFC (Priyadharshini & Wesley 2014; Selvarajan et al. 2016). Individuals open to experience are not stifled by tradition, and they utilise their novelty to

reduce the negativity of conflict. On the other hand, individuals who are not open to new experiences and cultures are rigid, conventional and prefer to stick to a routine, thereby causing them to dismiss change and succumb to high levels of conflict (Selvarajan et al. 2016).

Relationship between personality traits and the various forms of work–family conflict

Openness to experience is connected more to behaviour-based WFC than the other forms of conflict in the sense that the attitude of an open-minded individual allows them to transfer adaptive behaviours used in performing the work role to benefit the performance in the family role and vice versa (Bryant 2009). Openness may also be linked to strain-based conflict. The rationale is that the individual who is highly open to experience may not see roles in both the work and family domains as possible stressors but rather as opportunities for new experience since they take an interest in challenges and change (Priyadharshini & Wesley 2014; Ruzungunde 2019).

Extraversion is about the positive attitude that is revealed in the behaviours that one displays in performing various roles (Gheyratmand, Mohammadipour & Bakhshipor 2016). Extraversion may have an impact on WFC on the basis of behaviour interference (Wayne et al. 2004). Conscientiousness and agreeableness may also influence behaviour-based conflict (Ruzungunde 2019) because both of them are connected to the usage of work and family behavioural managing approaches (Baltes et al. 2011).

An extrovert establishes networks of support in both the work and family domains, hence cushioning against strain (Barceló 2017). Similar to conscientiousness, extraversion is also characterised by energetic and hard-working attributes. Thus, extraversion has an influence on strain-based work-conflict. In a similar fashion, neurotic individuals see challenging tasks in a role and/or domain as possible stressors and this psychologically depletes their energy and emotional state to perform in the other domain, hence experiencing more strain-based and behaviour-based conflict (Andreassi 2011; Baltes et al. 2011).

As indicated by findings from studies on other professions, neuroticism may be positively linked to WFC for mine workers. The situation may be worse for women because women find it extremely hard to perform the physical activities and tasks that demand physical strength (Botha & Cronje 2015).

Another personality trait that relates to WFC in intense work situations is conscientiousness (Badenhorst 2012). According to Ruzungunde (2019), a mining employee who thoroughly plans their day in terms of work and social engagements is likely to be able to commit to both roles without letting the negative aspects of the job interfere with family time. Individuals high in conscientiousness concentrate highly on doing their jobs and can avoid mistakes in operating machinery or using explosives (Schutte 2011). When the high

risk of occupational injury is cushioned, it is more likely that an individual may derive excitement and satisfaction in their job as well as increasing confidence in their abilities (Badenhorst 2012; Schutte 2011). Contrary to neuroticism, women tend to be cautious, well-planned and show more concentration than men. As such, their work–family engagements may be more manageable and less stressful (Ruzungunde, 2019).

Extraversion and openness to experience are both allied with low WFC since individuals high in these traits tend to be more open minded and willing to learn from people and new circumstances (Hermann & Karl-Dieter 2014; McAdams & Olson 2010). However, no studies were found to have linked these traits to mine work. Therefore, projecting from the traits attached to these two factors, it may be possible that in the mining industry a subtle approach that sticks to the confinements of rules and regulations of conduct is more applicable (Republic of South Africa 2010). As such, those who are always looking for opportunities to exercise flexibility may find the work uninteresting (Hermann & Karl-Dieter 2014). On the other hand, since mining is one of the most hazardous occupations, creative thinkers and adaptive problem solvers may find the work exciting and more satisfying (Badenhorst 2012; Schutte 2011).

Research methodology

The Positivist Approach was adopted. The study made use of quantitative analysis and questionnaires were used to collect data.

The population was made up of all employees from the nominated mine. There were 900 employees working in this mine. The endorsed sample size, with a 95% confidence level as well as 5% acceptable error margin and a 50% response distribution, was 270 respondents, hence 270 questionnaires were distributed for the study.

Probability sampling was used in this study and it allows a researcher to estimate sampling error (Churchill & Brown 2007), and each participant had the same chance and known probability to be included in the sample.

Structured questionnaires were used in collecting data. The questionnaire for this study was divided into different parts, comprising the demographic questionnaire, personality questionnaire and WFC questionnaire.

Excel was used for data coding and capturing. Thereafter, data were imported into the Statistics Package for the Social Sciences (SPSS). Data were analysed using descriptive statistical analysis. The proposed hypotheses were tested by means of statistical techniques. Quantitative data were analysed using the SPSS. Linear Regression Analysis was used to examine the association between the variables. Confirmatory factor analysis was used to measure the validity of the WFC instrument. To measure the validity for personality, the face validity, content and construct validity

were used. The Cronbach's alpha was used to measure the reliability of the instruments used for the purposes of this study. Various ethical standards were followed in carrying out this study. The study was conducted in such a way that there was no danger of bodily harm for the participants. Respondents were treated with dignity, and their particulars were treated with confidentiality and not disclosed to any unauthorised person. No personal details of participants were required and the questionnaires were unspecified. Informed consent was obtained from each respondent, and permission to conduct the study was obtained from senior management at the mine.

Personality traits and work–family conflict as a whole

Table 1 shows that all five personality traits had a significant relationship with the WFC variable. The results suggest that extraversion ($r = -0.389$; $p < 0.0001$) and emotional stability ($r = -0.446$; $p < 0.0001$) had a significant negative linear relationship with WFC. Conscientiousness ($r = -0.220$; $p < 0.0001$) and openness ($r = -0.216$; $p < 0.0001$) had a significant negative linear relationship with WFC. Only the agreeableness trait had a significant positive linear relationship with WFC ($r = 0.169$; $p = 0.005$). Tables 2, 3 and 4 illustrate the relationship between the five personality traits and the three components of WFC (i.e. time-based, strain-based and behaviour-based conflict).

Personality traits and time-based conflict

Table 2 indicates that all personality traits had a significant relationship with time-based conflict. According to the relationship between personality traits and time-based conflict, the results suggest that emotional stability ($r = -0.423$; $p < 0.0001$) had a significant negative linear relationship with time-based conflict while extraversion ($r = -0.300$; $p < 0.0001$) had a significant negative linear relationship with time-based conflict. Conscientiousness ($r = -0.245$; $p < 0.0001$) and openness ($r = -0.191$; $p < 0.002$) had a significant negative linear relationship with time-based conflict. Only agreeableness had a significant positive linear relationship with time-based conflict ($r = 0.198$; $p = 0.001$).

Personality traits and strain-based conflict

The results from Table 3 show that emotional stability ($r = -0.468$; $p < 0.0001$), extraversion ($r = -0.261$; $p < 0.0001$), conscientiousness ($r = -0.200$; $p < 0.0001$) and openness ($r = -0.138$; $p < 0.024$) had a significant negative linear relationship with strain-based conflict. Only agreeableness had no significant linear relationship with strain-based conflict ($r = 0.119$; $p = 0.051$).

Personality traits and behaviour-based conflict

The results from Table 4 indicate that extraversion ($r = -0.327$; $p < 0.0001$), emotional stability ($r = -0.135$; $p = 0.027$) and openness ($r = -0.124$; $p = 0.044$) had a

TABLE 1: Pearson product-moment correlations (r) and significance probabilities (p) for relations of work–family conflict to personality theoretical constructs.

Personality theoretical constructs	r	p
1. Extraversion	-0.389	< 0.0001**
2. Agreeableness	0.169	0.005*
3. Conscientiousness	-0.220	< 0.0001**
4. Emotional stability	-0.446	< 0.0001**
5. Openness	-0.216	< 0.0001**

*, Correlation is remarkable when the significant level is 0.05 (one-tailed test).

** , Correlation is remarkable when the significant level is 0.01 (one-tailed test).

TABLE 2: Pearson product-moment correlations (r) and significance probabilities (p) for relations of time-based conflict to personality theoretical constructs.

Personality theoretical constructs	r	p
1. Extraversion	-0.300	< 0.0001*
2. Agreeableness	0.198	0.001*
3. Conscientiousness	-0.245	< 0.0001*
4. Emotional Stability	-0.423	< 0.0001*
5. Openness	-0.191	< 0.002*

*, Correlation is remarkable when the significant level is 0.01 (one-tailed test).

TABLE 3: Pearson product-moment correlations (r) and significance probabilities (p) for relations of strain-based conflict to personality theoretical constructs.

Personality theoretical constructs	r	p
1. Extraversion	-0.261	< 0.0001*
2. Agreeableness	0.119	0.051
3. Conscientiousness	-0.200	< 0.0001*
4. Emotional Stability	-0.468	< 0.0001*
5. Openness	-0.138	< 0.024*

*, Correlation is remarkable when the significant level is 0.01 (one-tailed test).

TABLE 4: Pearson product-moment correlations (r) and significance probabilities (p) for relations of behaviour-based conflict to personality theoretical constructs.

Personality theoretical constructs	r	p
Extraversion	-0.327	< 0.0001**
Agreeableness	0.125	0.040*
Conscientiousness	-0.023	0.712
Emotional Stability	-0.135	0.027*
Openness	-0.124	0.044*

*, Correlation is remarkable when the significant level is 0.05 (one-tailed test).

** , Correlation is remarkable when the significant level is 0.01 (one-tailed test).

significant negative linear relationship with behaviour-based conflict. Agreeableness had a significant positive linear relationship with behaviour-based conflict ($r = 0.125$; $p = 0.040$). Conscientiousness ($r = -0.023$; $p = 0.712$) had no significant linear relationship with behaviour-based conflict.

Discussion of results

The relationship between personality traits and work–family conflict

Hypothesis 1:

H1₀: There is no significant negative relationship between personality traits and work–family conflict.

H1₁: There is a significant negative relationship between personality traits and work–family conflict.

The results presented sufficient evidence at the 5% level of significance to reject the null hypothesis and conclude that these personality traits exert a negative influence on WFC.

Agreeableness, on the other hand, was not significant, giving a 5% level of significance not to reject the null hypothesis and conclude that agreeableness does not exert a negative influence on WFC.

These results are consistent with those of Priyadharshini and Wesley (2014) who emphasise that personality traits influence the experiences of WFC negatively. Omrawo (2014) also supports the negative relationship between personality traits and WFC. He further places emphasis on the extraversion trait and its influence on WFC, stating that extroverts can accumulate social support as a resource to execute and negotiate work and family roles, hence reducing WFC.

The negative correlations, however, contradict the findings of Greenhaus and Powell (2006) and Michel et al. (2011) who report conflicting results regarding the negative relationship between extraversion and WFC. Their findings suggest extraversion is only a positive stimulus that could not be considered as an antecedent to WFC but rather as important in work–family roles facilitation (Greenhaus & Powell 2006).

According to the results, a positive relationship was found between agreeableness and WFC which supports the research results by Bruck and Allen (2003) and Devi and Rani (2012). Highly agreeable individuals experienced higher levels of WFC since they comply too easily and can adapt and comply with instructions or go overboard while helping others at the expense of themselves and their families. The strain caused by such compliance explains the positive correlation between agreeableness and WFC.

A significant negative relationship between conscientiousness and WFC indicates that individuals who are highly conscientious have the ability to control their behaviour easily regardless of negative work involvements. Such individuals have more control over the negative effects of various stressors related to work. Studies by Allen et al. (2012), Bazana and Dodd (2013), Michel et al. (2011), Haeruddin and Natsir (2016), Selvarajana et al. (2016) and Chawla (2018) support the negative relationship between WFC and conscientiousness.

Neuroticism was determined by measuring the emotional stability of respondents. Emotional stability scored in reverse to other scoring measures, meaning individuals who scored low on the emotional stability scale, scored high on neuroticism and were more prone to WFC. A low emotional stability score implies that an individual is highly neurotic. Significant negative correlations were found between emotional stability and WFC, implying a positive correlation between neuroticism and WFC. This association is supported by the studies of Andreassi (2011), Allen et al. (2012) and Leka and De Alwis (2016), who highlight that individuals high in neuroticism are highly anxious, worrisome and portray negative emotions that are linked to psychological distress and depression. For such individuals, stress experienced in

the performance of one task can easily spill over to other domains such as family life.

A significant negative relationship was observed between openness and WFC. These results are supported by those of Priyadharshini and Wesley (2014) who established that individuals who are highly open to experience are highly tolerant, eager to try out new ways of doing things and hence less likely to be victims of a stressful work environment. Such individuals are most likely to thrive within the mining industry, as they can counter the stressful, demanding and pressurised conditions that characterise the mining environment. Furthermore, such individuals experience decreased levels of WFC, hence a negative correlation between the two variables.

The relationship between personality traits and time-based conflict

Hypothesis 2:

H2₀: There is no significant negative relationship between personality traits and time-based conflict.

H2₁: There is a significant negative relationship between personality traits and time-based conflict.

The results showed that all personality traits with the exception of agreeableness had a negative relationship with time-based conflict.

Gheytratmand et al. (2016) support the negative relationship between personality traits and time-based conflict. In their studies they established, in relation to the extraversion personality trait, that as different levels of personality traits manifest in behaviour, with the behaviour affecting how resources are handled as well as time utilisation, highly extroverted people are likely to experience lower levels of time-based conflict. The authors further explained that this can be attributed to the positive morale that extroverts naturally possess and use to their advantage when faced with difficult circumstances. Extroverts find it easier to counter the negative outcomes associated with any form of WFC.

In relation to highly conscientious individuals, these individuals tend to experience lower levels of time-based conflict as they are time-efficient and have great organisational skills, thereby managing time well and being flexible enough to manoeuvre the available time between the two domains of family and work. Lin (2013), Baltes et al. (2011), Bazana and Dodd (2013), Michel et al. (2011) and Leka and De Alwis (2016) also support the negative relationship between conscientiousness and time-based conflict.

Studies by Botha and Cronje (2015) and Battaglia, Frey and Passeti (2014) also support the negative relationship between personality traits and time-based conflict.

Leka and De Alwis (2016) found no significant relationship between agreeableness and time-based conflict, which is contrary to the findings of this study. This study established

a significant but positive relationship between agreeableness and time-based conflict. Highly agreeable individuals can over-empathise because of their complying nature and because of going out of their way for others. This may result in them ending up not being able to fulfil their own tasks. They might thus find themselves struggling to meet time demands. This explains the positive relationship between agreeableness and time-based conflict.

The relationship between personality traits and strain-based conflict

Hypothesis 3:

H3₀: There is no significant negative relationship between personality traits and strain-based conflict.

H3₁: There is a significant negative relationship between personality traits and strain-based conflict.

The results indicated that all the personality traits had a negative relation to strain-based conflict with the exception of agreeableness; hence, we reject the null hypothesis and accept the alternative hypothesis.

The results of this study are supported by the results of Friedman et al. (2016) and McAdams and Olson (2010). The negative correlation between strain-based conflict and extraversion is also supported by Barceló (2017), who suggests that because of their vibrant, enthusiastic and socially interactive nature, extroverts are likely to experience lower levels of strain-based conflict than introverts, who are less involved in social networking and may struggle in finding ways to release their pressure.

Agreeableness may have a negative effect on depression and stress hence being negatively correlated to strain-based conflict (Gozukara & Simsek 2016). Highly agreeable individuals are more compliant and supportive and can easily resolve conflicts. Individuals scoring high on this trait are likely to experience lower levels of strain-based conflict because of their coping mechanisms and ability to comply with any situation, hence countering stressful factors. Leka and De Alwis's (2016) findings are also in support of this study's findings. These findings, however, contradict this study's findings which found a positive relationship between agreeableness and strain-based conflict. A possible explanation for the positive relationship between agreeableness and strain-based conflict would be that individuals who are highly agreeable may go overboard trying to help others, hence experiencing a lot of strain (Devi & Rani 2012).

Highly conscientious individuals may also experience less strain-based conflict as their excellent skills result in them experiencing lower vulnerability to work-related stress. Schutte's (2011) findings support the negative relationship between strain-based conflict and conscientiousness, stipulating that highly conscientious employees in the mining industry are likely to concentrate on their jobs,

hence avoiding mistakes in machine operations or use of explosives. As such, when high risk to injury is avoided, such individuals are presumed to find much satisfaction and enjoyment in their jobs, in the process countering WFC more, especially strain-based conflict, as their workplace becomes less stressful.

Priyadharshini and Wesley's (2014) findings support the negative correlation between openness to experience and strain-based conflict, indicating that individuals who are highly open to experience are less likely to experience strain-based conflict because they may view roles in family and work as opportunities for new experiences instead of viewing them as potential stressors. Baltes et al. (2011) and Andreassi (2011) also support the results of this study.

Gozukara and Simsek (2016) also support the relationship between neuroticism and strain-based conflict. Emotionally stable individuals exhibit a sense of calmness and do not show much reaction to stress, unlike emotionally unstable individuals who are highly anxious, unstable and show a great sense of fear. People scoring low on the emotional stability scale (highly neurotic) struggle with coping with stress and conflicts that arise between roles, hence the findings of the study showing a negative relationship between emotional stability and strain-based conflict. In other words, highly neurotic individuals experience increased levels of strain-based conflict, whereas individuals scoring low on neuroticism (highly emotionally stable) experience decreased levels of strain-based conflict.

The relationship between personality traits and behaviour-based conflict

Hypothesis 4:

H4₀: There is no significant negative relationship between personality traits and behaviour-based conflict.

H4₁: There is a significant negative relationship between personality traits and behaviour-based conflict.

The results of the study showed that a negative relationship exists between behaviour-based conflict and other personality traits, excluding agreeableness and conscientiousness.

A study by Gheytratmand et al. (2016) found evidence that supports the negative relationship between extraversion and behaviour-based conflict. According to these authors, extraversion is about positive attitudes that manifest in the behaviours that one exhibits in particular roles; hence, to some extent, extraversion has an influence on the experiences of WFC in relation to behaviour-based conflict. Individuals high in extraversion are likely to experience lower levels of behaviour-based conflict as they have a greater ability to use their positive attitude to influence their behaviour regardless of the situation. They also further explain that since different levels of personality traits manifest in behaviour, with the behaviour affecting how resources are handled as well as

time utilisation, highly extroverted people are likely to experience lower levels of time-based conflict, which is supported by the present study's results.

Studies by Bryant (2009) and Gozukara and Simsek (2016) showed openness to experience to be more related to behaviour-based conflict than other forms of WFC, which supports the results of this study. Individuals who are highly open to experience usually have an open-minded attitude and this allows them to transfer behaviours between the roles of family and work to benefit the performance in each role. As such, individuals highly open to experience are likely to experience reduced levels of behaviour-based conflict, while those at the lower end suffer more from behaviour-based conflict due to their inability to switch behaviours among roles within the workplace and home environment. Gozukara and Simsek (2016) are also in support of the findings of this study. They established a negative relationship between openness to experience and behaviour-based conflict in their study. Being open to experience can help individuals within the mining industry to explore and find positivity in other aspects of their work, instead of focusing on the stressful nature and dangerous environment that characterise their workplace.

Contrary to this study's results, Baltes et al. (2011) found conscientiousness and agreeableness to have an influence on behaviour-based conflict. They further indicate that this is because the two traits relate greatly to the usage of family and work behavioural coping strategies. The findings of Baltes et al.'s study, which established a negative relationship between agreeableness and behaviour-based conflict, contradict this study's results. Leka and De Alwis (2016) support this study's results as they found no significant relationship between agreeableness and behaviour-based conflict. Gozukara and Simsek (2016) conducted a study that discussed WFC from the perspective of the Big Two model of personality. The two-factor model comprised stability and plasticity with the stability metatrait including agreeableness, conscientiousness and neuroticism while plasticity involved openness to experience and extraversion. The findings of their study demonstrated a strong negative correlation between stability and behaviour-based conflict. This implies that agreeableness, conscientiousness and emotional low neuroticism all had a negative relationship with behaviour-based conflict. The results of their study only support the present study in relation to neuroticism.

With agreeableness, compliance is considered a facet of the trait. Individuals who are low in compliance are likely to display characteristics of aggression, unfriendliness and maliciousness while those on the other end tend to be compliant and more cooperative in resolving conflicts. As such, this can be the explanation for the findings of the present study where agreeableness does not have a significant relationship with behaviour-based conflict.

Gozukara and Simsek (2016) established a negative correlation between conscientiousness and behaviour-based conflict, which contradicts the present study's findings. However, Leka and De Alwis's (2016) findings are in support of the findings of this study on the relationship between conscientiousness and behaviour-based conflict. They also found no significant relationship between the two variables. Individuals who have high scores on the conscientious scale are associated with being vigilant, organised, reliable, efficient and careful, whereas those with low scores are associated with being careless, unreliable and less success driven. For individuals who score high on conscientiousness, role ambiguity has been reported to bear little influence. Role ambiguity is a role stressor related to WFC, and as it has little influence on highly conscientious individuals, they experience less WFC in all forms, including behaviour-based conflict, which can explain the insignificant relationship established between conscientiousness and behaviour-based conflict in this study.

Leka and De Alwis (2016)'s findings on emotional stability and behaviour-based conflict are in support of this study's findings. Their study established a negative relationship between emotional stability and behaviour-based conflict, implying that individuals low on the emotional stability scale (highly neurotic individuals) experienced increased levels of behaviour-based conflict. This implies that individuals low on the emotional stability scale are likely to experience greater levels of behaviour-based conflict as well as other forms of WFC as they struggle to cope with stressful conditions, which in turn manifest into their individual behaviours and reactions as evidenced by the present study's findings.

Amount of variance explained by personality traits on work–family conflict

Hypothesis 5:

H5₀: Combined, the five personality traits do not explain a significantly higher proportion of variance on WFC than any of them separately.

H5₁: Combined, the five personality traits explain a significantly higher proportion of variance on WFC than any of them separately.

To examine if the combined five personality traits explain a significantly higher proportion of variance on WFC than any of them separately, an *F*-test was used by comparing some linear regression models. Since in all cases the combined model significantly added unique variance in predicting WFC above and beyond that which was predicted by the individual personality traits (extraversion: $R^2 = 0.189$; agreeableness: $R^2 = 0.010$; conscientiousness: $R^2 = 0.068$; emotional stability: $R^2 = 0.271$; Openness: $R^2 = 0.062$), the null hypothesis was rejected and it was concluded that the five personality traits combined explain a significantly higher proportion of variance on WFC than any of them separately.

Results of a study by Priyadharshini and Wesley (2014) support the results of this study that, combined, the personality traits explain a significantly higher proportion of variance on WFC than any of them separately. In their study, Baltes et al. (2011) also support these findings as they found personality to be a distinct antecedent to WFC. The personality traits proved to have a great impact on the thoughts and judgements of the state of affairs at work and family roles of individuals, thereby greatly influencing the extent to which individuals experience WFC. Leka and De Alwis's (2016) study also supports the findings of this study.

Organisational and management implications

The findings of this research show that WFC experienced in the mining industry depends to a large extent on the personality of employees. Although the experiences of WFC are varied, the presence of WFC on its own has a great effect on employees' commitment to their work and may result in various negative implications if not addressed (Haines, Deaux & Lofaro 2016; Lavassani & Movahedi 2014). It is of vital importance for management to make efforts towards reducing WFC and the consequences it carries in the work environment, also considering the different traits possessed by different individuals to come up with solutions that cater for all employees.

To help address the issue of WFC in the mining industry, it is important for management to consider the issue of personality in the conflict management and employee wellness approaches they adopt. Therefore, management can make use of personality tests by using the personality traits questionnaire to assess the different personality traits possessed by their employees. From there, it becomes easier for them to implement safety systems management programmes set up by the Chamber of Mines in a bid to help mine employees deal with their job demands. Taking different personalities into consideration in implementing the programmes will also ensure that the needs and expectations of all employees are addressed. Generalising would not achieve the desired results.

To reduce the high emotional, physical and mental exhaustion reported among mine employees, management can introduce shuttle services. These shuttle services will transport the employees from home to work and from work to home. This will enable employees to have more time to rest in between. Also, It would also help reduce accidents that may occur when one has to drive after work when one is physically exhausted and has difficulty concentrating on driving. Even for those who do not drive, it would ensure safety as it is risky to look for transport in the evening outside the workplace for some employees. Shuttle services can also be arranged for the employees' children to be transported to and from school since most employees reported school runs as their responsibilities and they found it difficult to balance these responsibilities with work, especially with the mine being far from town.

Ongoing training courses and programmes that encourage individuals' career development within the organisation can also be implemented for the employees to continuously learn and upgrade their skills while at work. This will strengthen employees' attachment and reduce WFC as they feel indebted to the organisation, especially for individuals who are highly open to experience.

Regular maintenance of the working environment needs to be done to ensure that the working conditions are improved and safe. This should reduce stress and work overload. Management can also invest in hiring more assistants so that the workload is reduced and callouts during off days are minimised. Team-building exercises and activities can also be adapted in an effort to reduce stress in this emotionally, physically and mentally draining environment. Such activities allow employees and management to learn from or about and understand each other at a personal level, in turn creating awareness on the various personality traits of the employees with whom they are working.

Limitations

The study focused on one mine and cannot fully represent the whole mining sector. The use of questionnaires for data collection was also a limitation, as the individuals in the mining industry work under busy and hectic schedules and there are many shifts involved. Respondents struggled with finding sufficient time to complete the questionnaires. The use of only questionnaires curtails common-method variance (Bryman 2012). In future, other data collection methods should also be used for the sake of triangulation (Podsakoff, MacKenzie & Podsakoff 2012)), lack of which was also a limitation for this study. The study was also limited to the South African mining industry.

The closing down and retrenchments in most mines stood as a limitation as it was very difficult to finally secure an appointment with one of the mines because of the uncertainties that most mines in South Africa were facing at the time this study was conducted.

Recommendations for future research

Future studies can explore other mining entities across the country. Future studies should focus on establishing the organisational support or employee assistance programmes that can be developed to help mine workers cope with WFC. Future research can also expand the population to include other regions and countries across Africa to spread the sample over a wide geographical area. Future research can also focus on exploring a wide range of other professions and organisations.

Further studies can also examine why agreeableness has no significant correlation with strain-based conflict and behaviour-based conflict compared with other personality

traits. Also, further studies could explore why less behaviour-based conflict than strain-based and time-based conflict is experienced.

Conclusion

The study aimed at investigating the relationship between personality and WFC within the mining industry in South Africa. This study contributes to the existing knowledge by examining the role of personality traits on the different forms of WFC instead of holistically examining WFC (Jamshed et al. 2011).

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

V.S.R. formulated the original manuscript. T.M. supervised the manuscript and contributed towards valuable academic aspects.

Ethical consideration

Confidentiality was maintained in the completion of the questionnaires. Informed consent was obtained prior to questionnaire distribution. There was no harm to the participants, and an ethical clearance certificate was obtained from the University of Fort Hare before data collection (REC-270710-028-RA Level 01). Reference number: MJO111SRUZ01.

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