

ROLE CLARITY, ROLE CONFLICT, AND VITALITY AT WORK: THE ROLE OF THE BASIC NEEDS

INTRODUCTION

Contemporary work life is often characterized by fluid management of a complex web of task interdependencies, thus exposing people to role-related stress (Wong, DeSanctis, & Staudenmayer, 2007). Roles at work may be defined clearly or ambiguously to varying extents, and roles can present different kinds of conflicts between and within actors. Role clarity is the positive antipode of role ambiguity, the uncertainty regarding an employee's role requirements and their place in the organization (R. L. Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). According to R. L. Kahn et al., to attain role clarity and adequate role performance, an employee must know the rights, duties and responsibilities of their job, have procedural knowledge to fulfil the responsibilities, and know the consequences of role performance. Role conflicts, in turn, are pressures arising from incompatible expectations about employee behaviour (R. L. Kahn et al., 1964). This incompatibility may occur due to the conflicting expectations of a single person (e.g. incompatible demands from a supervisor), of two or more persons (e.g. demands from supervisor, co-workers and clients) or of different roles (e.g. differing expectations between role as an employee and as a parent). There may also be conflicts between the working role and personal values.

As related factors, lack of role clarity and presence of role conflict have similar but not identical associations with outcomes important for individuals and organizations. Although they have both been associated with lower work performance, the association between role conflict and performance has been consistently weaker than that of lack of role clarity and

performance (Gilboa, Shirom, Fried, & Cooper, 2008). They have been similarly associated with job satisfaction and commitment (Örtqvist & Wincent, 2006) and organizational citizenship behaviour (Eatough, Chang, Miloslavic, & Johnson, 2011). Whereas lack of role clarity has been consistently associated with all job burnout symptoms, role conflict has no equally consistent association with a lower sense of personal accomplishment (Örtqvist & Wincent, 2006).

In job demands-resources theory, job characteristics such as role clarity and role conflict are divided into categories of job demands and job resources (Bakker & Demerouti, 2017). According to the theory, job demands require sustained effort and are associated with physiological or psychological costs. Job resources facilitate achieving work goals, reduce job demands and their costs, and may instigate learning and development. Per the definitions, role clarity is a job resource functional to achieving goals and related outcomes, whereas role conflict is a job demand requiring effort to handle the pressures of incompatible expectations. Furthermore, it has been suggested that job demands can be divided into challenge demands and hindrance demands (Cavanaugh, Boswell, Roehling & Boudreau, 2000). Role conflict is usually considered a hindrance demand (e.g. Crawford, LePine & Rich, 2010), but Gilboa et al. (2008) have argued that it may include a challenge component, as the employee has to solve problems related to priorities and schedules. However, as job demands-resources theory allows for interaction of job characteristics, it may too simplistic to assume that the effects of role clarity and role conflict are independent of each other.

The explanatory mechanisms, from the characteristics to the outcomes, should be explicated further (Bakker & Demerouti, 2017; Schaufeli & Taris, 2014). Van den Broeck, Vansteenkiste, De Witte and Lens (2008) have suggested that satisfaction of the

psychological basic needs described in self-determination theory (SDT; Deci & Ryan, 2000; Ryan & Deci, 2017) explains the associations between job characteristics and different outcomes. In SDT, autonomy means experiencing volition, self-endorsement and ownership of actions; competence means, for example, expressing and expanding one's capacities and talents; and relatedness means a feeling of belonging and of being significant to others. More specifically, the needs of autonomy, competence and relatedness are expected to mediate the effects of job characteristics on outcomes, as need satisfaction stimulates well-being, growth and autonomous motivation (Deci, Olafsen, & Ryan, 2017; Ryan & Deci, 2017). Although need satisfaction is expected to be associated with a wide variety of positive phenomena, Ryan and Deci (2017) consider experience of energy and aliveness, e.g. subjective vitality (Ryan & Frederick, 1997), an especially viable indicator of need satisfaction. The present study aims to examine whether the psychological basic needs partake in the indirect associations between role clarity and work-related vitality, and role conflict and work-related vitality.

According to a meta-analysis by Van den Broeck, Ferris, Chang and Rosen (2016), role clarity and role conflict have both been consistently associated with satisfaction of the basic needs of autonomy and competence. The association between role conflict and autonomy is stronger than the association between role conflict and competence. There are few studies on the association between relatedness and role clarity or role conflict, but low relatedness has been associated with higher general role stress. As the three psychological basic needs are also consistently associated with several outcomes, the meta-analytic findings by Van den Broeck et al. (2016) suggest indirect associations between job characteristics and outcomes through the needs, or the mediational role of the needs.

However, there are at least three arguments for further studies concerning the function of the needs in the indirect association between work-role characteristics and vitality at work.

Firstly, although the three needs of autonomy, competence and relatedness have independent criteria for their fulfilment, their satisfaction is expected to correlate (Ryan & Deci, 2017).

Thus, findings on correlative associations between job characteristics and needs, and needs and outcomes do not demonstrate the hypothesized indirect relationships simultaneously through the separate basic needs. Secondly, in most of the studies regarding indirect associations between the role constructs and outcomes through need satisfaction, the needs have not been measured separately but as a general need satisfaction composite (e.g. Gillet, Fouquereau, Huyghebaert, & Colombat, 2015). As SDT emphasizes the contribution of each need (Dysvik, Kuvaas, & Gagné, 2013; Ryan & Deci, 2017), each one should be examined regarding the indirect associations. Thirdly, to the best of our knowledge, only Fernet, Austin, Trépanier and Dussault (2013) have examined the separate needs as potential mediators between role ambiguity and an outcome, reporting that none of the needs mediated the association between role ambiguity and emotional exhaustion. Consequently, there are no studies on the possible indirect association between role-related job characteristics and positive energy-related outcome through the separate needs, although experience of energy and aliveness is theoretically the most relevant indicator of need satisfaction (Ryan & Deci, 2017).

There are both conceptual and empirical reasons to expect partially differing functions of the basic needs in the indirect associations between role clarity and vitality at work and role conflict and vitality at work. Conceptually, the link between both role clarity and autonomy, and role conflict and autonomy is strong. Ma (2016), following W. A. Kahn (1990), suggests that role clarity grants employees' psychological safety, which facilitates personal

engagement in their work. Personal engagement refers to expressing one's real identity, thoughts and feelings (W. A. Kahn, 1990), which may facilitate experiencing autonomy. Furthermore, the association between role clarity and well-being at work has been mediated by psychological empowerment (de Villiers & Stander, 2011), a motivational construct consisting of several components conceptually related to autonomy, such as experienced meaning and self-determination (Spreitzer, 1995; Thomas & Velthouse, 1990). Role conflict, in turn, has the inherent capability to hinder autonomy, as incompatible demands impede volitional action.

Hypothesis 1a: Role clarity is positively associated with vitality at work through higher autonomy.

Hypothesis 1b: Role conflict is negatively associated with vitality at work through lower autonomy.

The link between role clarity and competence is possibly stronger than the link between role conflict and competence. With high role clarity, an employee knows the job requirements and the procedures to meet them, which is likely to ultimately lead to higher job performance (Gilboa et al., 2008) and competence satisfaction. Broadly, the same should also apply to role conflict, as conflicts probably complicate goal achievement even if those goals are known. However, Gilboa et al. (2008) suggest that role conflict may include a challenge component, as the employee has to solve problems related to priorities and schedules (see also Crawford, LePine, & Rich, 2010; LePine, Podsakoff, & LePine, 2005). Thus, the associations between role conflict and performance may be complex. Furthermore, as the association between role conflict and performance is weaker (Gilboa et al., 2008) and the association between lower

sense of personal accomplishment is more inconsistent (Örtqvist and Vincent, 2006) than the associations between role clarity and the consequences, the association between role conflict and vitality is not expected to be indirect through competence.

Hypothesis 2a: Role clarity is positively associated with vitality at work through higher competence.

Hypothesis 2b: Role conflict is not associated with vitality at work through competence.

The extent to which relatedness should mediate the effects of role clarity and role conflict may differ. R. L. Kahn et al. (1964) speculate that lack of role clarity leads to two opposing social processes, one of defensive withdrawal, and another of engaging in gathering more information. They suggest that, in contrast, role conflict probably reduces trust and results in a withdrawal process and reduced communication to avoid interactions creating or maintaining further role conflicts. As role clarity may not have a predictable function regarding relatedness, relatedness is hypothesized to not take part in the indirect relationships between role clarity and vitality at work.

Hypothesis 3a: Role clarity is not associated with vitality at work through relatedness.

Hypothesis 3b: Role conflict is negatively associated with vitality at work through lower relatedness.

As interactions between job characteristics are expected in job demands-resources theory (Bakker & Demerouti, 2017), role clarity and role conflict may have joint effects. In the

relatively few studies examining the joint effects of role clarity and role conflict, the results have been variable. For example, Kemery (2006) observed that job satisfaction was at its highest level when both role clarity and role conflict were low. Among another sample, role clarity and role conflict jointly predicted intrinsic aspects of job satisfaction in such a way that the relationship between role conflict and satisfaction was negative only when role clarity was high (Faucett, Corwyn & Poling, 2013). It is conceivable that role clarity and role conflict could have an interactive effect on need satisfaction. For example, role conflict as a demand could inhibit the association between role clarity and need satisfaction. Consequently, it could be possible that the mediating roles of the needs vary depending on the level of role conflict. As there are no previous theoretical discussions on the interactive effects of the role characteristics on need satisfaction, and as the status of role conflict as a challenge or hindrance stressor is ambiguous, two exploratory analyses are conducted without set hypotheses.

The first exploratory analysis: Are the associations between role clarity and the needs moderated by role conflict?

The second exploratory analysis: Are the indirect associations between role clarity and vitality at work through the needs moderated by role conflict?

METHOD

Procedure and participants

The present cross-sectional study was conducted with subjects participating in a preventive vocationally oriented intervention programme known as ASLAK. The programme was funded by the Finnish Social Insurance Institution. It was targeted at promoting the long-term working ability of middle-aged or younger employees considered to be at risk of future work disability due to mild medical symptoms, lifestyle risk factors or sickness absences (Suoyrjö et al., 2009). In a previous registry-based study, ASLAK participants tended to be generally healthy both mentally and physically but had more annual sick leave and higher rates of absence spells over 21 days compared to matched controls (Suoyrjö et al., 2009). The intervention was more often granted to employees with good and steady job conditions and few health-related risk factors (Saltychev et al., 2011). Annually nearly 6,000 workers participated in the ASLAK programme in Finland (The Social Insurance Institution, 2017).

The participants of the present study are a convenience sample of 110 subjects at the beginning of their ASLAK intervention. ASLAK participants were requested for the study as they were seen as an easily approachable group of employees, probably motivated to assess their work characteristics and well-being. The participants began their ASLAK programme in a rehabilitation centre in Eastern Finland during 2014 and 2015. In the first group session they received a letter explaining the purpose of the study, inviting them to complete a questionnaire specifically for the study (Work-related Basic Need Satisfaction) and to grant permission to use two measures utilized in the intervention for study purposes (General Nordic Questionnaire and Utrecht Work Engagement Scale). The study protocol was accepted by the Research Ethics Committee of the Northern Savo Hospital District.

The mean age of the sample was 50.6 years ($SD = 6.4$). Most of the participants were female (86%) and almost all of them worked full-time (98%). The sample was well-educated, 46%

having a master's degree or equivalent, and 47% a bachelor's degree or equivalent. Only 4% had a vocational degree or courses as their highest qualification. The education level of 3% of the participants was unknown. Occupational status was relatively high, with 62% working in occupations considered to be white-collar jobs (e.g. teaching, management, various professionals) and the remaining 38% in blue-collar jobs (e.g. nurses and nurse aides, sales clerks).

Instruments

Subjective vitality at work, reflecting full functioning and need satisfaction according to self-determination theory, was measured using the vigour subscale of the short Finnish Utrecht Work Engagement Scale (UWES; Schaufeli, Bakker, & Salanova, 2006; Seppälä et al., 2009). The vigour component of work engagement is an indicator of an energy continuum of work-related well-being (Demerouti, Mostert, & Bakker, 2010). Vigour is a three-item scale measuring high levels of energy and activation at work (e.g. "At my job, I feel that I am bursting with energy"). Participants evaluated the items on a seven-point scale from 0 ("never") to 6 ("every day"). The score of the scale is the mean of the three items, higher scores indicating higher vitality at work. The internal consistency was good, with a Cronbach's alpha coefficient of 0.84.

Role clarity and role conflict were measured with their respective scales from the General Nordic Questionnaire (QPSNordic; Dallner et al., 2000). Participants rated the items on a five-point scale from 1 ("very seldom or never") to 5 ("very often or always"). The role clarity scale measures clarity regarding work-related goals, responsibilities and expectations with three items (e.g. "Have clear, planned goals and objectives been defined for your job?").

The score of the scale is the mean of the three items, higher scores indicating higher role clarity. The role conflict scale measures experience of conflicting goals and conflict with one's personal values with four items (e.g. "Do you receive incompatible requests from two or more people?"). The score of the scale is the mean of the four items, higher scores indicating higher role conflict. Internal consistency of the role-related scales in the present study is good, with Cronbach's alpha coefficients of 0.88 for role clarity and 0.75 for role conflict.

The satisfaction of needs for autonomy, competence and relatedness at work were assessed with the Finnish version of the Work-related Basic Need Satisfaction questionnaire (W-BNS; Karkkola, Kuittinen, & Van den Broeck, 2017; Van den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2010). The questionnaire consists of 15 items, five items tapping into the satisfaction of each need (e.g. "The tasks I have to do at work are in line with what I really want to do" for autonomy; "I really master my tasks at job" for competence; "At work, I feel part of a group" for relatedness). Participants responded on a five-point scale from 1 ("totally disagree") to 5 ("totally agree"). The score of each scale is the mean of the items, higher scores indicating stronger need satisfaction. Internal consistency of the scales was good, with Cronbach's alpha coefficients of 0.77 for autonomy, 0.90 for competence and 0.88 for relatedness.

Statistical analysis

The analyses were conducted with SPSS version 23.0. Missing data was replaced with the participant's personal mean of the other items on the respective scale, as recommended by Hawthorne and Elliot (2005), provided that only one response per scale item was missing.

Four need satisfaction responses and two role conflict responses were replaced. Demographic information and correlation coefficients were calculated for descriptive purposes. To ensure sufficient independence of the role-related constructs in the sample, a maximum likelihood factor analysis with varimax rotation was conducted on the items concerning the role characteristics. The PROCESS macro (Hayes, 2013) was used for testing indirect effects in two multiple mediator models concerning hypotheses 1 through 3 (see also Desrumaux et al., 2015; Vander Elst, Van den Broeck, De Witte, & De Cuyper, 2012) and in two models testing the moderating role of role conflict concerning the two exploratory analyses. In all regression analyses, the socio-demographic variables of age, gender, education (as dummy variables) and occupational status were entered as covariates. All the indirect associations and moderating effects were tested using the bootstrapping method with 5,000 resamples with replacement. This is recommended for models with multiple mediators and for samples with possible non-normal sampling of the indirect effect (Preacher & Hayes, 2008).

For hypotheses 1 through 3, two series of regression analyses were conducted (Figure 1). In the first series, role clarity was set as the independent variable, the three needs simultaneously as the parallel mediating variables and vitality at work as the dependent variable. In the second series, role conflict acted as the independent variable, with other variables being the same as in the first series. The *a path* depicts associations of independent variables and mediators and the *b paths* associations of mediators and the dependent variables. The *c path* depicts the total association between the independent variable and the dependent variable, and the *c' path* the association of the independent variable and the dependent variable, controlling the mediating variables.

[FIGURE 1 AROUND HERE]

The indirect associations are depicted by the product of paths *a* and *b* (*ab paths*). The indirect association is supported when the 95% confidence interval (*CI*) of *ab paths* does not include zero (Hayes, 2013). As only *ab paths* are essential for the indirect effects, the interpretational focus is on them (Hayes & Rockwood, 2017; Rucker, Preacher, Tormala, & Petty, 2011). According to a simulation study by Williams and McKinnon (2008), the bootstrapping methods are also viable for detecting non-zero indirect paths in models with multiple mediators in small samples.

For the first exploratory analysis, three series of regression analyses were conducted (Figure 2). In every series, role clarity was set as the independent variable and role conflict as the moderator variable, while each need acted as the dependent variable in turn. The moderating effect is depicted by the product of the role clarity and role conflict variables, denoted by the *d paths*. The moderating effect is supported when the 95% confidence interval of the path does not include zero. Only the non-zero interactions and, to illustrate the moderation, the regression coefficients from role clarity to needs (*a path* values) at the 25th and 75th percentile of the values of role conflict are reported.

[FIGURE 2 AROUND HERE]

For the second exploratory analysis, one series of regression analyses was conducted (Figure 2). It was identical to the first series of the regression analyses for hypotheses 1 through 3 (role clarity as the dependent variable, the three needs as the parallel mediating variables, and vitality at work as the dependent variable) but whether role conflict acts a moderator variable in the indirect associations of role clarity and vitality through each of the needs was also

tested. The effect was tested with the index of moderated mediation (Hayes, 2015), depicted by indirect *ab paths* weighted by the interaction of role clarity and role conflict (denoted *dab*). The moderated mediation effect is supported, when the 95% confidence interval of the index does not include zero. Only the non-zero indexes and, to illustrate the moderated mediation, the *ab path* values at the 25th and 75th percentile of the values of role conflict are reported.

RESULTS

The descriptive characteristics of the sample and correlations of the continuous study variables are presented in Table 1. The sample means of the scales are very similar compared to the Nordic reference values of QPSNordic (Dallner et al., 2000) and the Finnish reference values of UWES in workers aged from 46 to 55 years (Hakanen, 2009). The mean of role conflict deviates most from the reference values, being about a fifth of a standard deviation higher in the study sample. The factor analysis supported the independence of role clarity and role conflict, producing two factors with eigenvalues over one. The three role clarity items loaded on the first factor with loadings from .77 to .93, with loadings from $-.10$ to $-.20$ on the second factor. The four role conflict items loaded on the second factor with loadings from .46 to .75, with loadings from $-.06$ to $-.24$ on the first factor.

In the linear regression analyses, role clarity was associated with all the suggested mediators, and of the mediators autonomy and competence were associated independently with vitality at work (Table 2). Furthermore, there was no direct association between role clarity and vitality once the needs as potential mediators were controlled for. In linear regression analyses, role conflict was associated with autonomy and relatedness (Table 3). There were

no statistically significant direct associations between role conflict and vitality at work, whether the potential mediators were controlled for or not.

[TABLE 1 AROUND HERE]

There was a positive association between role clarity and vitality at work through higher autonomy ($a_1b_1 = 0.105$, 95% $CI = [0.017; 0.270]$), supporting Hypothesis 1a. Consistent with Hypothesis 1b, there was also a negative association between role conflict and vitality at work through lower autonomy ($a_1b_1 = -0.180$, 95% $CI = [-0.365; -0.067]$).

There was a positive association between role clarity and vitality through higher competence ($a_2b_2 = 0.147$, 95% $CI = [0.005; 0.304]$), as expected in Hypothesis 2a. Consistent with Hypothesis 2b, no association between role conflict and vitality at work through competence was observed ($a_2b_2 = -0.047$, 95% $CI = [-0.177; 0.025]$).

There was no indirect association between role clarity and vitality through relatedness ($a_3b_3 = 0.143$, 95% $CI = [-0.018; 0.372]$), consistent with Hypothesis 3a. However, there was a negative indirect association between role conflict and vitality through lower relatedness ($a_3b_3 = -0.135$, 95% $CI = [-0.334; -0.020]$), supporting Hypothesis 3b.

[TABLE 2 AROUND HERE]

[TABLE 3 AROUND HERE]

In the first exploratory analysis, only the association between role clarity and competence was moderated by role conflict ($d_2 = -0.260$, 95% $CI = [-0.506; -0.013]$). At high values of role conflict, the association between role clarity and competence was weaker compared to low values of role conflict. In the 25th percentile of role conflict, $a_2 = 0.57$, whereas in the 75th percentile $a_2 = 0.31$.

In the second exploratory analysis, only the indirect association between role clarity and vitality at work through competence was moderated by role conflict ($d_2a_2b_2 = -0.101$, 95% $CI = [-0.303; -0.002]$). At high values of role conflict, the indirect association between role clarity and vitality through competence was weaker compared to low values of role conflict. In the 25th percentile of role conflict, $a_2b_2 = 0.223$ (95% $CI = [0.005; 0.500]$), whereas in the 75th percentile $a_2b_2 = 0.122$ (95% $CI = [0.009; 0.280]$).

DISCUSSION

Based on the tenets of SDT, theoretical formulations of role clarity and role conflict, and reviewed empirical studies, it was hypothesized that role clarity and role conflict are associated with subjective vitality at work through the basic needs of autonomy, competence and relatedness. Furthermore, it was hypothesized that these needs differ regarding their roles in the indirect associations. Role clarity and vitality at work were expected to have an indirect association through autonomy and competence, and role conflict and vitality through autonomy and relatedness. The results were consistent with the hypotheses. Furthermore, two exploratory analyses suggested that more information on the relationships between role-related job characteristics, need satisfaction and vitality could be gained by also considering the joint effects of role clarity and role conflict.

Implications for theory and research

Assuming the theoretically expected causal relationships, the results of the present study are consistent with the notion that both role clarity and role conflict are important job characteristics affecting opportunities for need satisfaction and consequent well-being, as indicated by subjective vitality. Autonomy partook in the indirect relationship between role clarity and vitality, and role conflict and vitality, whereas competence acted as mediator between role clarity and vitality, and relatedness between role conflict and vitality.

Autonomy is considered as the key need in SDT, as both competence and relatedness tend to be satisfied in environments facilitating autonomy (Ryan & Deci, 2017). The significance of autonomy is also evident in the present study. The association of both role clarity and role conflict with vitality was hypothesized to be indirect through autonomy, due to role clarity's associations with personal engagement and psychological empowerment (de Villiers & Stander, 2011; W. A. Kahn, 1990; Ma, 2016), and because role conflict is antithetical to fully volitional action. The present study is one of the few examining the indirect association between role clarity and an energy-related outcome through separately measured autonomy (see also Fernet et al., 2013), and possibly among the first to utilize the positive end of the energy continuum. The results of the present study are at odds with those of Fernet et al. (2013), who did not observe the above-mentioned indirect relationship through autonomy. Further studies should examine whether the association between role clarity and positive and negative energy-related outcomes are mediated by different factors. For example, need satisfaction may be more strongly related to positive outcomes, whereas need frustration may

be associated more strongly with negative outcomes (Deci & Ryan, 2000; Ryan & Deci, 2017).

Competence was expected to be an instrumental factor in the indirect relationship between role clarity and vitality at work, but not in the relationship between role conflict and vitality. This notion was based on the weaker or more inconsistent associations between role conflict and performance and between role conflict and the sense of personal accomplishment (Gilboa et al., 2008; Örtqvist & Wincent, 2006). Additionally, Gilboa et al. (2008) speculated that role conflict may include a challenge component making the associations more complex. The findings of the present study suggest that competence partakes in the relationship between role clarity and vitality at work, but not in the relationship between role conflict and vitality. This may indicate that the supposed effect of role conflict on performance does not straightforwardly or consistently lead to decreased competence satisfaction and does not necessarily threaten well-being in that way. However, the exploratory analyses suggest that the full significance of role conflict for indirect associations through competence may be unfoundedly ignored if role clarity and role conflict are examined separately. Although the joint effect of the role characteristics did not affect the conclusion that role clarity and vitality have indirect association through competence, a hypothesis on role conflict hindering the association between role clarity and the needs, and related indirect associations may be put forward.

Relatedness was expected to act differently in the indirect relationship between role clarity and vitality at work, and in the indirect relationship between role conflict and vitality at work, as lack of role clarity may instigate different kinds of processes (R. L. Kahn et al. 1964). In the present study, this was speculated to have inconsistent effects on relatedness satisfaction.

Role conflict, in turn, was predicted to be unambiguously deleterious for interaction and communication, thus affecting relatedness negatively. This hypothesis was supported as the indirect effect through relatedness appeared between role conflict and vitality at work but not between role clarity and vitality. Although it is impossible to verify the accuracy of the suggestion by R.L. Kahn et al. (1964) in the present study, it is noteworthy that among all the tests for indirect effects, the effect of relatedness had the widest confidence interval in the association between role clarity and vitality. This refers to the possibility of a wide range of magnitudes and differing directions of indirect associations between role clarity and vitality at work in the sample. The results imply that role clarity and role conflict have a similar but not identical function in affecting need satisfaction and consequently subjective vitality, the most applicable indicator of full functioning according to SDT (Ryan & Deci, 2017).

The indirect associations between role conflict and vitality at work were observed despite the lack of total association, reflected also in the non-significant zero-order correlation. This raises the possibility of two or more opposing mediational processes (see Hayes & Rockwood, 2017; Rucker et al., 2011). In the absence of a proper explanatory model for an indirect association between higher role conflict and higher vitality through one or more mediators, opposing the processes observed in the present study, only three speculations are mentioned. Firstly, should higher role conflict have an effect on higher vitality at work without the mediational role of the needs, it would be contrary to the tenets of SDT. Secondly, if role conflict has a positive indirect effect on vitality, it would be inconsistent with the established conceptualization of role conflict as a hindrance stressor (Crawford et al., 2010; but see also Gilboa et al., 2008 on the challenge component of role conflict). Thirdly, it could be possible that role conflict is not uniformly a challenge or a hindrance stressor (Webster, Beehr & Love, 2011). For instance, in the sample of the present study, the

challenge component may be more salient compared to samples with less education or lower occupational status.

Practical implications

As the present study was cross-sectional, causal relationships and strong practical implications cannot be inferred. However, there are longitudinal studies on need satisfaction (Olafsen, 2017) and role clarity (Hassan, 2013) suggesting causal functions. The indirect associations observed in the present study are consistent with the explanatory role of the basic needs. Thus, there are some observations of practical value.

While not every need participated in the indirect associations between both role clarity and role conflict and vitality at work, each need had at least one mediational role suggested by the bootstrap analyses. Thus, the managers and the community at work may affect the opportunities of individuals to achieve need satisfaction and feel energized by delineating and negotiating role-related characteristics. The facilitated or hindered opportunities to satisfy one's needs are, in turn, antecedents of outcomes related to well-being and motivation.

Autonomy seems especially important in the indirect associations between both role clarity and vitality at work, and role conflict and vitality at work. Thus, by explicit communication of the required work-role performance, responsibilities and procedures, it may be possible to contribute to an employee's process of personal engagement in the job and make work a more harmonious part of their identity, in addition to facilitating feelings of competence.

Employees should feel able to clarify potential work-role related ambiguities with a supervisor or co-workers. Similarly, by enabling and encouraging employees to highlight and lessen the role conflicts raised by the expectations of various stakeholders, organizations can

facilitate experiences of both autonomy and relatedness, and possibly strengthen the association between role clarity and competence and the related indirect association between role clarity and vitality at work.

Limitations of the study and suggestions for further research

There are some limitations to acknowledge. Firstly, as this is a survey study, the well-known limitations of the method apply here. This is mostly unavoidable, as factors such as need satisfaction and subjective vitality are subjective constructs in their essence. Secondly, the cross-sectional design precludes causal conclusions. Theoretically, it is possible that need satisfaction and vitality affect the perceived role characteristics and not the other way around. Thirdly, the properties of the sample restrict generalizability. Nevertheless, the sample size does not invalidate the theoretically relevant and conceptually sound results. The bootstrapping method alleviates some of the concerns with small samples and does not rely on the normal distribution of the indirect associations (Hayes, 2013; Preacher & Hayes, 2008; Williams & McKinnon, 2008). Despite important demographics being controlled for in the analyses, the sample does not represent the working population, being a subset of voluntary participants of a healthy and educated group with relatively high occupational status in a preventive intervention programme (Suoyrjö et al., 2009). However, the sample means for role constructs and vitality at work were very similar with available Nordic (Dallner et al., 2000) or Finnish (Hakanen, 2009) reference values, suggesting that the sample does not differ from the general population of workers in these respects. Naturally, replication with a larger and more representative sample is encouraged. This applies especially to the exploratory moderator analyses. Another viable strategy would be to examine the relationship of role clarity, role conflict and need satisfaction in more context-dependent ways, e.g. focus on

context-specific role characteristics (Van den Broeck & Parker, 2017) or personal characteristics such as cognitive appraisals (Webster et al., 2011) intervening between role-related characteristics and need satisfactions. Finally, the vigour subscale of UWES was originally not constructed to measure work-related vitality. However, as the short version utilized in the present study omits items referring to motivation and resilience, leaving only the energy-related items (Shirom, 2010), it corresponds well with the conceptualization and operationalization of subjective vitality by Ryan and Frederick (1997).

Despite the limitations, the present study contributes to knowledge about role clarity, role conflict, need satisfaction, and vitality at work. The study is among the first to examine the indirect association between role clarity and any job-related outcome through the separately measured needs. It also adds to the study of Fernet et al. (2013) by examining the association between role conflict and an energy-related variable, but with vitality instead of exhaustion. Finally, the results hopefully encourage study on the joint effects of role-related job characteristics on need satisfactions and related indirect associations. This would help in finding new approaches for enhancing well-being at work.

References

- Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology, 22*, 273–285.
doi:10.1037/ocp0000056
- Cavanaugh, M. A., Boswell, W. R., Roehling, M. V., & Boudreau, J. W. (2000). An empirical examination of self-reported work stress among U.S. managers. *Journal of Applied Psychology, 85*, 65–74.

- Crawford, E. R., LePine, J. A., & Rich, B. L. (2010). Linking job demands and resources to employee engagement and burnout. *Journal of Applied Psychology, 95*, 834-848.
doi:10.1037/a0019364
- Dallner, M., Elo, A., Gamberale, F., Hottinen, V., Knardahl, S., Lindström, K., . . . Ørhede, E. (2000). *Validation of the General Nordic Questionnaire (QPSNordic) for psychological and social factors at work*. Copenhagen: Nordic Council of Ministers.
- de Villiers, J. R., & Stander, M. W. (2011). Psychological empowerment, work engagement and turnover intention: The role of leader relations and role clarity in a financial institution. *Journal of Psychology in Africa, 21*, 405-412.
doi:10.1080/14330237.2011.10820474
- Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017). Self-determination theory in work organizations: The state of a science. *Annual Review of Organizational Psychology and Organizational Behavior, 4*, 19-43. doi:10.1146/annurev-orgpsych-032516-113108
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.
doi:10.1207/S15327965PLI1104_01
- Demerouti, E., Mostert, K., & Bakker, A. B. (2010). Burnout and work engagement: A thorough investigation of the independency of both constructs. *Journal of Occupational Health Psychology, 15*, 209-222. doi: 10.1037/a0019408
- Desrumaux, P., Lapointe, D., Ntsame Sima, M., Boudrias, J.S., Savoie, A., & Brunet, L. (2015). The impact of job demands, climate, and optimism on well-being and distress at work: What are the mediating effects of basic psychological need satisfaction? *Revue*

Européenne De Psychologie Appliquée/European Review of Applied Psychology, 65, 179-188. doi://dx.doi.org/10.1016/j.erap.2015.06.003

Dysvik, A., Kuvaas, B., & Gagné, M. (2013). An investigation of the unique, synergistic and balanced relationships between basic psychological needs and intrinsic motivation. *Journal of Applied Social Psychology*, 43, 1050-1064. doi:10.1111/jasp.12068

Eatough, E. M., Chang, C., Miloslavic, S. A., & Johnson, R. E. (2011). Relationships of role stressors with organizational citizenship behavior: A meta-analysis. *The Journal of Applied Psychology*, 96, 619-632. doi:10.1037/a0021887

Faucett, J. M., Corwyn, R. F., & Poling, T. H. (2013). Clergy role stress: Interactive effects of role ambiguity and role conflict on intrinsic job satisfaction. *Pastoral Psychology*, 62, 291-304. doi:10.1007/s11089-012-0490-8

Fernet, C., Austin, S., Trépanier, S., & Dussault, M. (2013). How do job characteristics contribute to burnout? Exploring the distinct mediating roles of perceived autonomy, competence, and relatedness. *European Journal of Work and Organizational Psychology*, 22, 123-137. doi:10.1080/1359432X.2011.632161

Gilboa, S., Shirom, A., Fried, Y., & Cooper, C. (2008). A meta-analysis of work demand stressors and job performance: Examining main and moderating effects. *Personnel Psychology*, 61, 227-271. doi:10.1111/j.1744-6570.2008.00113.x

Gillet, N., Fouquereau, E., Huyghebaert, T., & Colombat, P. (2015). The effects of job demands and organizational resources through psychological need satisfaction and thwarting. *The Spanish Journal of Psychology*, 18, 1-19. doi:10.1017/sjp.2015.30

- Hakanen, J. (2009). Työn imun arviointimenetelmä (Utrecht Work Engagement Scale) [Method for assessing work engagement (Utrecht Work Engagement Scale)]. Helsinki: Finnish Institute of Occupational Health. Retrieved from https://www.wilmarschaufeli.nl/publications/Schaufeli/Test%20Manuals/Test_manual_UWES_Finnish.pdf
- Hassan, S. (2013). The importance of role clarification in workgroups: Effects on perceived role clarity, work satisfaction, and turnover rates. *Public Administration Review*, 73, 716-725. doi:10.1111/puar.12100
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. New York, NY: The Guilford Press.
- Hayes, A. F. (2015). An index and test of linear moderated mediation. *Multivariate Behavioral Research*, 50, 1–22. doi:10.1080/00273171.2014.962683
- Hayes, A. F., & Rockwood, N. J. (2017). Regression-based statistical mediation and moderation analysis in clinical research: Observations, recommendations, and implementation. *Behaviour Research and Therapy*, 98, 39-57. doi:10.1016/j.brat.2016.11.001
- Hawthorne, G. & Elliot, P. (2005). Imputing cross-sectional missing data: Comparison of common techniques. *Australian and New Zealand Journal of Psychiatry*, 39(7), 583–590. doi:10.1080/j.1440-1614.2005.01630.x
- Kahn, R. L., Wolfe, D. M., Quinn, R. P., Snoek, J. D., & Rosenthal, R. A. (1964). *Organizational stress: Studies in role conflict and ambiguity*. New York, NY: John Wiley & Sons.

- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *The Academy of Management Journal*, 33, 692-724. doi:10.2307/256287
- Karkkola, P., Kuittinen, M., & Van den Broeck, A. (2017). *Psykologisten perustarpeiden työssä täyttymisen suomenkielinen kysely [Finnish Work-related Basic Need Satisfaction questionnaire]*. Unpublished manuscript.
- Kemery, E. R. (2006). Clergy role stress and satisfaction: Role ambiguity isn't always bad. *Pastoral Psychology*, 54, 561–570. doi:10.1007/s11089-006-0024-3
- LePine, J. A., Podsakoff, N. P., & LePine, M. A. (2005). A meta-analytic test of the challenge stressor-hindrance stressor framework: An explanation for inconsistent relationships among stressors and performance. *The Academy of Management Journal*, 48, 764-775. doi:10.5465/AMJ.2005.18803921
- Ma, C. (2016). *Perceived overqualification, empowering leadership, and role clarity: A three-way interaction effect on work engagement* (Master's thesis). Retrieved from <https://openresearch-repository.anu.edu.au/handle/1885/107334>
- Olafsen, A. H. (2017). The implications of need-satisfying work climates on state mindfulness in a longitudinal analysis of work outcomes. *Motivation and Emotion*, 41, 22-37. doi:10.1007/s11031-016-9592-4
- Örtqvist, D., & Wincent, J. (2006). Prominent consequences of role stress: A meta-analytic review. *International Journal of Stress Management*, 13, 399-422. doi:10.1037/1072-5245.13.4.399

- Preacher, K., & Hayes, A. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*, 879-891. doi:10.3758/BRM.40.3.879
- Rucker, D. D., Preacher, K. J., Tormala, Z. L., & Petty, R. E. (2011). Mediation analysis in social psychology: Current practices and new recommendations. *Social and Personality Psychology Compass*, *5*, 359-371. doi:10.1111/j.1751-9004.2011.00355.x
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York: The Guilford Press.
doi:10.7202/1041847ar
- Ryan, R. M., & Frederick, C. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality*, *65*, 529-565.
- Saltychev, M., Laimi, K., Oksanen, T., Pentti, J., Virtanen, M., Kivimäki, M., & Vahtera, J. (2011). Predictive factors of future participation in rehabilitation in the working population: The Finnish public sector study. *Journal of Rehabilitation Medicine*, *43*, 404-410. doi:10.2340/16501977-0788
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire. *Educational and Psychological Measurement*, *66*, 701-716. doi:10.1177/0013164405282471
- Schaufeli, W. B., & Taris, T. W. (2014). A critical review of the job demands-resources model: Implications for improving work and health. In G. F. Bauer, & O. Hämmig (Eds.), *Bridging occupational, organizational and public health: A transdisciplinary approach* (pp. 43-68). Dordrecht, Netherlands: Springer.

- Seppälä, P., Mauno, S., Feldt, T., Hakanen, J., Kinnunen, U., Tolvanen, A., & Schaufeli, W. (2009). The construct validity of the Utrecht Work Engagement Scale: Multisample and longitudinal evidence. *Journal of Happiness Studies, 10*, 459-481. doi:10.1007/s10902-008-9100-y
- Shirom, A. (2010). Feeling energetic at work: On vigor's antecedents. In A. B. Bakker, & M. P. Leiter (Eds.), *Work engagement: A handbook of essential theory and research* (pp. 69-84). New York: Psychology Press.
- Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *The Academy of Management Journal, 38*, 1442-1465. doi:10.2307/256865
- Suoyrjö, H., Oksanen, T., Hinkka, K., Kivimäki, M., Klaukka, T., Pentti, J., & Vahtera, J. (2009). The effectiveness of vocationally oriented multidisciplinary intervention on sickness absence and early retirement among employees at risk: An observational study. *Occupational and Environmental Medicine, 66*, 235-242. doi:10.1136/oem.2007.038067
- The Social Insurance Institution. (2017). *Kelan tilastollinen vuosikirja 2016 [Statistical yearbook of the Social Insurance Institution]*. Helsinki: The Social Insurance Institution.
- Thomas, K. W., & Velthouse, B. A. (1990). Cognitive elements of empowerment: An "interpretive" model of intrinsic task motivation. *The Academy of Management Review, 15*, 666-681. doi:10.5465/AMR.1990.4310926
- Van den Broeck, A., Ferris, D. L., Chang, C., & Rosen, C. C. (2016). A review of self-determination theory's basic psychological needs at work. *Journal of Management, 42*, 1195-1229. doi:10.1177/0149206316632058

- Van den Broeck, A., & Parker, S. K. (2017). Job and work design. In O. Braddick (Ed.), *Oxford research encyclopedia of psychology*. Oxford, UK: Oxford University Press.
doi:10.1093/acrefore/9780190236557.013.15
- Van den Broeck, A., Vansteenkiste, M., De Witte, H., & Lens, W. (2008). Explaining the relationships between job characteristics, burnout, and engagement: The role of basic psychological need satisfaction. *Work & Stress, 22*, 277-294.
doi:10.1080/02678370802393672
- Van den Broeck, A., Vansteenkiste, M., De Witte, H., Soenens, B., & Lens, W. (2010). Capturing autonomy, competence, and relatedness at work: Construction and initial validation of the work-related basic need satisfaction scale. *Journal of Occupational and Organizational Psychology, 83*, 981-1002. doi:10.1348/096317909X481382
- Vander Elst, T., Van den Broeck, A., De Witte, H., & De Cuyper, N. (2012). The mediating role of frustration of psychological needs in the relationship between job insecurity and work-related well-being. *Work & Stress, 26*, 252-271.
doi:10.1080/02678373.2012.703900
- Webster, J. R., Beehr, T. A., & Love, K. (2011). Extending the challenge-hindrance model of occupational stress: The role of appraisal. *Journal of Vocational Behavior, 79*, 505–516.
doi:10.1016.j.jvb.2011.02.001
- Williams, J., & McKinnon, D. P. (2008). Resampling and distribution of the product methods for testing indirect effects in complex models. *Structural Equation Modeling, 15*, 23-51.
doi:10.1080.10705510701758166

Wong, S., DeSanctis, G., & Staudenmayer, N. (2007). The relationship between task interdependency and role stress: A revisit of the job Demands–Control model. *Journal of Management Studies*, 44, 284-303. doi:10.1111/j.1467-6486.2007.00689.x