

\*\*\*\*\*

MANUSCRIPT ACCEPTED FOR PUBLICATION IN

*JOURNAL OF VOCATIONAL BEHAVIOR, 2019*

\*\*\*\*\*

**The Influence of Work on Personality Trait Development: The Demands-Affordances  
TrAnsactional (DATA) Model, an Integrative Review, and Research Agenda**

Stephen A. Woods PhD  
University of Surrey

Bart Wille PhD  
Ghent University

Chia-huei Wu PhD  
London School of Economics and Political Science

Filip Lievens PhD  
Singapore Management University

& Filip De Fruyt PhD  
Ghent University

Address for Correspondence:  
Professor Stephen A. Woods PhD  
Surrey Business School  
University of Surrey  
Guildford, Surrey  
GU2 7XH  
UK

s.a.woods@surrey.ac.uk

**The Influence of Work on Personality Trait Development: The Demands-Affordances  
TrAnsactional (DATA) Model, an Integrative Review, and Research Agenda**

**Abstract**

Although personality is typically conceptualised in industrial, organizational, and vocational psychology as enduring and stable, an increasing volume of research now shows that personality changes throughout the lifespan, with work being a potentially important influence of trait development. This paper reviews and integrates the emergent literature in this area, and in doing so proposes a new Demands-Affordances TrAnsactional (DATA) model of personality development at work, against which research is evaluated. This DATA model clarifies how personality-related behavior at work is called upon by work demands at four different levels (vocation, job, group and organization) and proposes Person-Environment (PE) fit as the main guiding mechanism for personality trait change at work. Drawing on this model, we develop a predictive framework of work demands that influence personality and outline eight core questions to advance this field.

*Keywords:* Personality change, Personality development, Demands-Affordances TrAnsactional (DATA) Model, PE fit, Work environment.

## 1. Introduction

Personality, the relatively enduring pattern of thoughts, feelings, and behaviors that distinguish individuals from one another, has been widely used to understand individual differences in work performance and career outcomes. Although personality is often assumed to be stable and static, studies have shown that personality can change, even in adulthood (see Lodi-Smith & Roberts, 2007; Roberts & Mroczek, 2008, for reviews; Roberts, Walton, & Viechtbauer, 2006). Following the idea of social investment theory (Roberts, Wood, & Smith, 2005), work environment and experiences have been theorized as a key source for personality change because work is a major part of adult life, and work environment/experiences can shape one's values, social roles, and activities on a daily basis (Frese, 1982). Hence, a growing number of longitudinal studies have been conducted to understand the role of work in shaping personality development. Generally, these studies provide evidence supporting the importance of work in shaping trait change. Moreover, research has indicated that work experiences can explain personality development phenomena that neither a biological perspective (i.e., intrinsic maturation of personality traits) nor other major life experiences, such as marriage, can explain (Bleidorn et al., 2013).

However, there is great variability in the type of work environments, the psychological conditions under which workers are required to function, and the reward structures that these environments create. These differences between work environments can drive personality change to different directions. This diversity of what one understands under “work” has led to a diffused, and poorly integrated understanding of the role of work in shaping personality change.

The purpose of the current paper is therefore to review, integrate, and evaluate the literature on personality change at work, in order to develop an explanatory framework of the mechanisms of personality development, with an end goal to guide future research directions.

A significant barrier to the integration of studies in this area is the absence of a coherent explanatory framework that is inclusive in the sense that it captures all relevant variables that have been studied, and those that *could be* considered salient for trait change at work.

Accordingly, we present such a framework in our review, the *Demands-Affordances TrAnsactional (DATA) model*, drawing on a number of conceptual and theoretical sources.

Our framework integrates theoretical and conceptual models from studies of personality change at work, and literatures from Industrial/Organizational and personality and social psychology. It serves both *descriptive* and *explanatory* functions. The DATA model firstly allows explication of mechanisms of change, and a multi-level taxonomic approach to organizing work factors that could prompt trait development, drawing on the concept of Person-Environment (PE) fit. Secondly, by classifying work factors around a coherent PE fit taxonomy, we are subsequently able to organize the emergent literature so as to evaluate its comprehensiveness to date and point towards future directions of research.

## **2. The Demands-Affordances TrAnsactional (DATA) model of personality development at work**

The lack of an integrating explanatory framework that facilitates understanding and prediction of work effects on personality is a significant gap in the literature on personality development at work. We propose the DATA model as a solution to this gap (see Figure 1). There are three main elements in the framework: Demands, Affordances and Demand-Affordance Transactions. Demands and Affordances are descriptive elements. The Demands element represents all of the situational or work-oriented factors that define the external environment of work. Affordances represent individual personality attributes and characteristics that are activated or required to respond or deal with the demands of the environment (i.e. in the context of personality, *what traits does a work demand call for?*). Based on the focus of the model on personality development, this affordances category

comprises traits at various levels of breadth versus specificity, and we conceptualize traits as affecting, and being affected by other elements of the model. The third element of the model is Demand-Affordance Transactions, an explanatory element. We propose that this transaction reflects a process initially triggered by the activation of affordances (traits) against work demands and then, motivated by the attainment of desirable work outcomes (e.g. reward, satisfaction), operated to achieve fit between affordances (traits) and demands. Such transaction should be determined by the levels of consistency between affordances (traits) and work demands as lower consistency should trigger a stronger developmental process to approach fit.

The result of the transaction is ultimately expression of behavior, which reciprocally affects demands and affordances. We complete the elements of the DATA model by including a motivational element based on goal formation driven independently by both demands and affordances.

A final general aspect of the framework is its dynamic nature. That is, we conceptualize all parts of the model to be in a dynamic state, interacting with one another. As personality is also conceptualized as dynamic, our model places personality development within this wider and fuller demands-affordances framework.

## **2.1. Demands**

Work demands in the model are organized into the four main levels of PE fit, namely job, vocational, team/group, and organizational (Su & Rounds, 2015). Each of these levels is elaborated further with respect to the literature that has examined the influence of each on personality trait development and change. However, consistent with theories of personality and performance (e.g. Trait Activation Theory; Tett & Burnett, 2003), we emphasize that affordances may be activated by micro- and macro-level features of the work environment. That is, people's traits may be activated and developed in response to features of the work or

occupation, as well as the features of the context (i.e. team and organization) in which work is carried out. We expand on each of these levels in greater depth in our review of the literature on trait change at work.

## **2.2. Affordances**

Affordances in our proposed explanatory model represent the psychological and behavioral responses to demands. Situations experienced in the context of working life call on people's personal resources. For example, consider the demands of managing a project at work, which may call upon a variety of organizational skills and associated behaviours, as well as effectiveness in the management of staff and stakeholders. On one hand, the personal resources may comprise a variety of personal attributes such as skills, knowledge, abilities and so forth. However, for the purposes of the DATA model of personality development at work, our focus is on how demands call upon personality traits as personal resources. Studies of personality and job performance have long established the demand-salience of different traits (e.g. Hogan & Holland, 2003; Bartram, 2005; Judge & Zappata, 2015), and traits have also been treated as personal resources for deployment in relevant situations (see Russell, Woods & Banks, 2016; Gorgievski, Halbesleben, & Bakker, 2011). More recently, studies establishing the taxonomic structure of situations have incorporated the notion of personality affordances as a foundation of those models (see e.g. the DIAMONDS model, Rauthmann et al., 2014; CAPTION model, Parrigon et al., 2017). Importantly, when the goal is to examine the effect of work on personality development, the conceptualization of a personality trait needs to incorporate change in addition to (cross-situational) stability.

Indeed, the most common conceptualization of personality in industrial, work and vocational psychology is one in which traits, as instantiated in the Big Five/HEXACO models, describe individuals' positions or levels on each of the five or six broad dimensions or their more specific underlying facets. These trait levels describe how people think, behave

or feel on average; that is, across varying situations at work. More recent approaches to personality, however, increasingly consider how individual differences in traits are manifest in moment-to-moment behaviors at work (e.g., Debusscher, Hofmans, & De Fruyt, 2017). Whole Trait Theory (Fleeson & Jayawickreme, 2015), for instance, proposes a density distributions approach to trait descriptions in which individuals' personality states are expected to deviate regularly and predictably from the average personality trait level. This approach arguably provides a fuller account of how individual differences are manifested in actual behavior, and how the expression of trait-relevant behavior is influenced by characteristics (or demands) from the environment, including work. Such a perspective on personality aligns better with our view on traits as affordances.

Applying the logic of Trait Activation Theory (Tett & Burnett, 2003), work demands are proposed to differentially activate personality traits, bringing them into a process of development explained by the broader mechanisms of the model. The specificity of the activation can be differentiated in two ways. That is, demands may be related to specific Big Five domain areas (i.e. social demands related to Extraversion; intellectual demands related to Openness) and hence be differentiated across the defining categories of taxonomic models of traits. Secondly, demands may impact along various levels of the trait hierarchy (bandwidth). Whilst some demands may activate traits at a broad level of abstraction (e.g. Extraversion), others may act on narrower personality facets (e.g. sociability versus dominance facets of Extraversion), effectively differentiated through the hierarchy of personality traits.

A final consideration in respect of affordances concerns the interplay of personality traits and other individual attributes such as knowledge, skills and abilities. In the theory of work adjustment, learning new skills or adjusting attitudes is a potential response to environment misfit (Dawis & Lofquist, 1987). Such strategies for adjustment could

conceivably influence traits. For example, improving interpersonal skills and practising them could lead to development of social poise or sociability more generally, elements of Extraversion (Woods & Anderson, 2016). Moreover, there are possible longer-term interactions between classes of affordances, for example the interplay of Openness/Intellect and cognitive ability as proposed in investment perspectives on personality and intelligence (see e.g. Woods, Hinton & Von Stumm, 2017). A full elaboration of these mechanisms is outside the bounds of this review paper, yet it remains important to recognise that traits exist as affordances at work alongside multiple individual characteristics and attributes.

### **2.3. Transaction**

At the centre of the explanatory model is the transaction between demands and affordances leading to behavior. The transaction represents a psychological exchange between perceptions of the demands of the work situation and the deployment of resources to meet those demands. The concept of a transaction or exchange between person and environment has been proposed to help understand and frame personality development influences of major life events (Denissen, Luhmann, Chung & Bleidorn, 2018), and career experiences (Wille & DeFruyt, 2012). It is both a relevant and helpful foundation for modelling the developmental effects of environments on traits because it is implicitly recognized that the nature of any transaction is dependent upon what each side contributes; the unique combination of the person and their profile of traits, with their work environment influence the developmental track that results. The aforementioned studies provide a basis for proposing the transactional nature of personality change based on environment factors.

However, our conceptualisation of transaction advances its place in personality development processes in two important ways. First, we assume that transactions occur continuously through working life. Rather than focus on significant major events, or discrete work choices, we rather see regular, micro-transactions with aspects of work as building to

shape personality traits over time (Wrzus & Roberts, 2017). Second, we propose a guiding directional mechanism. Our main proposition is that people seek to respond in ways that promote or increase *fit* with the demands they perceive and encounter at work. Consistent with our multilevel approach to work demands, this comprises the fit between a person's characteristics and work characteristics at the level of the job (i.e., PJ fit; the extent to which an individual possesses traits to perform tasks required in a job), the vocation (i.e., PV fit; the extent to which an individual possesses traits that are consistent with the vocational characteristics), the group (i.e., PG fit; the extent to which an individual possesses traits that are consistent with traits possessed by other group members, or complementary to other members in meeting team functional demands), and the organization (i.e., PO fit; the extent to which an individual possesses traits that are congruent to organizational characteristics).

PE fit has a long history in work, organizational and vocational psychology, originating as early as the first years of the twentieth century in the work of Parsons (1909). Since then, the consequential properties of PE fit have been established (e.g. Kristof-Brown, Zimmerman & Johnson, 2005). Attaining better PE fit at work seems to be an important determinant of, for example satisfaction and performance. However, beyond these empirical effects of PE fit, its explanatory function has been utilised in multiple theories relevant to the study of personal and trait development. For example, at a career level, Super (1990) emphasises the long-term career developmental trajectories as people optimize their fit to self-concept. At an organizational level, Schneider's ASA model elaborates how people are attracted to specific kinds of organizational cultures, selecting into those congruent environments. A further development of this model was proposed by Roberts (2006) in the ASTMA model, specifically considering the reciprocal influence of organizational features on the person.

Theory has also considered the motivational properties of misfit. In the theory of work adjustment, misfit is proposed to prompt action to restore fit, which may itself be considered

adaptive given the negative psychological consequences of work situations where personal resources are insufficient to deal with demands (e.g. *the job-demands resources model*; Bakker & Demerouti, 2007). In sum, while PE fit is the central guiding concept of our DATA model, the attainment of associated positive consequences of fit (e.g. satisfaction, work happiness and engagement) are also viable outcomes of personality development mechanisms.

**2.3.1. Developmental Mechanisms.** To further elaborate how discrete interactions between demands and affordances can evoke a transactional development process resulting in fit, we offer an integrative perspective by incorporating different ideas in the literature. First, based on the idea of reciprocity suggested in social learning theory (Bandura, 1977), person, environment, and behavior can shape each other in a dynamic reciprocal way. This classical learning theory highlights how repeated experience of environmental demands, processed through cognitive and affective reactions resulting in behavior, and observation of behavioral consequences, leads to typical, characteristic response patterns. Through such processes, *traits* may become refined, strengthened or modified based to fit situational demands, providing a theoretical foundation to examine personality change under the interactions between demands and affordances.

Then, depending on the initial consistency between demands and affordances, two different mechanisms may operate to achieve fit between demands and affordances by shaping one's behavior. First, the corresponsive mechanism theorised by Roberts and colleagues (e.g. Roberts et al., 2003) proposes that people select-in to environments that fit their traits, and that the corresponding activation and expression of those traits serves to strengthen and deepen them. The developmental process in the model is the activation and expression of traits in ways that serve to reinforce and deepen them. For example, in a busy customer-facing environment, sociability is likely to be an advantage for performing key job

tasks. By this pathway, for highly sociable workers, the activation and expression of this trait would serve to strengthen and deepen it.

However, development may also be prompted in situations where traits are a misfit for demands, suggesting an alternative mechanism. In this scenario, what a situation *calls for* may be different from the typical ways of responding associated with a person's traits, evoking an adjustment mechanism. Trait Activation Theory (Tett & Burnett, 2003) incorporates moderation of trait-behavior pathways by extrinsic and intrinsic job rewards, recognizing that people may be motivated to behave counter to their traits to attain certain pecuniary or non-pecuniary (e.g. satisfaction, well-being) benefits of work. Imagine a person in the example above, who is low on sociability (e.g. shy or socially reserved). Their typical social style may be incompatible with effective performance of duties. Therefore, to attain the benefits of the job, they may need to act in ways that are counter-typical to their traits.

The theory of work adjustment describes how people respond to the demands of their work by acting on themselves to develop skills, adapt behavior and change attitudes (Dawis & Lofquist, 1984). In simple terms, if traits are not a fit for demands, then development may be prompted so that appropriate behavior is deployed in response (Su, Murdock & Rounds, 2015). Through learning processes, such new behavior becomes strengthened, practiced and more autonomous as it is deployed across similar and consistent work demands and situations. In time, this reinforcement is a likely mechanism through which personality develops. Again, the direction of development is towards increasing PE fit.

No matter which (i.e., responsive or adjustment) mechanism is operated to achieve fit between demands and affordances, the long term personality trait development should be based on accumulated short-term or micro person-work environment transactions, which can be understood from the recently developed TESSERA framework (Wrzus & Roberts, 2017). Specifically, the TESSERA model posits that long-term personality development occurs due

to repeated short-term, situational episodes and processes. These short-term processes can be generalized as recursive sequences of *Triggering situations, Expectancy, States/State Expressions, and ReActions*. Triggering situations that are salient for personality traits at work, when combined with performance demands that shape required behavior in those situations, and long-term tenure in jobs and careers, could conceivably explain long-term patterns of personality growth and change in adulthood (i.e., continuity and lasting changes in personality characteristics and behavioral patterns). Overall, in our DATA model, we suggest that transactions between demands and affordances drive a process through which personality traits develop in response to work demands. Depending on the initial levels of consistency between demands and affordances, a corresponsive or an adjustment mechanism will be operated to strengthen the fit between demands and affordances through repeated and accumulated transactions over time.

#### **2.4. Behavior: the result of the demands-affordance transaction**

The preceding discussion has presented a demands-affordance transactional mechanism as a key process through which personality traits develop in response to work demands. Behavior at work assumes an important role and is the product of the transaction (path *a* in Figure 1). The directional influence of PE fit strengthening leads to behavior being the product of both the unique make up of psychological resources of the person, and the demands that their work environment presents. However, as in social learning theory, behavior also exerts a reciprocal effect on both demands and affordances. On one hand, behavior naturally affects the work environment in various ways, shaping future work demands (path *b* in Figure 1). On the other hand, as behavior becomes more practiced, automatic and habitual, individual skills and competencies are developed, and traits modified, strengthened and refined (path *c* in Figure 1). In our example of demands-affordances misfit above (i.e. a person low on sociability working in a busy customer-facing environment),

repeated job-related sociable behaviour (e.g. interacting with customers, initiating communication, talking warmly etc) could in time lead to development of higher trait sociability. The association of behavioural change with subsequent personality trait change along these lines has been evidenced in recent research on development interventions (see Hudson, Briley, Chopik, & Derringer, 2018).

## **2.5. Goals**

A final element of our proposed explanatory model of personality development at work is the role of goals and motivation as inputs into the demands-affordance transaction. The importance of motivation is underlined in general perspectives on personality development in adulthood, as well as in Trait Activation Theory.

The corresponsive mechanism (Roberts, Caspi, & Moffitt, 2003) of personality development proposes that personality traits lead people to select into environments or take decisions that enable pursuit of trait-relevant goals. An example is the pursuit of close and positive relationships or pro-social goals by people higher on Agreeableness. Pursuit of those goals correspondingly strengthens and deepens those same traits (e.g. see Woods, Lievens, De Fruyt & Wille, 2013). A similar motivational mechanism at work is presented in the Theory of Purposeful Work Behaviour (Barrick, Mount, & Li, 2013). The theory proposes a directional influence of traits on behavior through the process of striving for superordinate goals. One motivational mechanism is therefore from the affordance side of our model (paths *f* and *g* in Figure 1): that personality traits as individual characteristics direct the general direction of work behavior toward attainment of personally salient goals. This may affect, for example, how different people respond to similar work demands.

Work as a context for personality trait development, however, also introduces motivational factors from the environment demands side of the model (paths *d* and *e*). As highlighted earlier, Trait Activation Theory positions extrinsic and intrinsic rewards as

factors determining or regulating the expression of traits in behavior. When responding to work demands, people's actions result from a complex set of cognitive evaluations. These comprise perceptions of the situation and psychological features of demands, and associated affordances. Where traits and individual resources are judged to be inconsistent with work demands, a process of adjustment is invoked to respond in a way counter to one's typical style or behaviour. The motivation to respond in such a way (in effect to act counter to personality traits) is reinforced by the rewards that work brings. In order to obtain the benefits of work, one must deliver required standards of performance, regardless of whether those standards are consistent with preferred ways of behaving (e.g., the low Conscientious person who is required to be organized and systematic in their administration work).

Perhaps most interesting is when traits may interact to influence goals in different ways. In the example above, a person low on Conscientiousness may need to act in an organised manner to gain progression or promotion. However, the extent to which that outcome is desirable may itself be dependent on other traits such as ambition and achievement orientation.

## **2.6. Developing an explanatory framework of work demands that influence personality**

We propose that to date, an explanatory framework of work demands that influence personality development is elusive in part because taxonomies of work demands are highly descriptive in that they describe what people are required to do, or the environments they experience, or the KSAOs that are needed to perform. However, there exists no systematic approach to examining underlying taxonomic structures through a person-environment interactional lens.

In our explanatory model, traits develop because they represent affordances to deal with situational work demands. Logically, to develop an integrated understanding and taxonomy

of work demands that affect personality development, those demands must be classified not only on their level of specificity in terms of characterizing *job, vocation, group and organization*, but also based on their salience to personality traits. The proposition that different traits are more or less relevant to different job performance requirements is well-established in theories of trait-behavior relations at work (e.g. Trait Activation Theory) and criterion validity studies (e.g. Hogan & Holland, 2003; Judge & Zappata, 2015). By establishing the salience of a work demand to specific trait affordances, it should be possible to facilitate prediction of which traits are likely to develop in response to the experience of specific demands. Simply put for example, at the vocational level, the salience of RIASEC artistic and investigative occupation environments for Openness/Intellect (e.g. Woods & Hampson, 2010), provides a basis for predicting that the demands-affordance transaction process, directed toward greater PV fit, would serve to increase Openness/Intellect for people working in highly artistic or investigative occupations.

The DATA model enables a review of the literature to classify and organize studies *vertically* based on the level of demands (i.e. vocational, job, , group or organizational characteristics), and *horizontally* across traits based on their salience as affordances for the demands. In the latter case, the Big Five represent a parsimonious initial classification system, although we recognize that specific demands may also be associated with narrower facets of personality.

### **3. Personality development and work demands: A structured review of the literature**

Our review of the literature is structured around the four levels of work demands and their associated measures of PE fit. Within each section, we identify where work demand factors have been associated with change in specific personality traits. Based on our explanatory model, these specific relations contribute to building an understanding of how traits act as affordances for work environment demands. Below we first introduce the four

sources of demands at work towards which people develop. These demands were deliberately selected because of their connection to the central explanatory process in this framework, namely PE fit (Su, Murdoch & Rounds, 2015). More specifically, *job-, vocation-, group, and organization-*level demands have been used in the literature as relevant categories to distinguish between different levels of fit at work (Kristof Brown, Jansen, & Colbert, 2002). In each case, we highlight how the demands associated with each level of fit could be conceptualised, providing direction towards the objective of a descriptive taxonomy of work factors affecting personality traits, and outline what the literature has already offered with respect to empirical research into their developmental influences. With respect to the latter point, we emphasize that our model serves both *descriptive-integrative* (i.e. summarising findings of the literature to date) and *predictive-prospective* functions (i.e. proposing a coherent model of work factors that conceptually could influence trait development, yet have not been studied to date). All studies reviewed in this section are integrated in Table 1 where different work demand factors are defined and previously identified demand-affordance transactions are summarized.

### **3.1. Job characteristics and features**

In the context of PE fit, jobs have been identified by Kristof (1996) as “the tasks a person is expected to accomplish in exchange for employment, as well as characteristics of those tasks” (p. 8). In our DATA model, we classify job-level demands as specifically the tasks and activities required of a person in the attainment of their job requirements and the general ways in which they are characterized (e.g. the extent to which a person has autonomy in deciding how to perform tasks).

To elaborate further, existing job-based demand models describe features or characteristics of work at various levels of specificity. The Job Characteristics Model (Hackman & Oldham, 1980) for example, describes key psychologically relevant workplace

features, namely *skill variety* (i.e., the range of tasks performed, and skills called upon doing so), *task identity* (i.e., the ability to complete the whole job from start to finish), *task significance* (i.e., the impact of the job on others), *autonomy* (i.e., the extent of discretion and freedom an employee has over his or her tasks), and *feedback* (i.e., the extent to which the job provides the employee with information about the effectiveness of his or her performance).

Task characteristics are a more complex prospect to profile given their evident job-specificity. Unlike the job characteristics model, a description of job *tasks* should represent a functional specification of the work to be done rather than the deeper psychological profiling of the nature of the work. At this advanced level of specificity, one illustrative example and means of taxonomizing task demands is the O\*NET content model (Peterson, Mumford, Borman, Jeanneret, & Fleishman, 2001), which includes detailed descriptions of the tasks and features associated with jobs within occupational categories. For example, the taxonomy describes generalized work activities, and specific work tasks, profiling in a more direct way what a job actually entails in terms of work to be done. Moreover, O\*NET also provides some translation of work demands to statements of general work styles that are needed to meet those demands, providing a potentially useful heuristic for linking demands and affordances. We return specifically to this point in our discussion section of the review.

### **3.1.1. Research on personality development in response to job characteristics and features**

PJ fit has been one of the most commonly studied levels of PE fit due to the tremendous amount of attention directed toward the selection of applicants based on his or her skills to fill available positions. The bulk of research on reciprocal relationships between personality and work environments has focused on this level of analysis. That is, a series of studies have looked at how personality predicts and is predicted by job-level characteristics (see Table 1). Whereas some studies included (only) a select set of isolated job characteristics, others

considered established frameworks of integrated job characteristics such as the Job Characteristics Model and the Job Demand-Control Model.

Mortimer and Lorence (1979) were among the first to study job-level work content in relation to personality development over time. They observed that a sense of competence (or self-efficacy) prior to labor force entry, positively predicted future *work autonomy*. Moreover, those who experienced greater autonomy in work increased in competence across the next ten years. A seminal study by Roberts, Caspi and Moffitt (2003) extended these results by investigating the reciprocal relationships between four personality traits (constraint, negative emotionality, agentic positive emotionality, and communal positive emotionality) and a “comprehensive battery of work experiences”, including job characteristics such as *resource power*, *work autonomy* and *work stimulation* (see Table 1). There was ample support for predictive relationships between personality traits (age 18) and later work experiences (age 26). For instance, adolescents who scored higher on negative emotionality experienced a turbulent and rather unsuccessful transition into the world of work, as indicated by lower prestige jobs, reduced work satisfaction and financial insecurity; adolescents who scored high on the communal component of positive emotionality (i.e. an orientation to interpersonal relationships and the tendency to experience positive affect in such settings) had the opposite experience. Importantly, two job characteristics at age 26 also explained part of the change in personality, particularly positive emotionality. More specifically, higher levels of work stimulation and autonomy at age 26 explained relative increases in this trait between age 18 and 26.

Le, Donnellan, and Conger (2014) replicated and extended these findings by examining the reciprocal relationships between these same personality variables and a broader range of “work conditions” which included measures of *fit*, *self-determination*, *ease*, *material benefits* and *job safety/quality* (see Table 1). Similar to Roberts et al. (2003), job characteristics were

related to changes in personality, and these effects were also replicated when parent reports were used instead of self-reports of personality. In particular, individuals who reported that their jobs did not allow them to use their skills, were stressful and less fitting, did not provide a secure working environment, and were lower quality and involved some level of danger, increased in negative emotionality across time.

Other research has adopted more integrated and established models of job characteristics. One of the earliest examples of this tradition is a study by Brousseau and Prince (1981) which used the Job Characteristics Model (Hackman & Oldham, 1976) to assess an integrated set of psychologically relevant workplace features: *skill variety*, *task identity*, *task significance*, *autonomy* and *feedback* (see Table 1) in a single-company sample of engineers, scientists and managers. Skill variety, task identity and task significance were related to increases in emotional stability (or decreases in Neuroticism) over a time period of 7 years. Having a job which has a profound impact on other's lives was also related to increases in social dominance (i.e. an aspect of Extraversion).

Complementing these results, two studies investigated reciprocity between Big Five personality and the Job Demand-Control Model (JDCM; Karasek, 1979). The JDCM describes work environments along four independent dimensions thought to predict work stress: *Decision latitude*, *psychological demands*, *physical demands* and *hazardous work* (see Table 1). Sutin and Costa (2010) investigated reciprocal relationships between JDCM job characteristics and Big Five personality traits over a 10-year time interval. Baseline personality was associated with changes in job characteristics, particularly decision latitude. More specifically, participants high in neuroticism decreased in decision making latitude, whereas extraverted, open, and particularly conscientious participants at baseline reported more decision making latitude at the 10-year follow-up. Importantly, none of the job characteristics predicted change in personality at the factor level. These authors concluded

that personality shaped job characteristics, but occupational experiences had minimal impact on personality.

However, using the same JDCM, Wu (2016) showed that time demand and job control (i.e. a combination of decision-making autonomy, work-methods autonomy and work-scheduling autonomy) shaped job stress at a given time; and over time, an increase in time demand predicted an increase in job stress, which subsequently predicted an increase in Neuroticism, and a decrease in Extraversion and Conscientiousness. In addition, an increase in job control predicted an increase in Agreeableness, Conscientiousness and Openness directly, but did not predict changes in Neuroticism and Extraversion. This study concluded that work conditions can be important drivers of personality change, and job stress was identified as a key feature underlying changes in extraversion and neuroticism in particular.

In summary, our review indicates that a substantial number of studies has investigated reciprocal relationships between personality development and job characteristics, and that the plethora of these work demands are distilled from frameworks which describe work in terms of stressors and/or resources. This explains why most of the predictive effects from work to personality development have been found for the trait Neuroticism (or Negative Emotionality), given that this is the personal attribute most related to stress. We propose that, to more comprehensively understand the predictive effects from jobs to personality development, greater variability in job characteristics is needed. More specifically, future research needs to consider job characteristics that better capture *what* people actually (need to) do in their jobs. So, greater consideration of work content is needed. We return to this point in our discussion section of the review.

### **3.2. Vocational characteristics**

Vocational characteristics describe work environments at a high level of abstraction. More specifically, work demands conceptualized at this level relate to higher-order

motivational structures (e.g., values, goals, personality and interests) which differ substantially across occupations and pose very different requirements to people in these occupations. For instance, Holland's taxonomy of occupational characteristics and interests (Holland, 1985) is among the most frequently studied models in vocational psychology (Nauta, 2010), and describes six occupational environments (i.e., Realistic, Investigative, Artistic, Social, Enterprising, Conventional) that pose very different requirements to individual employees, which can, in turn, be linked to people's personality (Barrick, Mount, & Gupta, 2003), higher-order motives and values. Other frameworks offer alternative models of career-related characteristics or features, such as Schein's (1978) career anchors or Hoekstra's (2011) career roles. In our DATA model, we classify demands as vocational-level if they refer to general features of work that apply across multiple jobs. That is, they should describe work characteristics in ways that are not specific to individual jobs, but are rather representative of the environment at a higher level of abstraction capturing complex *blends* of tasks, goals, values, norms and behavioral expectations concerning a vocation.

### **3.2.1. Research on personality development and vocational characteristics**

There are reliable concurrent associations between the Big Five and Holland's six vocational interest types (Barrick et al., 2003; De Fruyt & Mervielde, 1997; Larson et al., 2002). In a study of the Big Five traits and RIASEC vocational characteristics over time, Wille and De Fruyt (2014) tracked a longitudinal cohort of college alumni across the first 15 years of their professional careers after graduation. Self-reports of Big Five personality traits and RIASEC occupational characteristics were gathered at career start and 15 years later. The results first indicated that personality shapes early career choice as well as future career crafting. For instance, Openness before entering the labor market positively predicted social work characteristics at career start, and these open individuals also further strengthened this aspect of their work environment as their careers unfolded. Importantly, occupational

characteristics also influenced the patterns of personality development (see Table 1), which demonstrated how specific types of work environments can have different socialization effects which can be linked to occupation-specific work demands.

Using the same longitudinal sample but approaching vocational characteristics from a slightly different angle, Wille, Beyers, and De Fruyt (2012) also investigated reciprocal relationships between Big Five traits and Hoekstra's (2011) six career roles (i.e., maker, expert, presenter, guide, inspiratory, director; see Table 1). Interestingly, requirements associated with each one of these roles can be linked to Big Five personality traits (Wille et al., 2012). That is, Maker and Expert roles are conceptually linked to trait Conscientiousness; Guide and Presenter to the interpersonal traits Agreeableness and Extraversion, respectively; and the leadership roles of Director and Inspirator to trait Extraversion. Wille et al.'s (2012) longitudinal analyses first showed that baseline personality predicts early career role engagement at career start. For instance, Extraversion positively predicted engagement in Presenter, Director, Inspirator and Guide roles early in the career; whereas Conscientiousness positively predicted engagement in the Expert role. Further, baseline personality predicted subsequent changes in role engagement, showing how careers are crafted to enhance person-environment fit. Finally, change in career roles over time was associated with change in traits (see Table 1), illustrating how professional roles and personality co-develop over time.

Finally, focusing on one specific type of vocation, Niess, and Zacher (2015) examined reciprocal relationships between personality and managerial careers. Upward mobility into managerial professions was found to be positively predicted by Openness to Experience, and these vocational experiences in turn deepened this personality trait. In managerial vocations, it was argued, employees frequently encounter challenging situations that require them to make use of their divergent thinking skills, their potential of generating new ideas, or their creativity, all of which are facets of Openness.

### **3.3. Group characteristics**

Group characteristics may refer to the context of a specific work group or team, right through to departments, regions or divisions of an organisation. One common approach to characterizing groups is by focusing on the psychological features (e.g., values, goals, attitudes or personality traits) of individual group members and aggregating these to a higher-order level (Seong, Kristof-Brown, Park, Hong, & Shin, 2015). In one example, Prewett, Brown, Goswami and Christiansen (2016) found that team personality composition influenced member performance. However, a complementary approach to group-level characteristics focuses on features that inherently transcend the individual level, such as climate (e.g. Anderson & West, 1996) that characterise teams on general shared ways of working. Example climate constructs include participative safety, support for innovation, team vision, and task orientation.

For the purposes of the DATA model, we would classify potential group demands as resulting from the social normative, or aggregated styles and ways of working of multiple persons within a work group, however the boundaries of that group are defined.

#### **3.3.1. Research on personality development in response to group characteristics**

The literature on personality development at work has neglected the context of the team or group as demands that trigger affordances resulting in personality development. This represents a notable gap and oversight. The work group or team is potentially the most proximal representation of the context within which socialization processes take place.. Teams are governed by a relatively stable set of norms, role expectations and shared systems of knowledge and meaning (e.g. group climate, mental models). These informal structures emerge through social and work-based interactions among members across a group's developmental history. Newcomers present a potential challenge to this stable structure and are thus subject to efforts by group members to assimilate the person to it. At the same time,

newcomers are confronted by a novel and ambiguous social and work context and may attempt to exert influence on the group to accommodate to their unique attributes and needs (Moreland & Levine, 1982).

The dynamic multilevel theory of team personality (Gardner & Quigley, 2015) offers interesting insights into how individual and team personality interact and mutually influence each other. A work group or team is defined here as an interdependent collection of two or more individuals who share responsibility for specific outcomes (e.g., Sundstrom, De Meuse, & Futrell, 1990). These individuals interact socially with one another, exhibit task interdependency, possess one or more shared goals and are embedded in a larger organizational setting (Kozlowski, Gully, Nason, & Smith, 1999). The emergence of team personality is described in this model as a bottom-up compilation process that occurs as individuals interact with each other and with the broader context within the open team system. This model departs from the idea that individual personality is stable, whereas it is mainly team personality that is dynamic and evolves and changes over time as the team members interact with each other and with the context.

A further intriguing issue is the interaction of group demands versus job demands. For example, Van Knippenberg, De Dreu and Homan (2004), position task demands and complexity as a moderator of the impact of group diversity on task elaboration and performance. Logically, it follows that under different levels of task complexity, personality traits may develop towards fit to demands in ways that reflect either PG similarity or complementarity. Demands may activate affordances that reflect the same trait styles as other colleagues (i.e. where all members have similar contributions to group performance), or complementary styles (i.e. where members contribute uniquely to group tasks and performance). The prospect of the interaction of PG fit with PJ fit points towards the next key

challenges for research on personality change at work, namely the interplay of work factors operating at different levels.

### **3.4. Organization characteristics**

Approaches to characterizing organizations have identified a broad spectrum of factors to which individuals can feel more or less attracted (e.g., Schneider, 1987), including norms and values (Chatman, 1989) and organizational cultures (Schein, 1985). Modeling cultures in particular (i.e., typical ways of acting and behaving) has been attempted in various frameworks (see Van den Berg & Wilderom, 2004; O'Reilly, Chatman & Caldwell, 1991). Cultural dimensions could influence how priorities emerge and decisions are made in the course of day-to-day work activity, triggering different traits to a greater or lesser extent than would otherwise be expected in the job.

In the DATA model, we would classify demands at organizational-level when they represent factors that can be said to describe whole organizations. These will most clearly be factors characterising organizational culture.

#### **3.4.1 Research on personality development in response to organizational characteristics**

As with group characteristics, we found no studies addressing the specific issue of whether personality traits develop in response to organizational-level demands. Given this absence of research, we suggest future studies to investigate, for instance, whether newcomers adapt their individual personality profiles to enhance the level of PO fit. Interestingly, past research on PO fit provides some direction regarding specific activities and mechanisms that may facilitate such a form of organizational personality socialization. For instance, Louis (1980) proposed that interaction with members facilitates sense making, situational identification and acculturation among recruits. This interaction may occur during firm-sponsored social activities or in mentor programs, where recruits are encouraged to establish relationships with senior organization members who do not directly supervise their

work. To the extent that participation in social activities leads to greater social integration, new members will begin to rely on the characteristics of incumbents as reference points for their own actions (Terborg, Castore, & DeNinno, 1976). Similarly, mentor relationships could contribute to organizational socialization because senior members can provide cultural information about the broader organization.

#### **4. Discussion: Implications for future research on personality development at work**

Since the beginning of the 21<sup>st</sup> century, personality psychologists have shown increased attention to the effects of life experiences on personality development, including the role work plays in these processes. As evidence for personality plasticity started to grow, work and organizational psychologists contributed to this field of research as well, and soon this resulted in a rich, but also fragmented body of findings on reciprocal relationships between personality and work.

In our review, we set out to address this fragmentation to provide an integrated model for organizing this literature, serving both descriptive and explanatory functions.

Accordingly, we present the Demands-Affordances TrAnsactional (DATA) model. We propose PE fit as a central mechanism of personality development at work in this model, and *levels* of PE fit (i.e. fit to job, vocational, group and organizational characteristics) as an organizing framework for classifying features of work that may exert effects on traits.

Moreover, we propose how the DATA model addresses the need for theoretical and conceptual understanding of why, how, and in what ways personality traits develop in response to work demands.

In the remainder of this review, we corroborate the contributions of this approach by outlining directions for future research, with the main implications grouped into four themes: coverage of the content of the work demands domain; the development of a PE interactional perspective on personality development at work; and unresolved questions about volitional

trait change and its adaptiveness. We summarize these implications by presenting eight pressing questions for future research (see Table 2). This section also considers the implications for vocational development and counselling from a practice perspective.

#### **4.1. Content Coverage of the Work Domain in Studies of Personality Development**

One benefit of the framework we proposed in our review is that it serves a descriptive function. Application of levels of PE fit provides an informative structure against which we may classify the literature to date. We have earlier noted some notable and pressing gaps in the literature that emerge based on this classification. These comprise firstly, under the PJ fit level, research on the impact of detailed work activities and task characteristics on trait development. Whilst many studies have examined job-level effects on personality development, no studies to date have attempted to use detailed task and activity analysis information to predict unique effects of jobs on personality.

Detailed taxonomic approaches to defining work demands (such as in O\*NET content model) are designed to describe the tasks that sum to represent effective performance of a job or occupation, enabling specification of the person requirements needed to deliver those demands. The inclusion of *performance demands* explicitly into research on personality development at work would integrate the emergent literature more effectively with the dominant paradigm in personality research in work settings, namely the criterion effects of traits in context. Given the motivational influences of attaining the rewards of performance at work, development of traits towards greater fit to such performance-related job characteristics and features appears to be a likely, yet neglected area of study in the literature.

We also commented in our review on the absence of any study currently examining the influences of organizational or group characteristics on trait development. This is a further wide-ranging area of potential study, which presents two especially notable directions. A first one deals with the social normative influence of organizational culture and group

climate. In both cases, the demand side in the DATA model represents a normative style of getting things done, towards which personality traits may adjust. Second, and particularly in the case of group characteristics, the tasks that are assigned to groups, and the distribution of sub-tasks across people with diverse traits and skills, represents a further potential influence on trait development. It is possible, for example, to propose an interaction of job-level factors, with group-level factors where key performance demands rely on interdependent actions of teams.

We acknowledge that not all work factors will fit neatly into the levels of work demands we classify in the DATA model. For example, overall work roles may be considered to fit somewhere between job and vocational demands. Yet, it is not the purpose of our DATA model to provide a mutually exclusive classification taxonomy, rather it is to provide a broad comprehensive set of domains around which work factors may be structured, and the state of the literature on trait change examined.

#### **4.2. Expansion of a person-environmental perspective of trait development at work**

One of the main implications of our DATA model is that work demand factors may be classified in at least two ways: a) based on their position in a specific level of the demands categories (e.g. vocational, job, organizational, group); b) their saliency for particular personality traits. Part b here, is a key property that helps to advance research towards a clearer PE interactional perspective on personality development at work. Part of the failure of research to attain an integrated understanding, is a lack of consistent alignment of work demands to personality traits, which would facilitate both prediction and research design.

There exist good recent examples, however, to guide such research. In the situational taxonomic literature, the DIAMONDS (Rauthmann et al., 2014) and CAPTION (Parrigon et al., 2017) models have described multi-dimensional taxonomies of psychological situations with explicit connections to personality dimensions. For example, interpersonal situational

factors are relevant to Extraversion and Agreeableness, and factors relating to goal achievement and work are evidently related to Conscientiousness. An implication of these situational taxonomies for understanding the impact of work on trait development is the need to structure demands based on their psychological salience for personality, rather than on their descriptive properties. For example, in the O\*NET model, rather than differentiate work activities from occupationally specific tasks, it is more informative to group these occupational dimensions based on their relevance to traits (e.g., which features are relevant to Extraversion, Agreeableness and so forth).

Judge and Zappata (2015) undertook precisely this approach and applied six key job demands to guide hypotheses about the trait salience of different job contexts (occupations requiring independence, attention to detail, strong social skills, competition, innovation and dealing with unpleasant or angry people). These were assigned in various ways as being relevant to each of the Big Five, and expert coders were used to create composite scores based on the assignment of individual occupational characteristics to the job demand dimensions. Applying similar thinking and methodology to link traits to job demands in studies of personality development at work could frame more clearly the ways in which performance demands may activate and crucially, affect specific personality traits. To this end, our assignment of factors to specific traits in Table 1 offers a first step, showing how work factors may be linked to the Big Five.

However, related to this, we also observe in the literature that studies of trait development have focused mainly on broad personality dimensions, and correspondingly broad work factors. The bandwidth-fidelity issue is a well-defined concept in the personality literature (e.g. Stewart, 1999), with the implication that narrow ‘facet’ traits of personality exert stronger effects on specific or correspondingly narrow work criteria, whereas broad personality constructs exert weaker, more distributed effects across a wider domain of

criteria. We posit that similar consideration should be given to bandwidth and fidelity in modeling the reciprocal effects of work on personality. Occupation and job factors that are narrowly defined are likely to exert limited developmental effects on broad personality domains like the Big Five, but may exert deeper effects on specific personality facets. Examining work effects on broader personality traits may, for example, require consideration of composites of multiple work factors. In short, while an important future direction of research in this area is to examine the impact of more specific and detailed work factors on personality, an accompanying challenge is to measure personality at an appropriately specific level using, for example, trait facet models. By doing so, the literature can speak to wider research on the interplay of facet-level personality traits and work (see e.g., Woods & Anderson, 2016).

Encompassing wider variables, a future research need is to also consider developmental processes of personality incorporating other personal characteristics that may moderate or mediate work demand effects. For example, demographic characteristics such as gender could moderate development pathways. Socialisation influences have long been identified as affecting men and women differently as they develop vocational preferences (Woods & Hampson, 2010), and these expectations may exert influences on how the demands-affordance transaction plays out.

Other personal characteristics could also be influential or even explanatory in the process of personality development. For example, cognitive ability could influence the effective perception of demands at work. Acquisition of skills through training could facilitate effective adjustment to meet demands (i.e. potentially mediating the process of trait development). Testing the nature of these more complex relations will represent key challenges for future research.

### **4.3. Volitional personality change and its adaptiveness**

Changing conceptual understanding about the stability of personality invites the question of whether trait change might result from training and development interventions at work (Allan et al., 2018). It is not an overstatement however, to note that such a question might be considered “radical, even outlandish” (Mroczek, 2014) in the academic literature, where the stability of personality has been a theoretical pillar for several decades. In the context of development of work, it is therefore unsurprising that our review did not locate any published papers on workplace interventions designed to develop personality traits such as those of the Big Five model. Yet in this respect, we also note that industrial, work, and organizational psychology literature is lagging significantly behind literatures on health and clinical psychology, where research on the effects of intervention are blossoming. For example, from a clinical therapeutic perspective, Roberts, Luo, Briley, Chow, Su, and Hill (2017) undertook a systematic review of the literature on personality change following interventions for clinical conditions. Remarkably, their review of 207 studies revealed reliable change effects for extraversion and emotional stability, and to a lesser extent agreeableness and conscientiousness. More recently, an intervention focused on behavioural change goals was found to predict volitional trait change in a non-clinical sample (Hudson et al., 2018).

Further, no study in our review directly considered the question of whether personality change at work is an *adaptive* process. This is a fundamental consideration for how personality change in response to work is conceptualised. From one perspective, adaptation to environmental demands enhances fit, enables greater attainment and is thus consistent with adaptive development. Indeed, job-demands resources perspectives on work engagement and burnout emphasize the positive psychological benefits of fit between demands and personal resources to meet them (Bakker & Demerouti, 2007). However, from another perspective, where development and change is a consequence of job misfit, it is

plausible to hypothesize that psychological strain may result. For example, in models of work-family interface (WFI), behavioral conflict (the need to behave differently at work compared to home) is conceptualized as a negative feature of the WFI (e.g, Carlson, Kacmar & Williams, 2000). Perhaps the need to change to fit work demands could exert effects on psychological well-being that are similarly negative? Research is needed to address this issue.

#### **4.4. Implications for vocational development and counseling**

The conventional approach for practitioners in vocational development and counseling when profiling traits against occupational requirements typically involves assessing personality traits to facilitate matching people to careers or occupations, implicitly treating the trait side as fixed, and the occupational side as variable (e.g. Parsons, 1909; Holland 1985). Our review, and the literature that we include show that this implicit assumption of stability is incorrect. Indeed, by operating from this assumption, there is a fundamental risk that vocational guidance and decisions are flawed, expressly because they do not acknowledge the capacity for change and growth of the person and their traits. The most direct practical implication of our review findings is that this approach needs to be modified such that vocational advisers consider not only occupations that fit individual preferences, but also the ways in which clients could approach personal development for a career in occupations that they would like to do, but which may be inconsistent in some way with their traits. As vocational psychologists and career practitioners, it is time to move beyond simple concepts of the ‘stable’ personality in the PE fit approach to counseling and guidance.

Our classification of the emergent research literature on trait development at work around the O\*NET content model enhances the potential for this thinking to be built into the understanding of practitioners who are already familiar with the components of the model. For example, vocational advisers examining *worker characteristics* from the O\*NET model against trait profiles of clients could treat misfit between the two as ‘gaps to close through

development', rather than considering these as potential sources of enduring job dissatisfaction. However, this implication brings into sharp focus the need for greater understanding of the psychological impact of personality change at work.

Finally, there is a critical role to play for vocational counselors and coaches in addressing the need for research on interventions at work and their impact on personality. Although modeled in sample groups in the literature, we urge the need to keep in mind that personality change is an individual-level experience, and as such, interventions that are focused on the specific needs of individual employees in adjusting to their work could potentially offer the clearest evidence for the effects of learning and adjustment at work, for long term personality change. Just as the TESSERA model proposes long-term development effects from multiple short-term episodes, so long-term development may result from accumulated development interventions captured in learning programmes at work.

## **5. Concluding comments**

Our work influences who we are. This is the conclusion of a steadily growing volume of research on the effects of work on personality traits. However, our review has highlighted the need to bring greater order into this emergent literature so that we may understand the work factors that are important for personality trait development, and design future research studies to address important questions, answers to which are needed to advance the literature in this area. We have presented the DATA model of personality development of work to serve both descriptive and explanatory functions to advance understanding of, and shape future research on the influences of work factors on trait change. Scholars and practitioners working on the questions that we pose in this review may do so to build on a coherent literature on the interplay of personality and work in industrial, organizational and vocational psychology. In this way, they may also contribute to the collective effort of psychologists on

understanding personality processes in adulthood, with *work* being positioned appropriately as a key life experience that guides how our traits develop and change.

### References

- Allan, J., Leeson, P., De Fruyt, F. & Martin, S. (2018). Application of a 10 week coaching program designed to facilitate volitional personality change: Overall effects on personality and the impact of targeting. *International Journal of Evidence Based Coaching and Mentoring*, 16(1), 80-94.
- Anderson, N., & West, M. A. (1996). The Team Climate Inventory: Development of the TCI and its applications in teambuilding for innovativeness. *European Journal of work and organizational psychology*, 5(1), 53-66.
- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of managerial psychology*, 22(3), 309-328.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliff.
- Barrick, M. R., Mount, M. K., & Li, N. (2013). The theory of purposeful work behavior: The role of personality, higher-order goals, and job characteristics. *Academy of management review*, 38(1), 132-153.
- Barrick, M. R., Mount, M. K., & Gupta, R. (2003). Meta-analysis of the relationship between the five-factor model of personality and Holland's occupational types. *Personnel Psychology*, 56(1), 45-74. doi: 10.1111/j.1744-6570.2003.tb00143.x
- Bartram, D. (2005). The Great Eight Competencies: A Criterion-centric Approach to Validation. *Journal of Applied Psychology*, 90(6), 1185-1203.
- Bleidorn, W., Klimstra, T. A., Denissen, J. J. A., Rentfrow, P. J., Potter, J., & Gosling, S. D. (2013). Personality maturation around the world—A cross-cultural examination of social investment theory. *Psychological Science*, 24, 2530-2540.

- Brousseau, K. R., & Prince, J. B. (1981). Job-person dynamics: An extension of longitudinal research. *Journal of Applied Psychology, 66*(1), 59-62. doi: 10.1037/0021-9010.66.1.59
- Carlson, D. S., Kacmar, K. M., & Williams, L. J. (2000). Construction and initial validation of a multidimensional measure of work–family conflict. *Journal of Vocational behavior, 56*(2), 249-276.
- Chatman, J. A. (1989). Improving interactional organizational research: A model of person-organization fit. *Academy of management Review, 14*(3), 333-349.
- Dawis, R. V., & Lofquist, L. H. (1984). *A Psychological Theory of Work Adjustment*. Minneapolis: University of Minnesota Press.
- Debusscher, J., Hofmans, J., & De Fruyt, F. (2017). The multiple face (t) s of state conscientiousness: Predicting task performance and organizational citizenship behavior. *Journal of Research in Personality, 69*, 78-85.
- Denissen, J. J., Luhmann, M., Chung, J. M., & Bleidorn, W. (2018). Transactions between life events and personality traits across the adult lifespan. *Journal of personality and social psychology*.
- De Fruyt, F., & Mervielde, I. (1997). The five-factor model of personality and Holland's RIASEC interest types. *Personality and individual differences, 23*(1), 87-103.
- Fleeson, W., & Jayawickreme, E. (2015). Whole trait theory. *Journal of Research in Personality, 56*, 82-92.
- Frese, M. (1982). Occupational socialization and psychological development: An underemphasized research perspective in industrial psychology. *Journal of Occupational Psychology, 55*, 209-224.

- Gardner, S. D., & Quigley, N. R. (2015). Toward a dynamic multilevel theory of team personality. *Organizational Psychology Review*, 5(4), 364-384.
- Gorgievski, M. J., Halbesleben, J. R., & Bakker, A. B. (2011). Expanding the boundaries of psychological resource theories. *Journal of Occupational and Organizational Psychology*, 84(1), 1-7.
- Hackman, J. R., & Oldham, G. R. (1976). Motivation through design of work: Test of a theory. *Organizational Behavior and Human Performance*, 16(2), 250-279. doi: 10.1016/0030-5073(76)90016-7
- Hoekstra, H. A. (2011). A career roles model of career development. *Journal of Vocational Behavior*, 78(2), 159-173. doi: 10.1016/j.jvb.2010.09.016
- Holland, J. L. (1985). *Making vocational choices: A theory of vocational personalities and work environments (2nd ed.)*. Odessa, FL: Psychological Assessment Resources, Inc.
- Hogan, J., & Holland, B. (2003). Using Theory to Evaluate Personality and Job-performance Relations. *Journal of Applied Psychology*, 88(1), 100-112.
- Hudson, N. W., Briley, D. A., Chopik, W. J., & Derringer, J. (2018). You have to follow through: Attaining behavioral change goals predicts volitional personality change. *Journal of Personality and Social Psychology*.
- Judge, T. A., & Zapata, C. P. (2015). The person–situation debate revisited: Effect of situation strength and trait activation on the validity of the Big Five personality traits in predicting job performance. *Academy of Management Journal*, 58(4), 1149-1179.
- Karasek, R. (1979). Job demands, job decision latitude and mental strain: Implications for job design. *Administrative Science Quarterly*, 24, 285-308. doi: 10.1002/npr.4040090411

- Kozlowski, S. W., Gully, S. M., Nason, E. R., & Smith, E. M. (1999). Developing adaptive teams: A theory of compilation and performance across levels and time. *Pulakos (Eds.), The changing nature of performance: Implications for staffing, motivation, and development*, 240-292.
- Kristof, A. L. (1996). Person-organization fit: An integrative review of its conceptualizations, measurement, and implications. *Personnel psychology*, 49(1), 1-49.
- Kristof-Brown, A. L., Jansen, K. J., & Colbert, A. E. (2002). A policy-capturing study of the simultaneous effects of fit with jobs, groups, and organizations. *The Journal of applied psychology*, 87(5), 985-993.
- Kristof-Brown, A. L., Zimmerman, R. D., & Johnson, E. C. (2005). Consequences of individual's fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology*, 58, 281-342.
- Larson, L. M., Rottinghaus, P. J., & Borgen, F. H. (2002). Meta-analyses of Big Six interests and Big Five personality factors. *Journal of Vocational Behavior*, 61(2), 217-239.
- Le, K., Donnellan, M. B., & Conger, R. (2014). Personality development at work: Workplace conditions, personality changes, and the corresposive principle. *Journal of Personality*, 82(1), 44-56. doi: 10.1111/jopy.12032
- Lodi-Smith, J., & Roberts, B. W. (2007). Social investment and personality: A meta-analytic analysis of the relationship of personality traits to investment in work, family, religion, and volunteerism. *Personality and Social Psychology Review*, 11, 68-86.
- Louis, M. R. (1980). Surprise and sense making: What newcomers experience in entering unfamiliar organizational settings. *Administrative science quarterly*, 226-251.

- Moreland, R. L., & Levine, J. M. (1982). Socialization in Small Groups: Temporal Changes in Individual-Group Relations1. In *Advances in experimental social psychology* (Vol. 15, pp. 137-192). Academic Press.
- Mortimer, J. T., & Lorence, J. (1979). Occupational experience and the self-concept: A longitudinal study. *Social Psychology Quarterly*, 42, 307-323.
- Mroczek, D. K. (2014). Personality Plasticity, Healthy Aging, and Interventions. *Developmental Psychology*, 50(5), 1470-1474.
- Nauta, M. M. (2010). The development, evolution, and status of Holland's theory of vocational personalities: Reflections and future directions for counseling psychology. *Journal of Counseling Psychology*, 57(1), 11-22. doi: 10.1037/a0018213
- Nies, C., & Zacher, H. (2015). Openness to experience as a predictor and outcome of upward job changes into managerial and professional positions. *Plos One*, 10(6). doi: 10.1371/journal.pone.0131115
- O\*NET Online. Occupational database. Available: <https://www.onetonline.org/> Accessed 30/10/2017.
- O'Reilly III, C. A., Chatman, J., & Caldwell, D. F. (1991). People and organizational culture: A profile comparison approach to assessing person-organization fit. *Academy of management journal*, 34(3), 487-516.
- Parrigon, S., Woo, S. E., Tay, L., & Wang, T. (2017). CAPTION-ing the situation:: A lexically-derived taxonomy of psychological situation characteristics. *Journal of Personality and Social Psychology*, 112(4), 642-681.
- Parsons, F. (1909) *Choosing a Vocation*. Boston: Houghton-Mifflin.

- Peterson, N. G., Mumford, M. D., Borman, W. C., Jeanneret, P. R., Fleishman, E. A., Levin, K. Y., Campion, M. A., Mayfield, M.S., Morgeson, F. P., Pearlman, K., Gowing, M. K., Lancaster, A. R., Silver, M. B. & Gowing, M. K. (2001). Understanding work using the Occupational Information Network (O\* NET): Implications for practice and research. *Personnel Psychology*, *54*(2), 451-492.
- Prewett, M. S., Brown, M. I., Goswami, A., & Christiansen, N. D. (2016). Effects of team personality composition on member performance: A multilevel perspective. *Group & Organization Management*, *43*(2), 316-348.
- Rauthmann, J.F., Gallardo-Pujol, D., Guillaume, E.M., Todd, E., Nave, C.S., Sherman, R.A., Ziegler, M., Jones, A.B. and Funder, D.C. (2014). The Situational Eight DIAMONDS: A Taxonomy of Major Dimensions of Situation Characteristics. *Journal of Personality and Social Psychology*, *107*(4), 677-718.
- Roberts, B. W., Caspi, A., & Moffitt, T. E. (2003). Work experiences and personality development in young adulthood. *Journal of Personality and Social Psychology*, *84*(3), 582-593. doi: 10.1037/0022-3514.84.3.582
- Roberts, B. W., Luo, J., Briley, D. A., Chow, P. I., Su, R., & Hill, P. L. (2017). A systematic review of personality trait change through intervention. *Psychological Bulletin*, *143*(2), 117-141.
- Roberts, B. W., & Mroczek, D. (2008). Personality trait change in adulthood. *Current Directions in Psychological Science*, *17*, 31-35.
- Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin*, *132*, 1-25.

- Roberts, B. W., Wood, D., & Smith, J. L. (2005). Evaluating five factor theory and social investment perspectives on personality trait development. *Journal of Research in Personality, 39*, 166-184.
- Russell, E., Woods, S. A., & Banks, A. P. (2017). Examining conscientiousness as a key resource in resisting email interruptions: Implications for volatile resources and goal achievement. *Journal of occupational and organizational psychology, 90*(3), 407-435.
- Schein, E. H. (1978). *Career dynamics: Matching individual and organizational needs* (Vol. 6834). Addison Wesley Publishing Company.
- Schein, E. H. (1985). *Organisational culture and leadership: A dynamic view*. San Francisco.
- Schneider, B. (1987). The people make the place. *Personnel psychology, 40*(3), 437-453.
- Seong, J. Y., Kristof-Brown, A. L., Park, W. W., Hong, D. S., & Shin, Y. (2015). Person-group fit: Diversity antecedents, proximal outcomes, and performance at the group level. *Journal of Management, 41*(4), 1184-1213.
- Stewart, G. L. (1999). Trait bandwidth and stages of job performance: Assessing differential effects for conscientiousness and its subtraits. *Journal of Applied Psychology, 84*(6), 959-968. doi:10.1037/0021-9010.84.6.959
- Su, R., Murdock, C. D., & Rounds, J. (2015). Person-environment fit. In P. J. Hartung, M. L. Savickas, and W. B. Walsh (Eds) *APA handbook of career intervention, 1*, pp81-98; APA.
- Sundstrom, E., De Meuse, K. P., & Futrell, D. (1990). Work Teams. *American Psychologist, 45*(2), 120-133.
- Super, D. E. (1980). A life-span, life-space approach to career development. *Journal of vocational behavior, 16*(3), 282-298.

- Sutin, A. R., & Costa, P. T. (2010). Reciprocal influences of personality and job characteristics across middle adulthood. *Journal of Personality, 78*(1), 257-288. doi: 10.1111/j.1467-6494.2009.00615.x
- Terborg, J. R., Castore, C., & Deninno, J. A. (1976). A longitudinal field investigation of the impact of group composition on group performance and cohesion. *Journal of Personality and Social Psychology, 34*(5), 782-790.
- Tett, R. P., & Burnett, D. D. (2003). A personality trait-based interactionist model of job performance. *Journal of Applied Psychology, 88*(3), 500-517. doi: 10.1037/0021-9010.88.3.500
- Van den Berg, P. T., & Wilderom, C. P. (2004). Defining, measuring, and comparing organisational cultures. *Applied Psychology, 53*(4), 570-582.
- van Knippenberg, D., De Dreu, C. K., & Homan, A. C. (2004). Work group diversity and group performance: an integrative model and research agenda. *The Journal of applied psychology, 89*(6), 1008-1022.
- Wille, B., Beyers, W., & De Fruyt, F. (2012). A transactional approach to person-environment fit: Reciprocal relations between personality development and career role growth across young to middle adulthood. *Journal of Vocational Behavior, 81*(3), 307-321. doi: 10.1016/j.jvb.2012.06.004
- Wille, B., & De Fruyt, F. (2014). Vocations as a source of identity: Reciprocal relations between big five personality traits and RIASEC characteristics over 15 years. *Journal of Applied Psychology, 99*(2), 262-281. doi: 10.1037/a0034917

- Woods, S. A., & Anderson, N. R. (2016). Toward a Periodic Table of Personality: Mapping Personality Scales Between the Five-Factor Model and the Circumplex Model. *Journal of Applied Psychology, 101*, 582-604.
- Woods, S. A., Lievens, F., De Fruyt, F. & Wille, B. (2013) Personality Across Working Life: The Longitudinal and Reciprocal Influences of Personality on Work. *Journal of Organizational Behavior, 34*, S7-25.
- Woods, S. A. & Hampson, S. E. (2010). Predicting Adult Occupational Environments from Childhood Personality Traits. *Journal of Applied Psychology, 95*(6), 1045-1057.
- Woods, S. A., Hinton, D. P., von Stumm, S., & Bellman-Jeffreys, J. (2017). Personality and Intelligence: Examining the Associations of Investment-related Personality Traits With General and Specific Intelligence. *European Journal of Psychological Assessment.*
- Wrzus, C., & Roberts, B. W. (2017). Processes of personality development in adulthood: The TESSERA framework. *Personality and Social Psychology Review, 21*(3), 253-277.
- Wu, C. H. (2016). Personality change via work: A job demand-control model of Big-five personality changes. *Journal of Vocational Behavior, 92*, 157-166. doi: 10.1016/j.jvb.2015.12.001

Table 1

*Overview of previously considered work demand factors and their transactions with Big Five trait affordances.*

		<b>Big Five Trait Affordances</b>				
		<b>N</b>	<b>E</b>	<b>O</b>	<b>A</b>	<b>C</b>
<b>Work demands</b>						
<b>Level: Vocation</b>						
Holland's	Wille & De Fruyt, 2014					
RIASEC						
<i>Realistic</i>	Manipulating things (i.e. machines, plants, or animals). Encourages workers to see the world in simple, tangible and traditional terms.					
<i>Investigative</i>	Observation and creative investigation of physical, biological, or cultural phenomena. Encourages workers to see the world in complex, abstract, and original ways.			+		
<i>Artistic</i>	Ambiguous, free, unsystematized activities and competencies to create art forms or products. Encourages workers to see the world in complex, independent, and unconventional ways.			+		
<i>Social</i>	Deal with other people to cure, develop, or inform them. Encourages people to see the world flexibly.		+	+	+	
<i>Enterprising</i>	Persuade and/or manipulate others in order to attain organizational or self-interest goals. Encourages people to see the world in terms of power, status, and responsibility.	-	+			+
<i>Conventional</i>	Ordered, systematic manipulation of data such as keeping records, reproducing materials, organizing data, operating business and data processing equipment. Workers are encouraged to see the world in conventional, stereotyped, and constricted ways.					+
<b>Career roles</b>						
<i>Presenter</i>	Wille, Beyers, & De Fruyt, 2012 Interpersonal effectiveness with form, style, impression management.		+			
<i>Guide</i>	Relationships, connection with others.					+
<i>Director</i>	Attaining long term goals and realizing strategies.		+			
<i>Inspirator</i>	Focus on ideals, values and principles to be upheld in the collective.		+			
<i>Maker</i>	Own tangible results and planned performance.					+
<i>Expert</i>	Solving problems and providing ideas.					+
<b>Managerial career</b>	Niess & Zacher, 2015			+		
<b>Level: Job</b>	Brousseau & Prince, 1981; Le, Donnellan, & Conger, 2014; Li, Fay, Frese, Harms, & Gao, 2014; Mortimer & Lorence, 1979; Roberts, Caspi, & Moffitt, 2003; Sutin & Costa, 2010; Wu, 2016	<b>N</b>	<b>E</b>	<b>O</b>	<b>A</b>	<b>C</b>

Psychological and Physical Demands

<i>Psychological demands</i>	Workload demands, time pressures, and conflicts in the workplace (reverse of 'ease' in Le, Donnellan, & Conger, 2014).	+	-	-
<i>Physical demands</i>	Daily physical strain involved in the job.	+		
<i>Hazardous work</i>	The degree of physical danger on the job (reverse of 'safety/quality' in Le, Donnellan, & Conger, 2014).	+		

Psychological Resources

<i>Skill variety</i>	Range of tasks performed, and skills called upon.	-		
<i>Task identity</i>	Ability to complete the whole job from start to finish.	-		
<i>Work stimulation</i>	Opportunity to use skills and abilities and learn new things.	-		
<i>Fit</i>	How well the individual's talents and abilities match the demands of their work.	-		
<i>Task significance</i>	Impact of the job on others.	-	+	
<i>Autonomy</i>	The extent of discretion and freedom an employee has over his or her tasks.	-		
<i>Job control</i>	The combination of autonomy of decision-making work-methods, and work-scheduling.		+	+
<i>Self-determination</i>	How much freedom and feedback there is at work.	-		
<i>Decision latitude</i>	How much individuals utilize their skills, have discretion over their work environment, and have opportunities to express their creativity.			
<i>Resource power</i>	Ability to hire, fire, give pay raises, supervise people.			
<i>Feedback</i>	Extent to which the job provides the employee with information about the effectiveness of his/her performance.			
<i>Material benefits</i>	Tangible benefits and stability of a job.	-		

**Level: Organization** / **N E O A C**

Values  
Goals  
Personality  
Culture

**Level: Group** / **N E O A C**

Values  
Goals  
Personality  
Climate

---

Note. '+' indicates that work demands have been shown to positively influence growth in a specific trait affordance; whereas '-' means that work demands have been shown to negatively impact (or buffer) growth in that trait affordance.

Table 2

*Nine questions for future research on personality development at work to answer.*

---

**Content Coverage of Studies on Personality Development at Work**

1. *How do the performance demands (represented in e.g., key task and activity requirements) of jobs direct and shape personality development and change?*
2. *How do organizational and group characteristics influence personality development and change?*

---

**Expansion of a Person-Environmental Perspective of Trait Development at Work**

3. *How can work characteristics at different levels be most effectively classified based on personality trait salience?*
4. *How are broad versus narrow/specific job characteristics related to the development of correspondingly broad versus narrow personality traits?*

---

**Volitional Personality Change and its Adaptiveness**

5. *To what extent do learning and development interventions at work result in personality trait change?*
6. *Is personality trait change at work an adaptive process (i.e., what are the effects of change of psychological health and well-being?)*

---

**Vocational Development and Counselling Practice**

7. *How should practitioners in vocational development and counselling apply findings on personality development and change in client work?*
  8. *How could findings around personality development and change be applied to develop individually specific career development plans?*
-

Figure 1. The DATA Model of Personality Development at Work

