



Validating the South African Personality Inventory (SAPI): Examining green behavior and job crafting within a nomological network of personality

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Personality assessment in organizations has mostly served as a tool for decision-making regarding selection and job performance. In this article the focus is shifted towards understanding the role of personality in individuals' propensity to exhibit contemporary work-related behaviors, such as employee green behavior (EGB) and job crafting (JC), through a nomological network. From an indigenous perspective, the cultural applicability of EGB and JC was established prior to investigating the external validity of the South African Personality Inventory (SAPI). The unidimensional EGB-framework developed by Ones and Dilchert (2009) was found to have a covert and an overt component in the South African context, while the JC-model developed by Tims, Bakker, and Derks (2012) was unchanged. Within the nomological network, Positive Social-Relational Disposition did not display any predictive qualities. Conscientiousness and Negative Social-Relational Disposition were found to predict both EGB (covert) and JC. Extraversion, Openness, and Neuroticism displayed predictive qualities only within the JC-model. Further investigation of these relationships is suggested, using quantile regression.

Keywords: cross-cultural personality, green behavior, indigenous personality, job crafting, nomological network, personality assessment, South African Personality Inventory

The South African Personality Inventory (SAPI), an indigenous measuring instrument representative of personality in a multi-cultural society, has proven to address the challenges inherent to cross-cultural assessments and local employment equity legislation (Fetvadjev, Meiring, van de Vijver, Nel, & Hill, 2015; Government Gazette, 1998; Nel, 2008; Hill et al., 2013; Nel et al., 2016; Valchev et al., 2011, 2012). The development of the SAPI has been grounded in an etic-emic approach to personality assessment, in which the etic approach represents the transporting and testing of Western personality models within non-Western contexts and the emic approach studies a specific cultural group's personality traits by uncovering these traits through the specific culture's viewpoint (e.g., literature, interviews) (Cheung, van de Vijver, & Leong, 2011; Nel et al., 2011). A combined etic-emic approach therefore describes personality from both universal and indigenous points of view (Cheung et al., 2011). The SAPI commenced an emic approach with interviewing individuals from the 11 official language groups to determine how they view themselves and others in terms of personality (Cheung et al., 2011; Nel, 2008). The interview responses were recorded across the 11 language groups, transcribed, translated, and iteratively content-analysed until a multitude of descriptive personality

traits were obtained (Fetvadjev et al., 2015; Hill et al., 2013; Nel, 2008; Valchev et al., 2012). Thus "...the initial set of over 50,000 utterances in different steps were reduced first to 550 subfacets, then to 191 facets, 37 subclusters, and 9 clusters" (Cheung et al., 2011, p. 7). The initial nine-factor theoretical structure was "...partly informed by current, typically etic models in personality..." (Nel et al., 2011, p. 945) and represented Conscientiousness, Emotional Stability, Extraversion, Facilitating, Integrity, Intellect, Openness, Relationship Harmony, and Soft-Heartedness (Fetvadjev et al., 2015; Hill et al., 2013; Nel, 2008; Valchev et al., 2012).

The item generation phase during the development of the SAPI used the transcribed responses that represented the nine-factor theoretical structure and over 2,500 items were generated (Hill et al., 2013). These items underwent a rigorous and extensive process of refinement¹ which included using psychometric and practical principles iteratively, reducing the pool of items from 2,574 to 571 (Fetvadjev et al., 2015). The items were then translated from English to the 10 remaining South African languages and another round of item elimination took place where items that were too complex or too long were removed; 250 items remained (Fetvadjev et al., 2015). The set of 250 items were administered to a large sample and to represent the six factors, 146 items

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were selected. Items that reduced score reliability were removed, and only items with loadings above .30 were retained (Fetvadjev et al., 2015). The six factors are Conscientiousness, Extraversion, Neuroticism, Openness, Positive Social-Relational Disposition and Negative Social-Relational Disposition (Fetvadjev et al., 2015).

Conscientiousness can be described as an orientation towards achievement, order, consistently dependable, and traditionalism, while Extraversion represents the tendency towards being sociable and talkative, interacting with people in a spontaneous manner by having fun and telling stories that make people laugh. Neuroticism describes the tendency of a person to be impulsive and to fluctuate between emotions by being easily aggravated and apprehensive; and Openness portrays the quality of being well-informed and observant of external and internal things, being a rational and progressive thinker, and acquiring new experiences, knowledge, skills, and ideas. The Positive Social-Relational Disposition factor characterizes how and individual would positively manage relations with others; while the Negative Social-Relational Disposition describes how an individual may approach relations with others more controversially.

These six factors and their associated facets (see measuring instruments) have been found to contain model-fit and measurement invariance (see Fetvadjev et al., 2015; Morton, 2018). It is therefore expected that the SAPI will again produce acceptable model fit and fit statistics (*Hypothesis 1*). Having established an instrument that is replicable across cultures, researchers are now able to use it as a basis for expansion of research to differing contexts for further validation. The subsequent focus on the SAPI has shifted towards the work context. This paper reports on a nomological validation study which was conducted to inspect the extent to which the SAPI factors explain and predict behaviors exhibited by working individuals.

External validation of the SAPI

To provide evidence for external validity for the SAPI, a nomological network was built, containing personality (SAPI), Job Crafting (JC), and Employee Green Behaviour (EGB). The concept of a nomological network was initially suggested by Cronbach and Meehl (1955) who indicated the utility of such a network in evaluating the construct validity of psychometric measuring instruments. Li and Larsen (2011), based on theoretical stipulations by Cronbach and Meehl (1955), described a nomological network as (a) a theoretical framework reflecting the theoretical constructs and accompanying relationships, (b) an empirical framework highlighting the measurement instruments in the study and the possible relationships between them, and (c) the basis for linking the two frameworks. The latter relates to Cronbach and Meehl's notion of construct validity, the correspondence between the expected theoretical and observed patterns. Building a nomological network allows researchers to validate the respective theoretical models in order to obtain a more refined understanding of the latent constructs (Li & Larsen, 2011), and to predict and examine possible relationships between variables (Larsen & Hovorka, 2012) through observed scores. Li and Larsen (2011) did however

note that nomological networks only provide the philosophical groundwork for construct validity and that the actual computations should be done using statistical programs.

Personality assessments within the work context

Personality assessments have been labelled as having high utility when explaining and predicting attitudes, behaviors, performance, and outcomes within organizations (Goodstein & Lanyon, 1999; Ones, Dilchert, Viswesvaran, & Judge, 2007; Van Aarde, Meiring, & Wiernik, 2017). More specifically, such assessments are used to aid in decision-making regarding personnel selection, management and leadership styles, assessment centers, training and development, performance management (individual and team-level), and everyday behaviors displayed in the work environment (Bergh, 2013; Goodstein & Lanyon, 1999; Hough & Oswald, 2008). Personality assessments assist researchers in examining behavioral trends in organizations that are in line with general global changes, and the role personality plays in individuals exhibiting these behaviors. Such behavioral trends include individuals engaging in Job Crafting (JC) (Tims, Bakker, & Derks, 2012) and Employee Green Behavior (EGB) (Ones & Dilchert, 2012a; Ones & Dilchert, 2012b), where the focus is on ensuring sustainability both for individuals and the organizations they form part of.

The current study aims to expand the relationship between personality and JC, and personality and EGB, respectively. It builds on the results from various research studies on JC (Bell & Njoli, 2016; Geldenhuys & Bakker, 2017) and EGB (Chiaburu, Oh, Berry, Li, & Gardner, 2011; Dilchert, 2018; Ilies, Spitzmuller, & Johnson, 2009; Kim et al., 2014) by evaluating the possible predictive role of all six SAPI factors in explaining the respective organization related behaviors. However, the nomological validity of JC, EGB, and SAPI models depends on whether the assessments used in the study are valid and reliable within the South African context.

Job crafting

The complexity and challenges associated with contemporary jobs require individuals to take initiative in managing their current level of job demands, to make their jobs more meaningful, engaging, and personally satisfying, thus engaging in job crafting (Demerouti & Bakker, 2014). JC is said to occur within the task and relational boundaries of a job, requiring individuals to make physical, social, and cognitive changes that will bring about meaningful work (Demerouti & Bakker, 2014; Wrzesniewski & Dutton, 2001), healthy and motivating working conditions (Petrou, Demerouti, Peeters, Schaufeli, & Hetland, 2012), and increased job satisfaction and engagement, resilience, and achieving good results (Berg, Dutton, & Wrzesniewski, 2007). JC can further be said to have relational or proactive motivators, whereby individuals engage in JC to either benefit others by creating task significance or to initiate, anticipate, and implement changes to the way jobs, roles, and tasks are executed (Demerouti & Bakker, 2014; also see Berg et al., 2007; Frese & Fay, 2001; Hackman & Oldman,

1980). Furthermore, individuals do not change their jobs completely, but rather change incremental parts of their jobs (Berg & Dutton, 2008) such as seeking help or information from colleagues, seeking challenges to realize stimulation in their jobs, reducing their workload and emotionally intense situations, or increasing the social and structural resources associated with their jobs (Petrou et al., 2012).

Measuring JC. Tims et al. (2012) developed a JC measure, the Job Crafting Scale (JCS) set within the Job Demands-Resources (JD-R) model in which they defined JC as "...the changes that employees may make to balance their job demands and job resources with their personal abilities and needs" (p. 174). The final JCS proved to consist of four underlying dimensions, namely, (a) increase social job resources (social support, feedback, supervisory coaching), (b) increase structural resources (development opportunities, independence, resource variety), (c) increase challenging job demands (preventing boredom, taking on new projects), and (d) decrease hindering job demands (reducing cognitive demands) (Tims et al., 2012; Tims & Bakker, 2013). Research has found the first two dimensions to relate to individuals' work engagement (Bakker, Tims, & Derks, 2012; Halbesleben, 2010; Peral & Geldenhuys, 2016; Salanova, Agut, & Peiro, 2005), while the third dimension can result in new skills and knowledge development (LePine, Podsakoff, & LePine, 2005) and the fourth relates to individuals avoiding negative consequences in their jobs (Bakker, Demerouti & Euwema, 2005; Crawford, LePine, & Rich, 2010; Schaufeli, Bakker, & Van Rhenen, 2009).

JC has recently gained more attention amongst South African researchers (De Beer, Tims, & Bakker, 2016; Geldenhuys & Bakker, 2017; Peral & Geldenhuys, 2016), with De Beer et al. (2016) suggesting that the four-factor model proposed by Tims et al. (2012) be altered to a three-factor model when used in the South African context. According to De Beer et al.'s (2016) study, JC should be measured as (1) Increasing Social Resources, (2) Decreasing Hindering Job Demands, and (3) Increasing Structural Job Resources and Challenging Job Demands. Since De Beer et al.'s (2016) study took place within the South African context, it is hypothesized that JC within this study will also be better represented by a three-factor model (*Hypothesis 2*).

Employee green behavior

Environmentally significant (green) behavior refers to an individual's actions that change ecosystems, the biosphere, or the quantity of certain environmental materials or energy available (Stern, 2000). Subsequently, green behavior has been specifically noticed within consumer habits (Straughan & Roberts, 1999) and within the workplace (Norton, Parker, Zacher, & Ashkansasy, 2015). The current study focuses on EGB.

According to Ones and Dilchert (2012), EGB represents the way in which employees measurably behave or act with regards to environmental sustainability, with either an advancing or damaging impact; this is different from refraining from partaking in positive environmental behaviors (Wiernik, Ones, Dilchert, & Klein, 2018). Displaying EGB may be an inherent job requirement, directly or indirectly

impacting the core business of an organization, and therefore may be specified in an individual's job description or systematically monitored and rewarded by an organization (Kim et al., 2014; McConnaughy, 2014; Norton et al., 2015). However, an individual may also show personal initiative with regard to EGB which exceeds organizational expectations by prioritizing and lobbying environmental interests, initiating programs and policies to protect the environment, and encouraging others to engage in EGB (Kim et al., 2014; McConnaughy, 2014; Norton et al., 2015).

Ones and Dilchert (2012a & 2012b) developed a job-based taxonomy to be used in the scaling and measuring of EGB within organizations, regardless of whether the green behavior is specified in an individual's job description or systematically monitored and rewarded by an organization (see Kim et al., 2014). The taxonomy consists of working sustainably, conserving resources, influencing others, taking initiative, and avoiding harm (Ones & Dilchert, 2012a).

Measuring EBS. In the South African context, limited research has been done to validate the Green Five taxonomy developed by Ones and Dilchert (2012). Ones and Dilchert (2009) developed a Brief Employee Green Behavior Scale (BEGBS) containing 15 items, aimed at measuring overall EGB performance. Ones and Dilchert (2009) found the reliability of the scale to fall within the acceptable range ($\alpha=0.80$), while Amenumey (2015) established a reliability coefficient of 0.93 for the same 15-item scale; in both instances a one factor solution was employed. Ones, Wiernik, Dilchert, and Klein (2018) describes the BEGBS as one of the few assessments to adequately measure the green behavior construct. The BEGBS has not been validated within the South African context, and therefore it is necessary to ascertain the validity and reliability of the BEGBS through exploratory factor analyses (EFA). In line with Ones and Dilchert (2009) and Amenumey's (2015) findings, it is expected that a valid and reliable one-factor structure will emerge (*Hypothesis 3*).

Personality and job crafting

The presence of personality factors has been acknowledged for influencing JC behaviors (Lyons, 2008). Personality as a driving force behind such behaviors has, however, received limited attention (see Bakker et al., 2012; Bell & Njoli, 2016; Bipp & Demerouti, 2015; Demerouti & Bakker, 2014; Tims et al., 2012). A summary of relevant research findings in which personality traits have shown to predict the various JC dimensions, follows, furthering the aim to establish a nomological network for the SAPI.

Tims et al. (2012) found significant positive correlations between the Proactive Personality trait and the four JCS dimensions. The Proactive Personality trait according to Crant (1995) encompasses the individual who is resourceful, determined, and recognizes and acts on opportunities in order to bring about meaningful change. Bakker et al. (2012) found that the Proactive Personality trait significantly predicted JC. Theoretically, the Proactive Personality trait correlates to a certain extent to the SAPI's Openness and Conscientiousness facets of being achievement orientated, observant, imaginative, and seeking new experiences.

Bipp and Demerouti (2015) investigated the degree to which the approach and avoidance temperaments predicted JC. The approach temperament clusters together measure of Extraversion as measured by the Big Five model, Positive Emotionality, and the behavioral activation system; the avoidance temperament groups measures of Neuroticism as measured by the Big Five model, Negative Emotionality, and the behavioral inhibition system together (Elliot & Thrash, 2002). Communalities can be found between the Big Five's Neuroticism/Emotional Stability and Negative Emotionality on the one hand, and the SAPI's Neuroticism factor on the other, in terms of apprehensiveness, anger, and being emotional. Similarly, the approach temperament finds associations within the Sociability facet of the SAPI's Extraversion factor. In Bipp and Demerouti's (2015), the approach temperament positively predicted resource and challenge-seeking JC behaviors, while the avoidance temperament positively predicted demands-reducing JC behaviors.

Bell and Njoli (2016) assessed the FFM factors' predictability of JC; the results indicated that Conscientiousness, Agreeableness, Openness to experience, and Neuroticism were practical and significant predictors of JC. As with the Big Five and Proactive Personality traits, there are definitive overlaps in terms of Conscientiousness, Openness, and Neuroticism between the FFM and the SAPI factors.

Based on the frequency of the research findings, it is expected that Conscientiousness will predict all four JC dimensions (*Hypothesis 4a*); Openness will predict all four JC dimensions (*Hypothesis 4b*); Neuroticism will predict the Increasing Social Job Demands dimension (*Hypothesis 4c*); and Extraversion will predict the Increase Social Job Resources, Increase Structural Resources, and Increase Challenging Job Demands dimensions (*Hypothesis 4d*).

Lastly, the Social-Relational factors of the SAPI have been investigated for having moderating effects on individuals' likelihood to alter the relational and cognitive aspects of their jobs (Geldenhuis & Bakker, 2017), with Positive Social-Relational producing significant results. Valchev et al. (2015) found that, while the SAPI social-relational scales did correlate with the FFM's Agreeableness, they were still empirically and theoretically different constructs. However, considering Geldenhuis and Bakker (2017) and Bell and Njoli (2016), it is expected that the Social-Relational factors will predict all four JC dimensions (*Hypothesis 4e*).

Personality and employee green behavior

EGB can be seen as an 'extra role' behavior that is closely aligned with the Organizational Citizenship Behavior (OCB) phenomenon, more specifically, the civic virtue dimension of OCB (see Borman, & Motowild, 1993; George & Jones, 1997; Ilies et al., 2009; Organ, 1997). Both EGB and OCB have an underlying motive of a prosocial nature, where individuals commit to actions that promote and contribute to an organization's environmental sustainability (Renwick, Redman, & Maguire, 2013) and reflect their personal underlying motives to fulfil personal psychological needs (Kim et al., 2014). However, it should be noted that EGB "...are not limited to behaviors typically considered to

be part of the OCB domain (e.g., helping, persistence, volunteering)...” (Ones et al., 2018, p. 16-17), and can be evident in a person's technical job performance, communication, general sustainable initiative, supportive leadership practices, as well as counterproductive work behavior (CWB) (Ones et al., 2018). The link between EGB and CWB is furthermore strengthened given that employees may partake in harmful and deviant behavior in terms of environmental sustainability (see Dilchert, 2018). Dilchert extended Ones and Dilchert's (2012a, 2012b) taxonomy to describe Counterproductive Sustainability Behaviors (CSB) as an area of expression of CWB. Within CSB employees appear to be against the legitimate interests of the organization and to be more prone to harm the direct natural environment in which the organization operates (Dilchert, 2018).

As part of establishing the nomological network for the SAPI, it is important to determine from previous research findings which personality factors may predict EGB specifically, or OCB, CWB, and CSB in general.

Norton et al. (2015) observed that the available proof from the various personality and EGB studies were limited to voluntary EGB; no studies within a context where EGB were prescriptive as part of the organizational requirements were found. Overall evidence linking personality and EGB within the work context were scant. However, Kim et al. (2014) did find that people with a high level of Conscientiousness, as part of the Big Five personality model, will most probably think and act in an environmentally friendly manner at work. Barrick and Mount (1991) describes a conscientious person as someone who plans ahead, is organized and determined, as well as thorough and responsible. Taking the definition of the SAPI Conscientiousness factor into account, it is clear that there are communalities between these two definitions; with the exception that the SAPI also include a focus on being traditional.

In a meta-analysis of the relationship between the Five-Factor Model (FFM) and OCB, Chiaburu et al. (2011) noted the well-established findings that Conscientiousness and Agreeableness predict citizenship. Subsequently, Chiaburu et al. (2011) found that, over and above the influence of Conscientiousness and Agreeableness on OCB, "...Emotional Stability, Extraversion, and Openness represent useful additions to the prediction of citizenship behaviors, with most of the incremental validity originating from Openness" (p. 1148). Dilchert (2018) studied the relationship between the FFM of personality and CSB and found that Conscientiousness and Agreeableness relate to individuals who avoid engaging in CSB, thus engaging in more EGB-related activities. Openness and Neuroticism had a similar effect, albeit to a lesser degree (Dilchert, 2018).

Anglim, Lievens, Everton, Grant, and Marty (2018) found that the HEXACO model of personality significantly predicts OCB and CWB; more specifically, the Honesty-Humility, Extraversion, Agreeableness, and Conscientiousness factors predicted lower CWB and higher OCB. Bragg and Bowling (2018) found that the personality traits Trait Aggression (conceptually part of Agreeableness and Neuroticism), Trait Industriousness (part of Conscientiousness) and Trait Self-Control (part of Conscientiousness and Emotional Stability) predicted overall CBW.

Table 1. Characteristics of participants ($N=313$)

Characteristics	<i>n</i>	%	Characteristics	<i>n</i>	%
Gender			English reading ability		
Male	101	32.3	Very poor	5	1.6
Female	212	67.7	Poor	1	0.3
Language			Good	93	29.7
Afrikaans	105	33.5	Very good	214	68.4
English	77	24.6	Industry		
IsiNdebele	4	1.3	Airlines and airports	2	0.6
IsiXhosa	10	3.2	Automobile	6	1.9
IsiZulu	65	20.8	Banking	25	8.0
Sepedi	15	4.8	Construction	5	1.6
Sesotho	7	2.2	Education	56	17.9
Setswana	13	4.2	Electronics and/or engineering	8	2.6
SiSwati	2	0.6	Entertainment and/or leisure	2	0.6
Tshivenda	7	2.2	Finance	27	8.6
Xitsonga	5	1.6	Food and Beverages	2	0.6
Other	3	1.0	Government	13	4.2
Age			Hospitality	1	0.3
20-29	93	29.7	Information Technology and Computing	17	5.4
30-39	135	43.1	Insurance	4	1.3
40-49	63	20.1	Legal	7	2.2
50-59	17	5.4	Media and/or Publishing	3	1.0
60-69	5	1.6	Mining	10	3.2
Ethnic Group			Oil and Gas	5	1.6
African	133	42.5	Real Estate	3	1.0
Indian/Asian	13	4.2	Retail	8	2.6
Coloured	24	7.7	Telecommunications	2	0.6
White	141	45.0	Wholesale	1	0.3
Other	2	0.6	Professional Services/ Consulting	18	5.8
Education			Human Resources	35	11.2
Grade 9	1	0.3	Other	53	16.9
Grade 12	54	17.3	Managerial Position		
Certificate	42	13.4	Executive Management	26	8.3
Diploma	50	16.0	Senior Management	19	6.1
Bachelors	71	22.7	Middle Management	68	21.7
Post-graduate	89	28.4	Non-managerial	190	60.7
Other	6	1.9	Other	10	3.2

Based on the communality between various Conscientiousness definitions, as well as the frequency with which Conscientiousness is related to employee green behavior and associated activities, *Hypothesis 5a* expects Conscientiousness to predict EGB. The Neuroticism, Openness, and Extraversion factors from both the SAPI and the FFM models seems to be theoretically related, and therefore it is expected that these factors will predict a person's EGB (*Hypothesis 5b*). Research findings do not indicate any significant relationship between EGB and a person's approach to relationships as described by the positive and negative social-relational factors of the SAPI and it is thus expected that these two factors will not predict EGB (*Hypothesis 5c*).

METHOD

Participants

Table 1 presents the demographical information of the participants in the study. The participants were a sample of em-

ployed individuals from various industries in the South African workforce, at various levels found within organizations, and of South African descent ($N = 313$). Most of the participants in the study were female (68%). Participants from all 11 official language groups in South Africa took part in the study, with most of the participants representing the Afrikaans (34%), Nguni (isiNdebele, isiXhosa, isiZulu, SiSwati: 26%), and English (25%) languages. The participants in the study were mainly aged between 30 and 39 (43%) and represented mostly the African (43%) and White (45%) ethnic groups. Most of the participants had a post-school qualification (81%) and the participants judged their own English reading ability to be good (30%) to very good (68%). Several industries were represented by the participants who fulfilled mainly non-managerial roles (61%).

Procedure

Convenience sampling was initially used to approach individuals and organizations willing to participate in the research. Towards the end of the study, stratified sampling

was used to ensure that the language, racial, and cultural groups in focus were well represented within the sample. Participants had to be employed at the time of completing the questionnaires and had to be a South African citizen. Prior to completing the online questionnaire, participants were informed of (a) the aim of each of the questionnaires (to collect information regarding personality and organization-related behaviors), (b) the secure nature of the data collected, (c) the lack of psychological risk associated with the study, (d) the confidentiality with which the research project was being conducted, and (e) the aggregate use of the data. Participants had to give consent before commencing with the online questionnaires. Ethical clearance for the study was provided by the institution's research ethics committee.

Measures

SAPI-188-E. The 188 item English version of the SAPI was used to measure the six personality factors as identified by Fetvadjev et al. (2015) and Morton (2018). The six SAPI factors are represented by 20 facets (*Conscientiousness*: Achievement Oriented, Orderliness, Traditionalism-Religiosity; *Extraversion*: Playfulness, Sociability; *Neuroticism*: Emotional Balance, Negative Emotionality; *Openness*: Broadmindedness, Epistemic Curiosity, Intellect; *Negative Social-Relational Disposition*: Arrogance, Conflict Seeking, Deceitfulness, Hostility/Egoism; and *Positive Social-Relational Disposition*: Empathy, Facilitating, Integrity, Interrelatedness, Social Intelligence, Warm-Heartedness). Example items for each factor include Conscientiousness: "My work motivates me" (Achievement Oriented), Extraversion: "I can tell good stories" (Playfulness), Neuroticism: "My emotions is out of my control" (Emotional Stability), Openness: "I like to learn" (Epistemic Curiosity), Negative Social-Relational Disposition: "My opinion of others is not high" (Hostility/Egoism), Positive Social-Relational Disposition: "I consider myself to be a friendly person" (Warm-Heartedness). The items were rated on a 5-point Likert-type scale. Responses ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*) for the six factors were found to range between $\alpha=0.70$ and $\alpha=0.89$ (see Morton, 2018 for an overview of the reliability coefficients of the SAPI facets).

Additionally, the SAPI includes 18 Social Desirability items as part of the original 188 items, but these were not included in this study's analyses.

Job Crafting Scale (JCS). The 21-item JCS (Tims et al., 2012) was used to measure four independent job crafting dimensions namely (a) increased social job resources (Five items; e.g., "I make my own decisions on how to do things"), (b) increased structural job resources (Six items; e.g., "I prefer not to be involved in difficult decision-making at work"), (c) increased challenging job demands (Five items; e.g., "I seek guidance from my peers at work"), and (d) decreased hindering job demands (Five items; e.g., "I offer to do extra work, even if I do not get paid for it"). The four dimensions measure individuals' behavioral efforts to align their jobs to their personal preferences, motives, and passions (Tims et al., 2012), demonstrating reliabilities that range between $\alpha=0.75$ and $\alpha=0.80$. A 5-point Likert-type scale was used to rate the items (1 = *never* and 5 = *always*).

Brief Employee Green Behavior Scale (BEGBS). The BEGBS (Ones & Dilchert, 2009) was used to measure individuals' environmental behaviors within their place of work. The scale consists of 15 items, such as "I monitor the impact of my behavior on the environment" and "I teach others how to act environmentally friendly at work" that had to be scored on a 5-point Likert-type scale (1 = *never* and 5 = *always*).

Controls. Two dichotomously scored variables were controlled for, namely Gender (Male/Female) and Managerial Position (Yes/No). Valchev et al. (2014) investigated whether differences existed between men and women with regards to the SAPI Social-Relational scales and found no significant differences. However, no studies about the differences between genders in terms of the remaining four SAPI factors have been conducted. Since meta-analyses conducted by Feingold (1994) and Costa, Terracciano, and McCrae (2001) did indeed find differences between the two genders, and Klein, D'Mello, and Wiernick (2012) suggested that gender was weakly correlated with EGB, it was considered prudent to control for the possible effect of gender in the regression model. Furthermore, researchers identified the facilitating role that managers may have in the job crafting process (Berg, Wrzesniewski, & Dutton, 2010; Tims et al., 2013), creating an environment where job crafting is possible for their subordinates. Care should, however, be taken that it does not go against organizational goals (Berg et al., 2007). As such, the managerial position of the participants were also controlled for.

Analyses

Data cleaning and screening. Prior to the analyses, data screening was done to explore the dataset ($N = 410$). The data obtained from the questionnaires were inspected for missing values and cases with >10% missing values were deleted, while the missing values of cases with <10% were replaced with linear trend at point. In the present study, 97 cases were removed from further analyses and the final number of participants were 313. When relevant, items were reversed scored. The data further reflected no multivariate outliers, skewness or kurtosis, indicating that the dataset was normally distributed. Figueiredo Filho et al. (2013) considered a sample of $n>300$ as large enough and since the items in the assessment battery were defined as continuous, confidence levels of 99% ($p \leq 0.01$) and 95% ($p \leq 0.05$) were set in all the analyses to test for statistical significance.

Data analytic strategy. Mplus Version 8.0 (Muthén & Muthén, 2017) was used to inspect the model fit of the SAPI and JC factor structures by conducting an Exploratory Structural Equation Model (ESEM) analysis using a Maximum Likelihood estimation with targeted rotation. ESEM analysis has been identified as the default method of analysis when researchers aim to get a more precise understanding of a confirmed, hypothesized model (Asparouhov & Muthén, 2009; Marsh, Morin, Parker & Kaur, 2014), and is known to combine the strengths of exploratory- and confirmatory factor analyses (Marsh et al., 2014). The confirmed six factor structure of the SAPI was examined to determine its fit within the current study, while the original

Table 2. Geomin factor loadings of the BEGBS

Factors and Items	<i>F</i>
Covert Green Behaviour	
Item 5: Coming up with new environmentally responsible ideas	0.84
Item 3: Developing plans and schedules for the implementation of new, environmentally sustainable ideas	0.81
Item 6: Educating or training others on how to be environmentally friendly at work	0.64
Item 8: Persuading others to use environmentally responsible products	0.60
Item 7: Switching products being used for environmental reasons	0.51
Item 2: Stopping an environmental policy or program	0.48
Overt Green Behaviour	
Item 15: Reusing something instead of throwing it away	0.72
Item 14: Disposing of waste properly	0.70
Item 13: Collecting and recycling paper, glass, or cans	0.67
Item 11: Supporting someone else's environmental efforts	0.52
Item 4: Behaving in an environmentally responsible way even when it is inconvenient	0.50
Item 10: Using resources frugally (sparingly)	0.37

Note: BEGBS = Brief Employee Green Behaviour Scale. All indices in Table 2 are statistically significant at $p < 0.05$

four-factor solution for the JCS (Tims et al., 2012) was compared with the suggested three-factor solution by De Beer et al. (2016). Absolute and incremental fit indices were used to evaluate model fit.

Absolute indices include the chi-square statistic (χ^2 ; values > 2.0 are acceptable), the Root Mean Square Error of Approximation (RMSEA; values ≤ 0.05 are acceptable) and the Standardized Root Mean Square Residual (SRMR; values ≤ 0.10 are acceptable), while the incremental fit indices include the Tucker Lewis Index (TLI; values ≥ 0.90 is acceptable) and the Comparative Fit Index (CFI; values ≥ 0.95 is acceptable) (Byrne & van de Vijver, 2010; Cangur & Ercan, 2015; Hair, Black, Babin, & Anderson, 2010; Hu & Bentler, 1999; Jackson, Gillaspay, & Purc-Stephenson, 2009; Tabachnick & Fidell, 2007; Yu, 2002). Assessing model-fit also involved inspecting the Akaike Information Coefficient (AIC) to examine the trade-off between the measuring instruments used. There is no clear cut-off point for the AIC scores, however, the lowest value is commonly accepted as it yields the best trade-off between the theoretical models (Van de Schoot, Lugtig, & Hox, 2012).

Next, the factor structure of the BEGBS was inspected. The BEGBS had not previously been administered in the South African context and the researchers deemed it necessary to inspect the factor structure of the measuring instrument by conducting an EFA on the model. The eigenvalues > 1 and scree plot, obtained from a principle component analysis, were inspected to determine the number of factors to extract. Since the data were normally distributed, a maximum likelihood analysis with Geomin rotation (Muthen & Muthen, 2017) was used to inspect the validity of the BEGBS. The Geomin rotation factor loadings were inspected to determine which items sufficiently represented the identified factors ($> .30$). The EFA model was then compared to the *a-priori* BEGBS model as suggested by Ones and Dilchert (2009) and Amenumey (2015) by examining the absolute- and incremental fit indices.

SPSS 24.0 (SPSS Inc., 2018) was used to examine the descriptive statistics (means and standard deviations), reliabilities, and correlations of the various control, personality, green behavior, and job crafting variables. As a final step, hierarchical regression analysis was conducted using SPSS,

since the SAPI factors were then entered into the regression model one at a time in accordance with their theoretical relevance (see hypotheses). The standardized scores of all the variables were used in the analyses. The amount of variance of green behavior and job crafting that is explained and predicted by the six factors in the SAPI model was investigated after controlling for gender and managerial position. The unstandardized and standardized weights were reported, together with the Part Correlation that accounts for the relationship between the predictor and outcome variables, while controlling for the effect of the remaining predictors (Field, 2005). Lastly, the *R*-square, *R*-square change, and the sig. *F*-change statistic in each step was inspected to assess the goodness of fit of the model.

RESULTS

Testing of the measurement models

ESEM was used to examine the two hypothesized measurement models of the SAPI and JCS respectively to establish to what extent the items or facets significantly loaded onto the relevant scales. The χ^2 (85) value of 176.62 ($p = .000$) was attained for the SAPI measurement model; the fit statistics for the SAPI model (CFI = .98, TLI = .95, RMSEA = .06 [90% confidence interval (CI) = .05, .07], and SRMR = .02) proved to be very good. *Hypothesis 1* was therefore accepted.

For the three-factor model of the JCS, a χ^2 (150) value of 753.71 ($p = .000$) was attained for the JCS and the fit statistics was less than desirable (CFI = .79, TLI = .71, RMSEA = .11 [90% confidence interval (CI) = .11, .12], and SRMR = .06). The four-factor model of the JCS produces a χ^2 (132) value of 415.40 ($p = .000$) with moderately acceptable fit statistics (CFI = .90, TLI = .85, RMSEA = 0.08 [90% CI = 0.07, 0.09], and SRMR = 0.04). The AIC value was also substantially smaller for the four-factor model (Δ AIC = 302.31). No substantive correlations were found within the four-factor JCS solution, ranging between .13 and .53. *Hypothesis 2* was rejected.

Table 3. Descriptive statistics, reliabilities and correlations of the control variables, the SAPI and the BEGBS and JCS variables

	Cronbach		Gender	Managerial Position	SAPI				S-R	
	Alpha	Mean (SD)			C	E	N	O	Negative	Positive
Cronbach Alpha	-	-	-	-	.79	.72	.61	.78	.83	.88
Mean	-	-	-	-	4.09	3.7	2.62	4.07	2.07	4.11
(SD)	-	-	-	-	(0.39)	(0.60)	(0.53)	(0.40)	(0.45)	(0.38)
Gender	-	-	-	-	-.01	.01	.23**	-.14*	-.12*	.03
Managerial Position	-	-	-	-	-.15**	-.09	.14*	-.15**	-.03	-.14**
BEGBS-Covert Green Behaviour	.85	2.54 (0.92)	-.23**	-.16**	.31**	.25**	-.27**	.35**	-.02	.30**
BEGBS-Overt Green Behaviour	.78	3.43 (0.78)	-.11	-.15**	.40**	.18**	-.24**	.36**	-.19**	.38**
Increasing Structural Job Resources	.81	4.25 (0.53)	-.06	-.15**	.35**	.10	-.32**	.46**	-.16**	.27**
Decreasing Hindering Job Demands	.83	3.26 (0.80)	-.20**	.17**	.07	.18**	-.07	.11	.12*	.06
Increasing Social Job Resources	.84	3.41 (0.86)	-.07	.11*	.23**	.30**	-.08	.28**	.01	.27**
Increasing Challenging Job Demands	.83	3.61 (0.76)	-.10	-.28**	.39**	.15*	-.28**	.48**	-.07	.30**

Note: SAPI (South African Personality Inventory), C=Conscientiousness, E=Extraversion, N=Neuroticism, O=Openness, S-R= Social-Relational; the BEGBS (Brief Employee Green Behavior Scale) is represented by two factor-based scales: Covert Green Behavior and Overt Green Behavior, JCS = Job Crafting Scale; all these scales are scored 1-5; * $p < .05$. ** $p < .01$.

Exploratory factor analysis for EGBM

Both the eigenvalue criteria of > 1 and the scree plot indicated that two factors should be extracted, with the two-factor model ($\chi^2(76) = 245.35, p = .000$) fitting the data better than the one-factor model ($\chi^2(90) = 545.77, p = .000$). Furthermore, the overall model fit of the two-factor model was good as indicated by the SRMR (.04), and acceptable as shown the CFI (.92), TLI (.88), and the RMSEA (.08), compared to the weak fitting one-factor model (CFI = .77, TLI = .73, RMSEA = .13, SRMR = .09). The AIC value was also substantially smaller for the two-factor model ($\Delta AIC = 272.43$). One item did not load sufficiently on any factor and two items had double loadings; these items were omitted from further analyses. The first factor was labelled Covert Green Behavior (six items) and represents adherence to organizational rules and regulations, and interventions used to encourage green behavior. The second factor was labelled Overt Green Behavior (six items) and denotes individual action taken to demonstrate green behavior at work. The magnitude of the Geomin factor loadings (Table 2) was acceptable ($> .35$) (DiStefano, Zhu, & MinDrilá, 2009). Since the two-factor model fit the data better, *Hypothesis 3* was rejected.

Descriptive statistics, reliabilities, and correlations for BEGBS, JSC, and SAPI

The Cronbach Alpha reliability coefficients of all the subscales/facets are presented in Table 3. All subscales adhered to the traditional criterion of $\alpha > .70$ (Nunnally & Bernstein, 1994), except for Neuroticism which was slightly below .70. The means of all of the variables are also presented in Table 3, with the standard deviations presented in brackets. Lastly, Table 3 presents the correlations of the study variables and whether or not the correlation was statistically significant.

The mean scores for the Decreasing Hindering Job Demands and the Increasing Social Job Resources subscales, the two EGBS subscales, as well as the SAPI's Neuroticism factor were around the scale midpoint (3). The Increasing

Structural Job Resources, Increasing Challenging Job Demands, Conscientiousness, Extraversion, Openness, and Social-Relational Positive subscales scores were well above the midpoint, while Social-Relational Negative scores were well below the midpoint.

The Pearson Product Moment indicated that Gender was significantly correlated with Covert Green Behavior, Decreasing Hindering Job Demands, Neuroticism, Openness, and Social-Relational Negative. While Managerial Position was significantly correlated with all of the independent and dependent variables, except for Extraversion and Social-Relational Negative. Furthermore, the results revealed weak to moderate positive and significant correlations between Conscientiousness and all the BEGBS subscales and three of the JCS subscales; no significant correlations were found between Conscientiousness and Decreasing Hindering Job Demands ($r = .07$). Extraversion had weak to moderate positive and significant correlations with all the outcome variables. Neuroticism displayed weak to moderate negative and significant correlations with the two BEGBS variables, as well as two of the JCS subscales, namely, Increasing Structural Job Resources and Increasing Challenging Job Demands. Openness showed weak to moderate positive and significant correlations with all the outcome variables bar Decreasing Hindering Job Demands ($r = .11$). The Social-Relational Negative facet only had weak to moderate negative and significant correlations with Overt Green Behavior, Increasing Structural Job Resources, and Decreasing Hindering Job Demands. Social-Relational Positive showed weak to moderate and significant correlations with all the outcome variables except for Decreasing Hindering Job Demands ($r = .05$).

Regression analyses

The Tables 4 and 5 present the model statistics and coefficients for the various models. Before hierarchical regression analyses between the personality and job crafting dimensions were processed, the effect of the control variables Gender and Managerial Position were examined. The results

Table 4. Regression coefficients of the SAPI factors with the Job Crafting factors

Variables	Coefficients Statistics			Model Statistics	
	Increasing Structural Job Resources				
	B	β	Part Correlation	R^2	ΔR^2
Constant	0.07	-	-	-	-
Gender	0.10	0.05	0.05	0.00	0.00
Managerial Position	-0.15	-0.07	-0.07	0.02	0.02*
Conscientiousness	0.11	0.11	0.06	0.13	0.11**
Openness	0.47	0.47**	0.29	0.22	0.08**
Neuroticism	-0.12	-0.12*	-0.10	0.23	0.01*
Extraversion	-0.11	-0.11	-0.08	0.25	0.02**
Social-Relational Negative	0.00	0.00	0.00	0.25	0.00
Social-Relational Positive	-0.14	-0.14	-0.07	0.25	0.01
Decreasing Hinderling Job Demands					
	B	β	Part Correlation	R^2	ΔR^2
Constant	-0.08	-	-	-	-
Gender	-0.39	-0.18**	-0.17	0.04	0.04**
Managerial Position	0.45	0.22**	0.22	0.07	0.03**
Conscientiousness	0.18	0.18	0.10	0.08	0.01
Openness	-0.04	-0.04	-0.02	0.09	0.00
Neuroticism	-0.07	-0.07	-0.06	0.09	0.00
Extraversion	0.20	0.20**	0.16	0.12	0.03**
Social-Relational Negative	0.17	0.17*	0.13	0.14	0.02**
Social-Relational Positive	-0.08	-0.08	-0.04	0.14	0.00
Increasing Social Job Resources					
	B	β	Part Correlation	R^2	ΔR^2
Constant	-0.40	-	-	-	-
Gender	-0.12	-0.05	-0.05	0.00	0.00
Managerial Position	0.37	0.18**	0.18	0.02	0.01*
Conscientiousness	0.11	0.11	0.06	0.08	0.06**
Openness	0.10	0.10	0.06	0.11	0.03**
Neuroticism	0.02	0.02	0.01	0.11	0.00
Extraversion	0.18	0.18**	0.14	0.15	0.04**
Social-Relational Negative	0.13	0.13	0.10	0.16	0.01
Social-Relational Positive	0.11	0.11	0.06	0.16	0.00
Increasing Challenging Job Demands					
	B	β	Part Correlation	R^2	ΔR^2
Constant	0.65	-	-	-	-
Gender	0.00	0.00	0.00	0.01	0.01
Managerial Position	-0.40	-0.20**	-0.19	0.09	0.08**
Conscientiousness	0.21	0.21*	0.12	0.21	0.13**
Openness	0.41	0.41**	0.25	0.28	0.07**
Neuroticism	-0.07	-0.07	-0.05	0.28	0.00
Extraversion	-0.08	-0.08	-0.07	0.29	0.01
Social-Relational Negative	0.11	0.11	0.09	0.30	0.01*
Social-Relational Positive	-0.10	-0.10	-0.05	0.30	0.00

Note: ** $p < 0.01$; * $p < 0.05$

showed that Gender only explained 4% of the variance within the Decreasing Hinderling Job Demands dimension ($\Delta R^2 = 0.04$); while Managerial Position accounted for 14% of the variance within Increasing Structural Job Resources ($\Delta R^2 = 0.02$), Decreasing Hinderling Job Demands ($\Delta R^2 = 0.03$), Increasing Social Job Resources ($\Delta R^2 = 0.01$), and the Increasing Challenging Job Demands ($\Delta R^2 = 0.08$) dimensions. In the four final models, Gender significantly predicted Decreasing Hinderling Job Demands ($\beta = -0.18$), and Managerial Position significantly predicted Decreasing Hinderling Job Demands ($\beta = 0.22$), Increasing Social Job

Resources ($\beta = 0.18$), and the Increasing Challenging Job Demands ($\beta = -0.20$).

With regards to the relationships between personality and JC, Conscientiousness explained a significant amount of variance in Increasing Structural Job Resources ($\Delta R^2 = 0.11$), Increasing Social Job Resources ($\Delta R^2 = 0.06$), and Increasing Challenging Job Demands ($\Delta R^2 = 0.13$); while only Increasing Challenging Job Demands was significantly predicted by Conscientiousness ($\beta = 0.21$) in its final model. *Hypothesis 4a* was therefore partially accepted. Openness significantly accounted for a total of 18% variance in In-

Table 5. Standardized regression coefficients of the SAPI factors with the Green Behaviour factors

Variables	Covert Green Behaviour					Overt Green Behaviour				
	Coefficients Statistics			Model Statistics		Coefficients Statistics			Model Statistics	
	B	β	Part Correlation	R^2	ΔR^2	B	β	Part Correlation	R^2	ΔR^2
Constant	0.85	-	-	-	-	0.60	-	-	-	-
Gender	-0.38	-0.18*	-0.17	0.06	0.06**	-0.20	-0.09	-0.09	0.01	0.01
Managerial Position	-0.14	-0.07	-0.07	0.08	0.02**	-0.17	-0.08	-0.08	0.03	0.02**
Conscientiousness	0.20	0.20*	0.12	0.16	0.09**	0.18	0.18*	0.10	0.18	0.14**
Neuroticism	-0.14	-0.14*	-0.11	0.17	0.01*	-0.03	-0.03	-0.02	0.18	0.00
Openness	0.06	0.06	0.04	0.18	0.01*	0.08	0.08	0.05	0.19	0.01
Extraversion	0.12	0.12	0.09	0.20	0.02*	-0.02	-0.02	-0.02	0.19	0.00
Social-Relational Positive	0.05	0.05	0.03	0.20	0.00	0.18	0.18	0.09	0.20	0.01
Social-Relational Negative	0.14	0.14*	0.11	0.21	0.01*	-0.01	-0.01	-0.01	0.20	0.00

Note: ** $p < 0.01$; * $p < 0.05$

creasing Structural Job Resources ($\Delta R^2 = 0.08$), Increasing Social Job Resources ($\Delta R^2 = 0.03$), and Increasing Challenging Job Demands ($\Delta R^2 = 0.07$). Furthermore, Openness significantly predicted Increasing Structural Job Resources ($\beta = 0.47$), and Increasing Challenging Job Demands ($\beta = 0.41$) in the respective final models; providing partial support for *Hypothesis 4b*. Neuroticism accounted for 1% of the variance in Increasing Structural Job Resources, and in the final model, only Neuroticism ($\beta = -0.12$) significantly predicted the Increasing Structural Job Resources dimension of JC. *Hypothesis 4c* was therefore rejected. Partial support was found for *Hypothesis 4d* since Extraversion only significantly predicted Decreasing Hinderling Job Demands ($\beta = 0.20$) and Increasing Social Job Resources ($\beta = 0.18$). Extraversion did however explain 2% of the variance in Increasing Structural Job Resources, 3% of the variance in Decreasing Hinderling Job Demands, and 4% of the variance in Increasing Social Job Resources. The Social-Relational Negative factor accounted for a significant amount of variance of Decreasing Hinderling Job Demands ($\Delta R^2 = 0.02$) and Increasing Challenging Job Demands ($\Delta R^2 = 0.01$); while only significantly predicting Decreasing Hinderling Job Demands ($\beta = 0.17$) in its final model. The Social-Relational Positive factor did not account for any significant amount of variance in the JC dimension, nor did it significantly predict any of the JC dimensions. As a result, *Hypothesis 4e* was partially accepted.

Next, the EGB models were examined. The analyses revealed that Gender and Managerial Position contributed significantly towards the overall regression model of Covert Green Behavior ($R^2 = .08$), however, only Gender made a unique contribution towards the prediction of Covert Green Behavior ($\beta = -0.18$) in the final model. With regards to Overt Green Behavior, 2% of its variance was significantly explained by Managerial Position, but no significant predictive relationships were found.

After the effect of the control variables were accounted for, Conscientiousness significantly explained a total of 23% within EGB (Covert Green Behavior: $\Delta R^2 = 0.09$; Overt Green Behavior: $\Delta R^2 = 0.14$), and also significantly predicted both EGB factors (Covert Green Behavior: $\beta = 0.20$; Overt Green Behavior: $\beta = 0.18$) in the final models.

Hypothesis 5a was therefore accepted. Although Neuroticism ($\Delta R^2 = 0.01$), Openness ($\Delta R^2 = 0.01$), and Extraversion ($\Delta R^2 = 0.02$) significantly explained variance within the Covert Green Behavior factor, only Neuroticism predicted Covert Green Behavior ($\beta = -0.14$) in its final model. Thus *Hypothesis 5b* was partially accepted. Lastly, of the Social-Relational factors, only Social-Relational Negative significantly explained 1% of the variance in Covert Green Behavior, and also significantly predicted Covert Green Behavior ($\beta = 0.14$) in the final model; which refute *Hypothesis 5c*.

DISCUSSION

The overall objective of the study was to determine the external validity of the SAPI by generating a nomological network in which the SAPI personality traits predict organizational-related behavior (JC and EGB). However, before the nomological network could be established, the various measurement models had to be validated.

The SAPI model proved to be in accordance with recent studies (see Morton, 2018; Fetvadjev et al., 2015), indicating indigenous personality factors to be both evident and well represented in the multi-cultural context of South Africa. The six personality factors provide an overview of personality in South Africa, showing that the conceptions, convictions, and descriptions of personality attributes are sufficient to adequately describe the differences between individuals on these conceptions, convictions, and descriptions attributes (Morton et al., 2018).

De Beer et al. (2016) proposed a three-factor structure of the JCS should be used within the South African context; however, the JCS subscales proved to instead adequately represent the four-factor model proposed by Tims et al. (2013).

The BEGBS was found to have two underlying factors, contrasting the one-factor model proposed by Ones and Dilchert (2009). The factors were labelled Covert and Overt Green Behavior; corresponding with the theorized task-related green behavior (covert) and voluntary green behavior (overt) respectively (Kim et al., 2014; Norton et al., 2015). The Green Five Taxonomy of Ones and Dilchert (2012a &

2012b) was very well represented in both factors. These two factors prove to fit well within the conclusions of some researchers that EGB may be an inherent part of an individual's job, or be a voluntary stance the individual takes on (see Kim et al., 2014; McConaughy, 2014; Norton et al., 2015).

Validating the SAPI, JCS, and BEGBS sets the scene for creating the nomological network necessary to inspect the predictability of EGB and JC using SAPI factors. A nomological network consists of a theoretical framework, an empirical framework, and the link between these two frameworks. The current study established a theoretical framework in which all six of the SAPI factors were expected to predict certain aspects of JC, while only Conscientiousness, Openness, Neuroticism, and Extraversion was expected to predict EGB. The empirical results indicated that only five of the six personality factors predicted certain JC factors, and Conscientiousness, Neuroticism, and Social-Relational Negative predicted EGB. These results therefore support the construct validity of the SAPI and as such the SAPI can be used as a valid and reliable measure of personality within the South African context.

To understand the link between the theoretical framework and the empirical framework, as required when establishing a nomological network, some of the most significant relationships are briefly discussed.

In this study, the focus of conscientious individuals on personal achievement may prompt them to avoid getting bored by taking on new projects (Increasing Challenging Job Demands). Bell and Njoli (2016) also found that conscientious individuals would change their job characteristics if it assisted in achieving organizational goals. Bell and Njoli (2016) questions the soundness of this finding, yet the definition of Conscientiousness relates to the description of JC's Increasing Challenging Job Demands dimension, since both have an aspect of being motivated towards achievement and change. Being consistently dependable may increase the desire to act in an environmental sustainable manner, since a greater consciousness exist about the lasting effect of ecological damage (see Kim et al., 2014); explaining the relationship between Conscientiousness and EGB. Those who seek new experiences, skills, and knowledge (Openness factor) would be highly engaged in development opportunities and taking on new projects (Increasing Structural Job Resources, Increasing Challenging Job Demands) (see Bell & Njoli, 2016). In the current study it appears that a person who scores high on the Neuroticism factor may be apprehensive of development opportunities (Increasing Structural Job Resources), as well as engage in possible "...negative ungreen behaviors that are harmful to the environment..." as described by Wiernick et al. (2018, p. 8). While previous research found relationships between the SAPI definition of Extraversion and OCB and CWB (Anglim et al., 2018; Chiaburu et al., 2011), it seems in this study, the results regarding Extraversion does not extend beyond the OCB and CWB domains into EGB domains. EGB can be seen as an important and weighty behavior, while Extraversion as defined by the SAPI relates more to having fun and enjoying the company people. Despite high correlations between Extraversion and EGB, when controlling for other factors, the

effect of Extraversion reduces significantly and therefore the two constructs seem disconnected from each other.

Building onto theoretical linkages between personality and EGB and JC, the relationship with Social-Relational Negative is yet to be established within a theoretical framework. The results obtained suggested that individuals scoring high on Social-Relational Negative would be more likely to attempt to decrease hindering job demands, as well as engage in task-related green behavior such as conservation, harm avoidance, influencing others, and taking initiative. While these findings are counter-intuitive, it may be that a Social-Relational Negative person may act in a forceful and controversial manner when conveying strong ideas such as how to approach JC and EGB. A possible explanation in terms of the Social-Relational Negative and JC could be that a person that is arrogant and conflict-seeking may more confidently challenge the status quo in terms of work expectations and thus be more successful in job crafting. Looking at the histogram of Covert Green Behavior, the current sample rated their own Covert Green Behavior mainly as a rare occurrence. Therefore, it could be postulated that within the current study's context, individuals who are socially disruptive, intrusive, and aggressively promoting their own opinions (such as green behavior) will be more liberal in engaging in task-related green behavior. Lastly, although significant correlations were found between Social-Relational Positive and five of the six outcome variables, these relationships disappear when controlling for the effect of the demographic and personality variables.

In general, the results obtained proved satisfactory in attaining the objectives of the study. The SAPI produced results in accordance with recent validation and model-fit studies (see Fetvadjev et al. 2015; Morton, 2018), increasing the confidence levels with which generalizations can be made. The four-factor structure of the JCS as suggested by Tims et al. (2012) was confirmed. The BEGBS was validated within the South African context and consists of two scales. And lastly, a nomological network between the SAPI and two outcome variables (JC and EGB) were established based on theory, empirical results and the link between these two aspects. The SAPI therefore possess external validity.

Limitations. With the results reported and postulations made, one needs to take into consideration the possible limitations of the study and its effects. Greater attempts could have been made to collect data from the Indian and Colored ethnic groups, in order to affirm with confidence that the results represent all ethnic groups within South Africa. Also, while the SAPI has been developed for a multi-cultural context but limited or no research has been done to increase the cultural appropriateness of Employee Green Behavior and Job Crafting.

Future research. A point of departure for future research would be a confirmatory study on BEGBS to determine the presence and validity of the two-factor model found in the study or to increase the cultural appropriateness of the model developed by Ones and Dilchert (2012), by using the 36-item EGBS (see Dilchert, 2018). Further studies are also recommended on the limited presence of the Social-Relational clusters of the SAPI in both Employee Green Behavior and in Job Crafting. Last, it is recommended that a

quantile regression (Koenker & Basset, 1978) be done to obtain a more detailed understanding of the relationship between the SAPI, BEGBS and JCS by allowing for modelling of shape and location shift (Hao & Niaman, 2007) to occur.

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REFERENCES

- Amenumey, F. K. (2015). *Variables that impact Environmental Sustainability Behaviours of employees in the textile manufacturing industry in Ghana*. Unpublished doctoral thesis, University of Minnesota, Minnesota, United States of America.
- Anglim, J., Lievens, F., Everton, L., Grant, S. L., & Marty, A. (2018). HEXACO Personality Predicts Counterproductive Work Behavior and Organizational Citizenship Behavior in Low-Stakes and Job Applicant Contexts. *Journal of Research in Personality*, 77, 11-20. <https://doi.org/10.1016/j.jrp.2018.09.003>.
- Asparouhov, T., & Muthén, B. (2009). Exploratory structural equation modeling. *Structural Equation Modeling*, 16, 397-438.
- Bakker, A. B., Demerouti, E., & Euwema, M. C. (2005). Job resources buffer the impact of job demands on burnout. *Journal of Occupational Health Psychology*, 10, 170-180.
- Bakker, A. B., Tims, M., & Derks, D. (2012). Proactive personality and job performance: The role of job crafting and work engagement. *Human Relations*, 65, 1359-1378.
- Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, 44, 1-26.
- Bell, C., & Njoli, N. (2016). The role of big five factors on predicting job crafting propensities amongst administrative employees in a South African tertiary institution. *SA Journal of Human Resource Management/SA Tydskrif vir Menslikehulpbronbestuur*, 14, a702. <http://dx.doi.org/10.4102/sajhrm.v14i1.702>
- Berg, J. M., & Dutton, J. E. (2008). Crafting a fulfilling job: Bringing passion into work. *Ann Arbor, MI: University of Michigan, Ross School of Business*, 1-8.
- Berg, J. M., Dutton, J. E., & Wrzesniewski, A. (2008). What is job crafting and why does it matter. Retrieved from the website of *Positive Organizational Scholarship on October, 5, 2018*.
- Berg, J. M., Wrzesniewski, A., & Dutton, J. E. (2010). Perceiving and responding to challenges in job crafting at different ranks: When proactivity requires adaptivity. *Journal of Organizational Behavior*, 31, 158-186.
- Bergh, Z. (2013). The nature of personality and fundamental assumptions in personality study. In Z. Bergh and D. Geldenhuys (Eds.), *Psychology in the work context* (5th ed., pp. 290-314). Cape Town, SA: Oxford University Press.
- Bipp, T., & Demerouti, E. (2015). Which employees craft their jobs and now? Basic dimensions of personality and employees' job crafting behaviour. *Journal of Occupational and Organizational Psychology*, 88, 631-655.
- Borman, W. C., & Motowidlo, S. J. (1993). Expanding the criterion domain to include elements of contextual performance. In N. Schmitt & W. C. Borman (Eds.), *Personnel Selection in Organizations*. pp. 71-98. San Francisco, CA: Jossey-Bass.
- Bragg, C. B., & Bowling, N. A. (2018). Not all forms of misbehavior are created equal: Differential personality facet-counterproductive work behavior relations. *International Journal of Selection and Assessment*, 26, 27-35.
- Byrne, B. M., & Van de Vijver, F. J. R. (2010). Testing for measurement and structural equivalence in large-scale cross-cultural studies: Addressing the issue of nonequivalence. *International Journal of Testing*, 10, 107-132.
- Cangur, S., & Ercan, I. (2015). Comparison of model fit indices used in structural equation modeling under multivariate normality. *Journal of Modern Applied Statistical Methods*, 14, 14.
- Cheung, F. M., Van de Vijver, F. J. R., & Leong, F. T. L. (2011). Toward a new approach to the study of personality in culture. *American Psychologist*, 66, 593-603.
- Chiaburu, D. S., Oh, I. S., Berry, C. M., Li, N., & Gardner, R. G. (2011). The five-factor model of personality traits and organizational citizenship behaviours: A meta-analysis. *Journal of Applied Psychology*, 96, 1140-1166.
- Costa Jr, P. T., Terracciano, A., & McCrae, R. R. (2001). Gender differences in personality traits across cultures: Robust and surprising findings. *Journal of Personality and Social Psychology*, 81, 322.
- Crawford, E. R., LePine, J. A., & Rich, B. L. (2010). Linking job demands and resources to employee engagement and burnout: A theoretical extension and meta-analytic test. *Journal of Applied Psychology*, 95, 834-848.
- Crant, J. M. (1996). The proactive personality scale as a predictor of entrepreneurial intentions. *Journal of Small Business Management*, 34, 42-49.
- Cronbach, L., & Meehl, P. (1955). Construct validity in psychological tests. *Psychological Bulletin*, 52, 281-302
- De Beer, L. T., Tims, M., & Bakker, A. B. (2016). Job crafting and its impact on work engagement and job satisfaction in mining and manufacturing. *South African Journal of Economic and Management Sciences*, 19, 400-412.
- Demerouti, E., & Bakker, A. B. (2014). Job crafting. In M. C. W. Peeters, J. de Jonge, & T. W. Taris (Eds.), *An Introduction to Contemporary Work Psychology* (pp. 414-433). Chichester, Wiley.
- Dilchert, S. (2018). Counterproductive sustainability behaviors and their relationship to personality traits. *International Journal of Selection and Assessment*, 26, 49-56.
- DiStefano, C., Zhu, M., & Mindrila, D. (2009). Understanding and using factor scores: Considerations for the applied researcher. *Practical Assessment, Research and Evaluation*, 14, 1-11.
- Elliot, A. J., & Thrash, T. M. (2002). Approach-avoidance motivation in personality: approach and avoidance temperaments and goals. *Journal of Personality and Social Psychology*, 82, 804.
- Feingold, A. (1994). Gender differences in personality: A meta-analysis. *Psychological Bulletin*, 116, 429.
- Fetvadjev, V. H., Meiring, D., Van de Vijver, F. J. R., Nel, J. A., & Hill, C. (2015). The South African Personality Inventory (SAPI): A culture-informed instrument for the country's main ethnocultural groups. *Psychological Assessment*, 27, 827. <http://dx.doi.org/10.1037/pas0000078>
- Field, A. (2005). *Discovering statistics using SPSS* (2nd). London: SAGE Publications.
- Figueiredo Filho, D. B., Paranhos, R., Rocha, E. C. D., Batista, M., Silva Jr, J. A. D., Santos, M. L. W. D., & Marino, J. G. (2013). When is statistical significance not significant?. *Brazilian Political Science Review*, 7, 31-55.
- Frese, M., & Fay, D. (2001). Personal initiative: An active performance concept for work in the 21st century. In B. M. Staw, & R. I. Sutton (Eds.), *Research in Organizational Behaviour* (Vol. 23), pp. 133-187. San Diego: Elsevier Academic Press.

- Geldenhuis, M., & Bakker, A. B. (2017). *The role of personality in the weekly process of job crafting, work engagement and performance*. Paper presented at the European conference of Work and Organisational Psychology, 19 - 22 May, Dublin, Ireland.
- George, J. M., & Jones, G. R. (1997). Organizational spontaneity in context. *Human Performance, 10*, 153-170.
- Goodstein, L. D., & Lanyon, R. J. (1999). Applications of personality assessment to the workplace: A review. *Journal of and Business Psychology, 13*, 291-322. doi:10.1023/A:1022941331649
- Government Gazette, Republic of South Africa, Vol. 400, No. 19740, Cape Town, 19 October, 1998.
- Hackman, J. R., & Oldham, G. R. (1980). *Work redesign*. Reading, MA: Addison-Wesley.
- Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., & Tatham, R.L. (2006). *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Pearson Education Inc.
- Halbesleben, J. R. B. (2010). A meta-analysis of work engagement: Relationships with burnout, demands, resources, and consequences. In A. B. Bakker, & M. P. Leiter (Eds.), *Work engagement: A handbook of essential theory and research*, pp. 102-117. New York: Psychology Press.
- Hao, L., & Naiman, D. Q. (2007). *Quantile regression*. California: Sage.
- Hill, C., Nel, J. A., van de Vijver, F. J. R., Meiring, D., Valchev, V. H., Adams, B. G., & de Bruin, G. P. (2013). Developing and testing items for the South African Personality Inventory (SAPI). *SA Journal of Industrial Psychology/SA Tydskrif vir Bedryfsielkunde, 39*, Art. #1122, 13 pages.
- Hough, L. M., & Oswald, F. L. (2008). Personality testing and industrial-organisational psychology: Reflections, progress, and prospects. *Industrial and Organisational Psychology, 1*, 272-290.
- Hu, L.T., & Bentler, P.M. (1999). Cut-off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives, *Structural Equation Modeling, 6*, 1-55.
- Ilies, R., Fulmer, I. S., Spitzmuller, M., & Johnson, M. D. 2009. Personality and citizenship behavior: The mediating role of job satisfaction. *Journal of Applied Psychology, 94*, 945-959.
- Jackson, D. L., Gillaspay, J. A., Jr., & Purc-Stephenson, R. (2009). Reporting practices in confirmatory factor analysis: An overview and some recommendations. *Psychological Methods, 14*, 6-23.
- Kim, A., Kim, Y., Han, K., Jackson, S. E., & Ployhart, R. E. (2014). Multilevel influences on voluntary workplace green behavior: individual differences, leader behavior, and coworker advocacy. *Journal of Management, 43*, 1-24.
- Klein, R. M., D'Mello, S., & Wiernick, B. M. 2012. Demographics and employee sustainability. In S. E. Jackson, D. Ones, & S. Dilchert (Eds.), *Managing human resources for environmental sustainability: 117-154*. San Francisco: Jossey-Bass.
- Koenker, R., & Basset, G. J. (1978). Regression quantiles. *Econometrica, 46*, 33-50.
- Larsen, K. R., & Hovorka, D. S. (2012). *Developing interfield nomological nets*. Paper presented at the 45th Hawaii conference of System Sciences (HICSS-45), January. Manoa, Hawaii.
- 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. *Academy of Management Journal, 48*, 764-775.
- Li, J., & Larsen, K. R. (2011). *Establishing nomological networks for behavioural science: A natural language processing based approach*. Paper presented at the 32nd International conference of Information Systems. Shanghai, China.
- Lyons, P. (2008). The crafting of jobs and individual differences. *Journal of Business and Psychology, 23*, 25-36.
- Marsh, H. W., Morin, A. J. S., Parker, P. D., & Kaur, G. (2014). Exploratory structural equation modeling: An integration of the best features of exploratory and confirmatory factor analysis. *Annual Review of Clinical Psychology, 10*, 85-110.
- McConaughy, J. C. (2014). *Development of an employee green behaviour descriptive norms scale*. Unpublished doctoral thesis, California State University, San Bernardino, United States Of America.
- Morton, N. (2018). *The cross-cultural validation of the South African Personality Inventory – English Version*. Unpublished doctoral thesis submitted in the fulfilment of the requirements of the degree Doctor of Commerce in Industrial Psychology in the College of Business and Economics at the University of Johannesburg.
- Muthén, B., & Muthén, L. (1998-2017). *Mplus user's guide* (8th ed.). Los Angeles, CA: Author.
- Nel, J.A. (2008). *Uncovering personality dimensions in eleven different language groups in South Africa: An exploratory study*. Unpublished doctoral thesis, North-West University, Potchefstroom Campus, Potchefstroom, South Africa.
- Nel, J. A., Valchev, V. H., Rothmann, S., Van de Vijver, F. J. R., Meiring, D., & De Bruin, G. P. (2011). Exploring the personality structure in the 11 languages of South Africa. *Journal of Personality, 80*, 915-948.
- Nel, J.A., Fetvadjev, V.H., Rothmann, S., van de Vijver, F.J.R., Meiring, D., & Hill, C. (2016). *Developing psychometric instruments for a specific context: The South African Personality Inventory*. In R. Ferreira (Ed.), *Thinking innovatively about psychological assessment in a context of diversity* (pp. 88-103). Cape Town, South Africa: Juta.
- Norton, T. A., Parker, S. L., Zacher, H., & Ashkanasy, N. M. (2015). Employee green behaviour: A theoretical framework, multilevel review, and future research agenda. *Organization & Environment, 28*, 103-125.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw- Hill.
- Ones, D. S. and S. Dilchert (2009). *Green Behaviors of Workers: A Taxonomy for the Green Economy*, Paper presented at the annual meeting of the Academy of Management, Chicago, IL.
- Ones, D. S., & Dilchert, S. (2012a). Employee green behaviors. In S. E. Jackson, D. S. Ones, & S. Dilchert (Eds.), *Managing human resources for environmental sustainability* (pp. 85-116). San Francisco, CA: Jossey-Bass.
- Ones, D. S., & Dilchert, S. (2012b). Environmental sustainability at work: A call to action. *Industrial and Organizational Psychology, 5*, 444-466.
- Ones, D. S., Dilchert, S., Viswesvaran, C., & Judge, T. A. (2007). In support of personality assessment in organisational settings. *Personnel Psychology, 60*, 995-1027.
- Ones, D. S., Wiernick, B. M., Dilchert, S., & Klein, R. M. (2018). Multiple domains and categories of employee green behaviours: more than conservation. *Research Handbook on Employee Pro-Environmental Behaviour, Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing* (pp. 13-38).
- Organ, D. W. (1997). Organizational citizenship behaviour: It's construct clean-up time. *Human Performance, 10*, 85-97.
- Peral, S., & Geldenhuis, M. (2016). The effects of job crafting on subjective well-being amongst South African high school teachers. *SA Journal of Industrial Psychology/SA Tydskrif vir Bedryfsielkunde, 42*, a1378. <http://dx.doi.org/10.4102/sajip.v42i1.1378>
- Petrou, P., Demerouti, E., Peeters, M. C. W., Schaufeli, W. B., & Hetland, J. (2012). Crafting a job on a daily basis: contextual antecedents and the effect of work engagement. *Journal of Organizational Behavior, 33*, 1120-1141
- Renwick, D. W. S., Redman, T., & Maguire, S. 2013. Green human resource management: A review and research agenda. *International Journal of Management Review, 15*, 1-14.
- Salanova, M., Agut, S., & Peiró, J. M. (2005). Linking organizational resources and work engagement to employee performance

- and customer loyalty: The mediation of service climate. *Journal of Applied Psychology*, *90*, 1217–1227.
- Schaufeli, W. B., Bakker, A. B., & van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. *Journal of Organizational Behaviour*, *30*, 893–917.
- SPSS INC. (2018). *SPSS 24.0 for Windows*. Chicago, IL.
- Straughan, R. D., & Roberts, J. A. (1999). Environmental segmentation alternatives: a look at green consumer behaviour in the new millennium. *Journal of Consumer Marketing*, *16*, 558–575.
- Tabachnick, B.G., & Fidell, L.S. (2007), *Using multivariate statistics* (5th ed.). New York: Allyn and Bacon.
- Tims, M., & Bakker, A.B. (2013). *Job design and employee engagement*. In C. Truss, R. Delbridge, E. Soane, K. Alfes, & A. Shantz (Eds.), *Employee engagement in theory and practice* (pp. 131–148). London: Routledge.
- Tims, M., Bakker, A. B., & Derks, D. (2012). Development and validation of the job crafting scale. *Journal of Vocational Behaviour*, *80*, 173–186.
- Tims, M., Bakker, A. B., & Derks, D. (2013). The impact of job crafting on job demands, job resources, and well-being. *Journal of Occupational Health Psychology*, *18*, 230.
- Valchev, V. H., van de Vijver, F. J. R., Nel, J. A., Rothmann, S., Meiring, D., & de Bruin, G. P. (2011). Implicit personality conceptions of the Nguni cultural-linguistic groups of South Africa. *Cross-Cultural Research*, *45*, 235–266.
- Valchev, V., H., Nel, J. A., van de Vijver, F. J. R., Meiring, D., de Bruin, G. P., & Rothmann, S. (2012). Similarities and differences in implicit personality concepts across ethnocultural groups in South Africa. *Journal of Cross-Cultural Psychology*, *44*, 365–388.
- Valchev, V., H., van de Vijver, F. J. R., Meiring, D., Nel, J. A., Hill, C., Laher, S., & Adams, B. G. (2014). Beyond agreeableness: Social-relational personality concepts from an indigenous and cross-cultural perspective. *Journal of Research in Personality*, *48*, 17–32.
- Van Aarde, N., Meiring, D. & Wiernik, B.M. (2017). The validity of the Big Five personality traits for job performance: Meta-analyses of South African studies. *International Journal of Selection and Assessment*. *25*, 223–239. <https://doi.org/doi:10.1111/ijasa.12175>
- Van de Schoot, R., Lugtig, P., & Hox, J. (2012). A checklist for testing measurement invariance. *European Journal of Developmental Psychology*, *9*, 486–492. <http://dx.doi.org/10.1080/17405629.2012.686740>
- Wiernik, B.M., Ones, D. S., Dilchert, S., Hill, L., D’mello, S., & Klein, R. . (2010). Understanding environmentally unfriendly behaviours of employees. In A. Sanders and A. Huffman (Chairs), *Earth and I/O: Implications for a sustainable workforce*. Symposium conducted at the annual conference of the Society for Industrial and Organizational Psychology, Atlanta, Georgia.
- Wiernik, B. M., Ones, D. S., Dilchert, S., & Klein, R. M. (2018). Responsible business and individual differences: employee externally-directed citizenship and green behaviors. In A. McWilliams, D. E. Rupp, D. S. Siegel, G. K. Stahl, & D. A. Waldman (Eds.), *The Oxford handbook of corporate social responsibility: psychological and organizational perspectives* (2nd ed.). New York, NY: Oxford University Press.
- Wrzesniewski, A., & Dutton, J. E. (2001). Crafting a job: Revisioning employees as active crafters of their work. *Academy of Management Review*, *26*, 179–201.

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