Introduction

More than three decades ago, Antonovsky (1987, p. 154) concluded that it is ‘unrealistic to think that a working environment totally free of stressors could be created; people will always have to cope’. He coined the concept ‘sense of coherence’ (SoC) (Antonovsky, 1979), and research has consistently shown that employees with a strong SoC cope more efficiently with stressors in the working environment (Feldt, 1997; Van der Colff & Rothmann, 2009) and may even experience less risk of developing symptoms of ill-health relating to burnout over a 10-year period (Kalimo, Pahkin, Muthanen & Topipinen-Tanner, 2003). Recently, Bauer and Jenny (2007) proposed a context-specific application of SoC in the working environment, namely work-related sense of coherence (Work-SoC). In order to determine the theoretical and practical value of Work-SoC, Jenny, Bauer, Vinje, Vogt and Torp (2017) urged that the relationship between Work-SoC and SoC should be explored empirically. There currently appears to be a paucity of research investigating the context-specific Work-SoC in relation to general SoC in the context of work. The purpose of this research was therefore to determine whether Work-SoC provides incremental validity above and beyond that of SoC in predicting work engagement and fatigue in the context of work.

Sense of coherence

Antonovsky (1979) defined SoC as a general orientation relating to the degree to which an individual perceives stimuli from the environment to be consistent or understandable.
(comprehensibility); the degree to which the individual believes that resources are available to cope with demands (manageability); and the degree to which the individual perceives it worthwhile to address the demands (meaningfulness).

The direct, moderating and mediating role of SoC in relation to organisational outcomes and work wellness indicators has been researched extensively (for an overview of a few studies, see Jenny et al., 2017; Mayer & Krause, 2011). Specifically, SoC has been found to be negatively associated with burnout (Fourie, Rothmann & Van de Vijver, 2008; Van der Colff & Rothmann, 2009), positively associated with work engagement (Fourie et al., 2008; Vogt, Hakanen, Jenny & Bauer, 2016) and to be moderating the effects of detrimental work conditions on health outcomes (Jenny et al., 2017). Conversely, Antonovsky (1987) also proposed that working processes could have both detrimental and health-promoting consequences for an employee’s SoC (Antonovsky, 1987). Numerous research studies have since confirmed that SoC is indeed influenced by a number of work and organisational variables (Jenny et al., 2017).

Work-related sense of coherence

Work-related sense of coherence has been proposed as a context-specific application of SoC in the working environment (Bauer & Jenny, 2007). Similar to the definition of SoC, Work-SoC is defined ‘as the perceived comprehensibility, manageability and meaningfulness of an individual’s current work situation’ (Vogt, Jenny & Bauer, 2013, p. 1).

The perception of comprehensibility can be described as the degree to which information from the environment makes sense at a cognitive level, and the employee experiences the stimuli as consistent, clear, structured and thus predictable (Antonovsky, 1987; Vogt et al., 2013). Comprehensibility at work is generally influenced by enabling the employee to see his or her role in achieving the overall goals of the organisation, a sense of job security and the experience of shared values and identifying with a group at work in which clear normative expectations exist (Antonovsky, 1987). Even though stressors might be seen to be ordered, they can still pose demands, and comprehensibility on its own is therefore not sufficient.

Manageability can be described as the degree to which employees perceive resources to be available, to either themselves or other reliable individuals in the working environment and that these resources are adequate to meet the demands (Antonovsky, 1987; Vogt et al., 2013). Manageability in the work environment may be influenced by ‘an appropriate overload–underload balance’ (Antonovsky, 1987, p. 161). Employees must be convinced that the problems facing them are legitimate and applicable to their work; that they have the necessary knowledge, skills, material and equipment to address the task at hand; that their potential is fulfilled; and that support is available from legitimate others in the working context (Antonovsky, 1987).

Antonovsky (1987, p. 156) further proposed that employees must actually ‘care to cope’. Meaningfulness, as the third dimension of Work-SoC, therefore, relates to the degree to which employees regard stressors and demands or situations at work as worthy of investing energy in and worthy to commit to or become involved in (Antonovsky, 1987; Vogt et al., 2013). Meaningfulness relates to the degree to which employees feel a sense of ownership in their work, the degree to which they can participate in decision-making and the degree to which they may experience discretionary freedom in their task and work environment (Antonovsky, 1987).

Work-related sense of coherence has been found to be negatively related to job demands and burnout (Vogt et al., 2013) but positively related to job resources (Vogt, Jenny, Fülleman, Inaunen & Bauer, 2012), an employee-directed leadership style (Brossing & Sjovall, 2010), work engagement (Van der Westhuizen & Ramasodi, 2016; Vogt et al., 2013) and the perception that the organisational climate is supportive of employee health and well-being (Zweber, 2014). As a personal resource, Work-SoC can also act as a mediator in the work–health relationship, and Vogt et al. (2013) found that Work-SoC partially mediated both the relationship between job demands and exhaustion and the relationship between job resources and work engagement. The mediating effect, however, was stronger in the process that leads from job resources to work engagement (Vogt et al., 2013). One can therefore expect Work-SoC to change when work characteristics (such as job demands, job resources, leadership style and organisational climate) vary (Vogt et al., 2013) and to be related to employees’ work wellness.

Vogt, Bauer and Jenny (2014) proposed that Work-SoC can be used as a practical screening of employees’ perception of the health-promoting quality of their work situation. This assessment is thus useful for planning, managing and evaluating health-related interventions in a working environment.

Work-related sense of coherence and sense of coherence

Vogt et al. (2013) proposed that Work-SoC, as a context-specific application of SoC, may be more dynamic and sensitive to changes in the work context than general SoC. Eberz, Becker and Antoni (2011) investigated both SoC and Work-SoC in relation to work-related stress in a sample of pastors’ secretaries ($N = 93$). Evidence from this study suggests that Work-SoC explains incremental variance and seems to be a stronger predictor of work-related stress than SoC (Eberz et al., 2011). These findings seem to support the proposition that Work-SoC may serve as a better predictor of employees’ wellness in the work context in comparison to the measurement of general SoC. A recent call has been raised by Jenny et al. (2017) that the relationship between Work-SoC and SoC should be explored empirically. However, the findings of Eberz et al. (2011) have not yet been corroborated by any other studies. It is therefore important to determine if Work-SoC explains incremental variance above that of SoC.
in predicting work wellness. That way one can determine if the context-specific application is more effective in predicting employee wellness in the work context in comparison to the measurement of general SoC. The findings of the current study could guide management in planning and implementing interventions aimed at increasing the Work-SoC or SoC of employees in order to address fatigue (as a subdimension of burnout) and work engagement in the organisation.

Taking previous research into account, the following hypotheses were formulated for this study:

\( H_1 \): Work-related SoC provides incremental validity over and above SoC in predicting work engagement.

\( H_2 \): Work-related SoC provides incremental validity over and above SoC in predicting fatigue.

**Research design**

**Research approach**

This study followed a quantitative, descriptive approach and used a cross-sectional survey design in order to gather data. According to Zikmund (2003), a cross-sectional design is used when data from numerous people are collected at a single point in time.

**Research method**

**Research participants**

The population included part-time and full-time working adults registered for a research methodology module at honours level at a distance education institution (\( N = 1487 \)). Students were requested to complete the assessments online on their module site. A convenience sample of \( N = 837 \) responded to the invitation (response rate of approximately 56\%) and \( n = 734 \) correct response sets could be extracted. The characteristics of the participants are detailed in Table 1.

Table 1 indicates that the sample group consisted of 33.7\% male and 66.2\% female participants. Most of the participants spoke English (19.9\%), isiZulu (13.5\%) and Afrikaans (12.9\%). The majority of the participants were either single (47.7\%) or married (42\%) and had a 3-year degree (73.8\%) or a 4-year degree (20.8\%) as a qualification. The age of the participants varied from 20 to 62 years (mean age = 34 years) and work experience ranged from a few months to 42 years (mean of 7 years’ experience) with most participants being employed on a full-time basis (91.1\%).

**Measuring instruments**

In order to measure the variables on the study, the participants were required to complete a biographical section, the Work-SoC Questionnaire (nine items), the Orientation to Life Questionnaire (OLQ; six items), the Fatigue Scale (five items) and the Utrecht Work Engagement Scale (UWES-9).

The Work-SoC Questionnaire (Bauer, 2010; Bauer, Vogt, Inaunen & Jenny, 2015) consists of nine items that measure three subscales, namely comprehensibility (four items), manageability (two items) and meaningfulness (three items). The work-related sense of coherence is scored on a 7-point frequency rating. Vogt et al. (2012) and Bauer et al. (2015) reported a Cronbach alpha of 0.83 and a test–retest correlation (1-year interval) of 0.53 and that the scale had a three-factor structure. Vogt et al. (2013) confirmed the three-factor structure of the questionnaire. Zweber (2014) as well as Van der Westhuizen and Ramosodi (2016) also found that a three-factor structure fitted the data better than a one-factor structure. Vogt et al. (2013) showed that the questionnaire functioned equally well for different gender and age groups, for employees with lower and higher levels of education and for employees with or without a leadership position. The questionnaire’s factor structure was also invariant across time.

The Orientation to Life Questionnaire (six items) (Van Schalkwyk & Rothmann, 2008) is a shortened version of the 29-item OLQ developed by Antonovsky (1987). Van Schalkwyk and Rothmann (2008) confirmed the three-factor structure of the OLQ-6 measuring comprehensibility (two items), manageability (two items) and meaningfulness (two items). The OLQ-6 also had a Cronbach alpha coefficient of 0.73 in the study by Van Schalkwyk and Rothmann (2008) and 0.86 in the study by Barnard and Muller (2012).

The Fatigue Scale (five items) (Asiwe, Jorgensen & Hill, 2014) is a subscale of the 17-item Burnout scale that was developed for a South African context, measuring cognitive weariness,

### Table 1: Characteristics of participants in the sample (\( n = 734 \)).

<table>
<thead>
<tr>
<th>Item</th>
<th>Category</th>
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<tr>
<td>Gender</td>
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<td></td>
<td>isiXhosa</td>
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<td></td>
<td>isiZulu</td>
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<td>Sesotho</td>
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<td>Setswana</td>
<td>9.1</td>
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<tr>
<td></td>
<td>isiSwati</td>
<td>3.7</td>
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<tr>
<td></td>
<td>Thsivenda</td>
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fatigue and emotional exhaustion or withdrawal. This fatigue subscale is closely related to the exhaustion subscale of other burnout measures like the Maslach burnout inventory: General survey (Schaufeli, Leiter, Maslach & Jackson, 1996) and the Oldenburg Burnout Inventory (OLBI) (Demerouti, Bakker, Vardakou & Kantas, 2003). Asié et al. (2014) reported a Cronbach alpha coefficient of 0.85 for this subscale.

The Utrecht Work Engagement Scale (UWES) (nine-item) (Schaufeli, Salanova, Gonzáles-Romá & Bakker, 2002) was used to measure work engagement in this study. The UWES measures vigour, dedication and absorption as subdimensions of work engagement. Schaufeli, Bakker and Salanova (2006) reported Cronbach alpha values ranging from 0.65 to 0.79 for these subdimensions.

Research procedure and ethical considerations
Participants were requested to complete the assessment online. Before completing the assessments, participants had to indicate that they consented to the possible use of their data for research purposes. They were also assured that their personal information would not be used in any way other than to report on the results of the research in group format.

Statistical analyses
Structural equation modelling with Mplus 7.4 (Muthén & Muthén, 1998–2016) was used to validate the measuring instruments and test the structural model. The items were defined as continuous, and the robust maximum likelihood (MLR) was used as the estimator to account for the skewness in the data. The following fit indices were used in this study:

1. absolute fit indices, including the chi-square statistic and the root mean square error of approximation (RMSEA) and
2. incremental fit indices, including the Tucker–Lewis Index (TLI) and the Comparative Fit Index (CFI) (Hair, Black, Babin & Anderson, 2010).

The following cut-off scores were applied: CFI and TLI ≥ 0.90 (Hair et al., 2010) and RMSEA < 0.05 to indicate good fit. However, values as high as 0.08 can be seen to represent reasonable errors of approximation (Hair et al., 2010). The composite reliability of the measuring instruments was calculated by using Raykov’s formula (Raykov, 1997). SPSS 24.0 (SPSS, 2016) was used to determine the descriptive statistics, correlation between variables and regression analysis. Hierarchical linear regression analyses were conducted to determine the degree of incremental variance that Work-SoC predicts over and above the variance of SoC. Cohen’s (1992, p. 157) practical significant cut-off points for the correlation coefficient ($r \geq 0.30$ = medium effect; $0.50 \leq r < 0.70$ = large effect) and regression ($f^2 = R^2/1 - R^2$; $0.02 \leq f^2 < 0.15$ = small effect, $0.15 \leq f^2 < 0.35$ = medium effect, $0.35 \leq f^2$ = large effect) were used to determine the effect size. Statistical significance was set at $p < 0.05$.

Ethical consideration
Ethical clearance for the study was granted by the hosting university.

Results

Validity of the measuring instruments
In order to determine the validity of the measuring instruments, the measurement model was tested by means of structural equation modelling. The results are presented in Table 2. Several competing models were compared in the analyses. Model 1 was specified with Work-SoC consisting of three factors (comprehensibility – four items; manageability – two items; meaningfulness – three items) (Bauer et al., 2015; Van der Westhuizen & Ramaosodi, 2016). SoC consisting of three factors (comprehensibility – two items; manageability – two items; meaningfulness – two items) (Barnard & Muller, 2012; Van Schalkwyk & Rothmann, 2008); fatigue consisting of one factor (five items) (Asié et al., 2014); and work engagement consisting of three factors (vigour – three items; dedication – three items; absorption – three items) (Schaufeli et al., 2006). Model 1 was not positive definite as the meaningfulness dimension of SoC displayed a negative residual variance. Model 2 followed the same template as model 1, but SoC was specified to consist of one factor (six items). Model 3 followed the template of model 2 but specified Work-SoC consisting of three factors (comprehensibility – three items; manageability – three items; meaningfulness – three items) (Bauer et al., 2015). Model 4 followed the template of model 3 but specified Work-SoC to consist of one factor (Bauer et al., 2015). Model 5 followed the template of model 3 but specified work engagement to consist of only the two core factors, namely vigour (three items) and dedication (three items) (Schaufeli & Bakker, 2004). No additional modifications were done and further analyses were based on model 5.

Table 2 indicates that the measurement model as specified in model 5 displayed an acceptable fit (with fit indices CFI and TLI >0.90 and RMSEA below 0.08).

The descriptive statistics, reliability of the measuring instruments and the correlation between the variables are indicated in Table 3.

Table 3 indicates that all subscales and scales displayed an acceptable level of composite reliability (>0.70), except for the subscale of comprehensibility ($p = 0.66$). In line with the recommendations of Bauer et al. (2015) and Schaufeli et al. (2006), only the total scales of Work-SoC and work engagement were used in subsequent analysis. Relationships between Work-SoC and SoC on the one hand and fatigue and work engagement on the other hand were all practically significantly related (large effect) and in the expected direction.
Determing the incremental validity of work-related sense of coherence

Hierarchical multiple regression was used to determine if Work-SoC provided incremental variance over and above SoC in predicting work engagement and fatigue, respectively. The results are displayed in Table 4. In step 1, only SoC was entered. In step 2, Work-SoC was added. In step 3, Work-SoC was entered first, while in step 4, SoC was added to Work-SoC.

Table 4 indicates that both SoC and Work-SoC emerged as significant predictors of work engagement and fatigue, respectively, and when both were entered as predictors. Work-SoC predicted an additional 13% ($R^2$ change) over and above the 27% ($\Delta R^2$) that was predicted by SoC of the variance in work engagement. When Work-SoC was entered first, SoC predicted an additional 6% over and above the 33.5% that was predicted by Work-SoC of the variance in work engagement. Work-related sense of coherence then also predicted an additional 6% over and above the 33% that was predicted by SoC of the variance in fatigue. When Work-SoC was entered first, SoC predicted an additional 13.6% over and above the 25% that was predicted by Work-SoC of the variance in fatigue. The percentages predicted were of large effect ($f^2 \geq 0.35$) except for Work-SoC predicting fatigue, which was of medium effect ($f^2 \geq 0.15$).

### Discussion

The aim of this study was to determine whether Work-SoC provides incremental validity above and beyond that of SoC in predicting work engagement and fatigue as indicators of work wellness.

Congruent with the first hypothesis formulated, Work-SoC significantly predicted work engagement above and beyond SoC. Work-related sense of coherence also appeared to be a stronger predictor of work engagement in comparison with SoC. In line with the second hypothesis formulated, Work-SoC again predicted additional variance of fatigue over and above that of SoC. This was partially in line with the findings of Eberz et al. (2011), which showed that Work-SoC explained...
incremental variance of work-related stress. Eberz et al. (2011) also found that Work-SoC appeared to be a stronger predictor of work-related stress than SoC. The findings of the current study differed in that Work-SoC (even though providing incremental validity) was not a stronger predictor of fatigue in comparison with SoC. These results, however, do seem to corroborate earlier findings of Vogt et al. (2013) who reported that the mediating effect of Work-SoC was stronger between job resources and work engagement than between job demands and burnout. These results would suggest that Work-SoC appears to be a better predictor of work engagement than of fatigue in comparison with SoC. However, SoC seems to be a better predictor of fatigue than of work engagement in comparison with Work-SoC. From this, one could hypothesise that Work-SoC could be a stronger predictor of work wellness in the motivational, health-promoting process, but that SoC could be a stronger predictor of work wellness in the energetic, health-impairment process (Bakker, Demerouti & Schaufeli, 2003).

Managerial implications and recommendations

The work-related sense of coherence explained incremental validity of work engagement and fatigue as indicators of work wellness and could therefore be used with confidence in organisations as a context-specific application of SoC. Interventions aimed at addressing the work engagement of employees would be more suitable if they were to focus on Work-SoC as an indicator of coherent work experiences, rather than focusing on SoC. In this regard, management could consider increasing aspects like employees’ understanding of their contribution to the overall goals of the organisation, job security and effective teamwork in order to address their experience of comprehensibility. Ensuring an appropriate underload–overload balance, being equipped with the relevant knowledge and skills in order to perform required tasks and experiencing social support could address employees’ experience of manageability. Having discretionary freedom and being able to participate in decision-making in the work context could address the experience of meaningfulness of employees. However, if the aim of interventions is to address fatigue (as a dimension of burnout), it would seem that SoC could be a stronger predictor to take into account.

Limitations

A number of limitations of the study should be noted. A convenience sample of only one population was used and the researcher did not know in which contexts or industries these employees were working. It is therefore not possible to generalise the results of this study to other employees in South Africa. In order to limit the number of items, only the short form of SoC and a dimension of burnout, namely fatigue, were included in the data collection. The full SoC and burnout scales could be used in further studies. Future research could also investigate the degree to which Work-SoC and SoC predict other variables of work wellness in organisations, using large, random samples from a variety of industries in South Africa. The hypotheses that Work-SoC is a stronger predictor in the motivational process of work wellness and that SoC is a stronger predictor in the energetic process of work wellness need to be tested in other studies.

Conclusion

The study confirmed that Work-SoC provides incremental validity in predicting work engagement and fatigue over and above the variance that is predicted by SoC. This indicates that Work-SoC and SoC are interrelated but independent factors. The work-related sense of coherence appeared to be a stronger predictor of work engagement and SoC a stronger predictor of fatigue. The findings support the proposition of Vogt et al. (2013) that Work-SoC may be a more sensitive predictor of work wellness than general SoC.

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Competing interests

The author declares that she has no financial or personal relationships that may have inappropriately influenced her in writing this article.

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