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A confirmatory factor analytic study of a counterproductive work behaviour measure in Zimbabwe

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Orientation: Counterproductive work behaviour (CWB) has detrimental effects on organisations if not managed. Therefore, its accurate measurement will enhance proper decision-making to mitigate its effects.

Research purpose: The primary goal of the present study was to test the psychometric properties of the Workplace Deviance Scale (WDS) on a Zimbabwean sample.

Motivation for the study: The WDS developed in Europe is a widely used questionnaire. Therefore, there is a need to assess the reliability and construct validity of the WDS on a Zimbabwean sample.

Research approach/design and method: A quantitative research design was used. A total of 304 conveniently selected participants completed the WDS used to measure CWB. Item, dimensional, and confirmatory factor analyses (CFA) were conducted on the data.

Main findings: High reliability coefficients were recorded on the two subscales of the WDS. The discriminant validity of the two subscales was achieved. Reasonable model fit with the data was found for the first and second order as well as the bi-factor and single-factor measurement models through CFA.

Practical/managerial implications: The questionnaire can help to develop prevention strategies aimed at reducing the frequency and severity of counterproductive behaviours in Zimbabwean organisations.

Contribution/value-add: The study promotes the use of accurate, reliable, and valid instruments in Zimbabwe by confirming the psychometric properties of the WDS.

Keywords: counterproductive work behaviour; workplace deviance scale; reliability; uni-dimensional; confirmatory factor analysis; discriminant validity; construct validity.

Introduction

Counterproductive work behaviour (CWB) has been described as volitional actions that violate the norms of the organisation and have the capacity to harm stakeholders such as supervisors, customers, and co-workers (Sackett, 2002). Counterproductive work behaviours are elective and contrary to the legitimate interests of the organisation and therefore costly (Marcus et al., 2016; Sackett & DeVore, 2002). They can be viewed as expressions of workplace protest when individuals perceive injustice, bias, or deliberate inequality (Kelloway et al., 2010), acts of striking back or strains in employee behaviour (Skarlicki & Folger, 1997). The actions can be towards certain individuals (interpersonal deviance) or the organisation (organisational deviance) with the intention of causing harm (Smithikrai, 2014). Counterproductive work behaviour has been evolving over the past few decades and has received several labels from scholars. It has been identified as retaliation (Skarlicki & Folger, 1997), revenge (Bies et al., 1997), aggression (Douglas & Martinko, 2001), and deviance (Robinson & Bennett, 1995).

Counterproductive work behaviour has received considerable critical attention from scholars, the corporate world, and the public in the recent past (Aryati et al., 2018; Leweherilla, 2017; Liu et al., 2020; Striler et al., 2021). The growing interest has been necessitated by the cases of misconduct that continue to be widely reported costing organisations billions of dollars (Bennett et al., 2018; PricewaterhouseCoopers [PwC], 2018). Employees display several harmful and undesirable behaviours that are detrimental to organisational performance in terms of

economic costs and the organisations need to pay for the losses resulting from the CWB (Hiscox Embezzlement Study, 2016; Mehmood et al., 2022). It is imperative that the management develops and implements measures to curtail future occurrences of such behaviours. The growing interest is also motivated by the incorporation of CWB as part of the employee performance assessments in the workplace (O'Neill & Hastings, 2011). This implies that organisations should bring awareness to the employees regarding behaviours that are undesirable and detrimental to organisational performance to use CWB as part of the metrics for performance appraisal.

Counterproductive work behaviour has been found to have negative relationships with several organisational factors like ethical leadership (Bouzari et al., 2020), whereby employees refrain from engaging in harmful acts based on the normative standards created by the leaders. The perception of ethical leadership increases the employees' inclination to report problems to management and inspire altruistic behaviours owing to the fair and trustworthy environment (Zhang & Zhao, 2015). Associations have also been identified between CWB and employees' work engagement in that those who experience higher levels of engagement are always in a positive emotional state, are proactive, and take initiative within the workplace and, in the process, become less susceptible to CWBs (Chen et al., 2020).

Generally, there is an inverse relationship between the CWB and organisational citizenship behaviour (OCB) dimensions (Dalal, 2005; Sypniewska, 2020). Counterproductive work behaviour is often regarded as the opposite of OCB from a definitional perspective, as the former is regarded as destructive and costly to the organisation and the latter as beneficial (Glińska-Neweś & Lis, 2016). Based on the relationships that exist between CWBs and other positive organisational behaviours, it is sensible to suggest that the level of CWB may explain the nature and levels of positive behaviours like OCB and work engagement. Despite the role played by CWB in determining employee performance and providing red flags for potentially harmful behaviours, little has been done to validate its measures within the Zimbabwean context. Hence, this study aims to ascertain the psychometric properties of the workplace deviance scale (WDS) to ensure the use of accurate, reliable, and valid instruments in Zimbabwe.

Aim of the study

The primary goal of the study was to determine the reliability and construct validity of the WDS developed by Bennett and Robinson (2000) using a sample from Zimbabwe. The specific objectives of the study were to confirm the:

- reliability of the WDS by calculating the Cronbach's alpha reliability coefficients for each subscale
- construct validity of the WDS by testing the first- and second-order model goodness-of-fit (GFI) using confirmatory factor analyses (CFA)
- discriminant validity of the WDS.

Contribution to the field

Counterproductive work behaviour affects overall organisational performance, and the WDS can help identify specific CWBs that employees may engage in, such as theft, sabotage, or absenteeism. The results can assist in the development of target interventions such as training programmes aimed at reducing these behaviours, improving productivity, and promoting ethical behaviour.

Counterproductive work behaviour has been recognised as a criterion for evaluating employee performance extending beyond job performance (O'Neill & Hastings, 2011). Job performance is most accurately depicted as a multi-dimensional construct encompassing various sets of behaviours that contribute to an organisation's strategic objectives. Avoidance of CWBs stands as a pivotal dimension of job performance, aligning with task performance and organisational citizenship (Mercado et al., 2018). Therefore, it is pertinent for employees to be aware of the CWBs in the workplace.

There is a perceived association between CWB and the financial performance of organisations (Alwansyah et al., 2020). It follows that organisations monitor their operations to sustain competitive advantage in a volatile and uncertain environment. The increased significance of CWB has emphasised the necessity to determine the reliability and validity of its measurement through the WDS. Hence, the primary contribution of this study lies in expanding the knowledge base concerning the psychometric properties of the WDS within the Zimbabwean context.

Counterproductive work behaviour theory

The origin of CWB can be traced back to Hollinger and Clark (1983) who developed a two-dimensional model constituted by property and production deviance which was based on a list of CWBs. Robinson and Bennett (1995) then developed a four-dimensional typology of CWB, which included aspects of an interpersonal nature that were absent in Hollinger and Clark's (1983) conceptualisation. The first category in the four-dimension typology is referred to as *serious organisationally harmful behaviour* (property deviance). That involves the tendency to steal from the company, soliciting kickbacks, sabotaging equipment, and giving an incorrect account of the number of hours worked. The second category is *minor organisationally harmful behaviour* (production deviance). This category is characterised by deliberately working at a slow pace, wasting resources, taking long breaks, and leaving early without the supervisor's approval. The third category, namely, *minor interpersonally harmful behaviour* (political deviance) pertains to acts of favouritism, spreading gossip, and casting blame on coworkers and harmful competition. The fourth category, called *serious interpersonal harmful behaviour* (personal aggression), involves acts of sexual harassment, verbally abusing coworkers, theft, as well as

exposing fellow employees to serious danger (Robinson & Bennet, 1995).

Sackett and DeVore (2002) introduced a hierarchical model of CWB, positioning the overarching deviance factor (counterproductivity) at the highest level. The intermediate level comprises interpersonal and organisational deviance, while specific individual behaviours such as absenteeism, theft, alcohol, and drug use are situated at the lower tier. Spector et al. (2006) introduced five categories of CWB (abuse, production deviance, sabotage, theft, withdrawal). *Abuse* towards others encompasses actions such as hitting a coworker, while *production deviance* is defined as the failure to perform tasks correctly. *Sabotage* comprises actions involving the defacement or physical destruction of an employer's property, as well as the improper use of organisational resources (Chen & Spector, 1992). *Theft* involves exploiting supplies and company tools without approval. *Withdrawal* consists of absenteeism, arriving late, and leaving earlier as well as taking excessive breaks. Withdrawal is also constituted by acts of reducing the time spent on performing tasks to levels that are less than the ones required (Spector et al., 2006).

One of the widely used CWB conceptualisations distinguishes between CWB levelled against the organisation (CWBO) and CWB directed towards the individual (CWBI) (Neuman & Baron, 1998). An example of CWBO occurs when employees are involved in stealing and social loafing at work while CWBI involves behaviours such as gossiping, bullying, and the victimisation of other employees. This conceptualisation of CWB has been used in numerous studies in Southern Africa. One such study is the study by Van Staden (2018) conducted using non-managerial employees from parastatals in Namibia. While CWB can also be characterised as minor and severe harmful behaviours (Bennett & Robinson, 2000), the individual and organisational dimensions of CWB have consistently surfaced in various conceptual and empirical studies on CWB.

Stewart et al. (2009) proposed a typology of CWB comprising three dimensions. Their conceptual framework offers an excellent explanation of the core CWB construct and how organisational members perceive deviant behaviours among their coworkers. This aligns closely with the majority of Robinson and Bennett's (1995) four-category typology for workplace deviance, which includes personal aggression, production deviance, and property deviance in their model.

Gruys and Sackett (2003) assembled more than 250 CWBs and organised them into 11 categories according to the resemblance of behaviours. The 11 categories led Gruys and Sackett (2003) to formulate a two-dimensional structure of CWB, which differs from Robinson and Bennett's (1995) two-dimensional typology. The two dimensions of CWBs identified by Gruys and Sackett encompass the interpersonal-organisational dimension and the task-relevant dimension. Gruys and Sackett posit that the task-relevant dimension involves demonstrating high-quality work, responsibly using time and resources, and abstaining from detrimental activities such as drug and alcohol use. The task-relevant dimension may also include malpractices outside the workplace. Although there are differences in how the dimensions of CWB are conceptualised, it is important to highlight the fact that both Gruys and Sackett's (2003) and Robinson and Bennett's (1995) typologies emphasise the necessity of exercising caution when drawing conclusions about the dimensionality of CWB. In this study, Robinson and Bennett's (1995) conceptualisation of CWB focusing on interpersonal and organisational deviance was employed because of its widespread adoption as the predominant framework for understanding CWB.

Counterproductive work behaviour measurement

Several scales have been created and implemented to assess CWB (e.g. Bennett & Robinson, 2000; Gruys & Sackett, 2003; Laczo, 2002; Marcus et al., 2002; Sackett et al., 2006), employing a two-factor structure. One of the most utilised measures is the WDS by Bennett and Robinson (2000), which is rooted in Robinson and Bennett's (1995) four typologies of CWB. The four typologies comprise Hollinger and Clark's (1983) production deviance and property deviance, along with Robinson and Bennett's (1995) introduction of personal and political deviance. Bennett and Robinson categorised the four typologies of deviant workplace behaviour into two dimensions: interpersonal deviance and organisational deviance. Their self-report measure comprises items that evaluate an individual's inclination to participate in interpersonal deviance and organisational deviance within the workplace. The interpersonal dimension includes political and individual deviance, while the organisational dimension comprises production deviance and property deviance (Stewart et al., 2009). Bennett and Robinson (2000) conducted an empirical test on 28 items from Robinson and Bennett's (1995) original scale using a sample of 352 participants from Toledo, Ohio in the United States of America. The sample comprised participants from various sectors including MBA classes, retail, manufacturing, public and government services, hotel and restaurant, education, and the service industry. After conducting exploratory factor analysis (EFA), they subsequently reduced the items to 19. The final scale comprises 12 items that measure organisational deviance and seven items that gauge interpersonal deviance. The WDS utilises a 7-point Likert scale, ranging from 1 (never) to 7 (daily) for scoring. The internal consistency reliability for the interpersonal dimension is $\alpha = 0.81$ and that for the organisational dimension is at $\alpha = 0.78$, which is acceptable (Pallant, 2016). Dalal (2005) found a significant reliability coefficient for the organisational deviance dimension ($\alpha = 0.77$) while that for the interpersonal dimension was $\alpha = 0.68$, which was slightly below the cut off 0.70 (Nunnally & Bernstein, 1994). A significant correlation, $r = 0.46$ ($p < 0.01$) was found between the interpersonal and organisational deviance dimensions (Bennett & Robinson,

2000). Meta-analytic studies by Berry et al. (2007) and Dalal (2005) found correlations of $r = 0.62$ and $r = 0.70$ respectively between the sub-scales. After CFA, the scale had a comparative fit index (CFI) value of 0.90 and the root mean square residual (RMSR) of 0.05 indicating acceptable fit. The GFI and the normed fit indices (NFI) were 0.87 and 0.88 respectively. Spector et al. (2006) also found an acceptable fit of the two-factor model of workplace deviance ($N = 900$). Bennett and Robinson confirmed both the convergent and discriminant validities of the scale through assessing its relationship with other measures which assess similar constructs. This two-dimensional model of workplace deviance has been confirmed and verified in numerous studies (Berry et al., 2007; Dalal, 2005; Marcus et al., 2016).

Research design

The present study evaluated the reliability and construct validity of Bennett and Robinson's (2000) WDS among participants from selected security organisations in Zimbabwe. The study employed a quantitative research design to achieve its goals. Confirmatory factor analysis was carried out using structural equation modelling (SEM) to confirm the factor structure of the observed variables.

Research sample

A total of 304 participants that were drawn from selected organisations in Zimbabwe took part in the study. Most of the participants managed to return the questionnaires indicating a 76% response rate. Females constituted 28.9%, while males had a representation of 69.9% and 2% were missing. The largest proportion of the participants (42.4%) fell within the 31–40 age category followed by the 41–50 age category at 28.9%. All the participants were black Africans. A total of 64.5% were full-time employees, while 24.7% were on contract. Most of the participants (53%) had at least a secondary school qualification. Non-managerial employees constituted 52.8%, while 30% were in management.

Measuring instrument

Bennett and Robinson's (2000) WDS was used to measure CWB. Workplace deviance scale is a 19-item questionnaire that examines two dimensions of CWB: interpersonal deviance and organisational deviance. The interpersonal dimension is measured by seven items while the organisational dimension is measured by 12 items. Example items assessing the interpersonal dimension involve inquiring about the frequency with which participants have – 'Made an ethnic, religious, or racial remark at work' and 'publicly embarrassed someone at work'. Example items for the organisational dimension include asking the participants how frequently they have 'taken an additional or longer break than is acceptable in the workplace' and 'intentionally worked slower than you could have worked'. The checklist employs a 7-point Likert scale, ranging from 1 (almost never) to 7 (almost always). The interpersonal dimension demonstrates an internal consistency reliability of Cronbach's alpha of 0.81, whereas the organisational dimension has a reliability of 0.78 (Bennett & Robinson, 2000).

Research procedure and ethical considerations

The researcher obtained ethical clearance from the Human and Social Sciences Ethics Committee of the University of the Western Cape to carry out the study. Additionally, the researcher secured permission from the organisations from which the participants were recruited. The distribution of questionnaires was facilitated with assistance from the human resources and operations departments within the organisations. Prior to completing the questionnaires, respondents provided informed consent, emphasising their voluntary participation in the study. Participants were allotted 2 weeks to complete the questionnaires, with additional time provided for those requiring it. Confidentiality was rigorously upheld throughout the entire process. Participants were assured that their responses would be treated anonymously, with no personal names disclosed in the study. No anticipated risks or discomforts were identified in the study, and participants were assured that their responses would not be disclosed to their supervisors. Subsequently, the data collected were utilised as input for statistical analysis programs.

Statistical analysis

SPSS version 28 was utilised for conducting the reliability analysis. The output encompassed scale-if-item deletion, corrected-item statistics, and inter-item correlations. To ascertain the uni-dimensionality of the subscales in the WDS, EFA was performed using direct oblimin rotation and the principal axis factoring method. The scale's construct validity was determined through SEM available in LISREL 8.80, employing robust maximum likelihood estimation (Kelloway, 1998).

Structural equation modelling

Structural equation modelling serves as a valuable tool in appraising the measurement properties of psychological measures. It enables the specification and testing of path models, concurrently evaluating the quality of measurement and exploring predictive relationships among constructs by conducting CFA and path analysis simultaneously (Diamantopoulos & Siguaw, 2000). Additionally, SEM empowers researchers to develop and examine more detailed inquiries within their area of study (Hoyle, 1995; Tabachnick & Fidell, 2013).

Confirmatory factor analysis

Confirmatory factor analysis is a method utilised to test hypotheses or theories concerning the structure underlying a set of variables (Pallant, 2016). Confirmatory factor analysis is designed to verify whether a set of measures (the observed data) corresponds to specific latent variables as outlined in the measurement model (Blaikie, 2003), producing various fit indices. These indices enable the researcher to determine

how well the measurement model, along with its parameter estimates, aligns with the observed data. During the conceptualisation phase while constructing the model, each construct was assigned specific connotative meanings. Individual indicator variables were formulated to represent each construct accurately. This intended design is encapsulated in a measurement model, delineating how each latent variable is manifested by the respective observed indicators. The measurement model also furnishes insights into the validities and reliabilities of the observed indicators. The adequacy of the measurement model fit was evaluated using the CFA technique available in LISREL 8.80 (Jöreskog & Sörbom, 2006a). In CFA, the number of factors and/or latent variables and the pattern of indicator-factor loadings are predetermined. The specified factor solution is assessed based on how well it replicates the sample covariance matrix of the measured variables (Brown, 2006).

The evaluation of the counterproductive work behaviour model

The assessment of the CFA models for CWB relied on several indices: the root mean square error of approximation (RMSEA), Standardised Root Mean Squared Residual (SRMR), GFI, Normed Fit Index (NFI), Non-normed Fit Index (NNFI), CFI, Incremental Fit Index (IFI), and the Relative Fit Index (RFI). The RMSEA is widely considered one of the most informative fit indices, indicating how well a model with unknown but optimally chosen parameter values would fit the population covariance if available. It evaluates the goodness of fit in the null hypothesis (Diamantopoulos & Siguaw, 2000; Schumacker & Lomax, 2016). Root mean square error of approximation values less than 0.05 suggest good fit, values between 0.05 and under 0.08 indicate reasonable fit, values between 0.08 and 0.10 suggest mediocre fit, while values >0.10 indicate poor fit (Diamantopoulos & Siguaw, 2000). The SRMR presents the average difference between the sample covariance (variance) and a fitted (model-implied) covariance (variance). In essence, it summarises the fitted residuals (Diamantopoulos & Siguaw, 2000; Hair et al., 2010). Values below 0.05 indicate acceptable fit.

The GFI measures the proportion of variances and covariances accounted for by the model, illustrating how closely the model replicates the observed covariance matrix. Generally recommended as a reliable measure of model fit (Diamantopoulos & Siguaw, 2000), GFI values greater than 0.90 are considered indicative of acceptable fit (Diamantopoulos & Siguaw, 2000). For comparative purposes, other fit indices such as the RFI, IFI, Bentler-Bonett Non-Normed Fit Index (NNFI), Bentler-Bonett Normed Fit Index (NFI), and CFI (Diamantopoulos & Siguaw, 2000; Schumacker & Lomax, 2016) are recommended. Values exceeding 0.90 indicate a good fit (Diamantopoulos & Siguaw, 2000).

Ethical considerations

Ethical clearance to conduct this study was obtained from the Humanities and Social Science Research Ethics Committee of the University of the Western Cape (No. HS18/8/9).

Results

Missing values

The multiple imputations technique was used to address missing values. This technique allowed the missing values to be substituted with values derived from averages with the aid of simulation (Jöreskog & Sörbom, 2006a; Rubin, 1987). The final sample size was 304, no cases were deleted.

Item analysis

Item and dimensional analyses were conducted on the items of the WDS using the SPSS version 28 (IBM Corp., 2021). The internal consistency coefficients for the scale dimensions surpassed the acceptable threshold of 0.70 (Nunnally & Bernstein, 1994) (refer to Table 1). Both subscales demonstrated uni-dimensionality, with each factor explaining over 60% of the variance (see Table 1). Table 2 illustrates the correlation between the two latent dimensions of workplace deviance. The correlation remained within reasonable limits and did not exceed 0.90, which could signify multicollinearity (Pallant, 2016; Tabachnick & Fidell, 2013).

Evaluating the fit of the measurement model

The WDS underwent CFA via LISREL 8.80 (Du Toit et al., 2008; Jöreskog & Sörbom, 2006a) to assess the construct validity of the measurement models. The scale's measurement model was treated as an exogenous variable. Listwise deletion and Robust Maximum Likelihood estimation methods were employed to generate the necessary estimates, utilising the normalised dataset for further analyses.

Goodness-of-fit of the first-order, second-order, bi-factor, and single-factor measurement models

Table 3 displays that the measurement models tested for the WDS in this study exhibit comparable levels of fit concerning various indicators like CFI, NFI, NNFI, IFI, and RFI. Both the first-order and second-order measurement models

TABLE 1: Reliability and exploratory factor analysis output for the counterproductive work behaviour dimensions.

Scale	Number of items	Cronbach's alpha	Factor loadings	% variance explained
1. Interpersonal	7	0.89	0.50 – 0.82	61.8
2. Organisational	12	0.97	0.76 – 0.89	75.6
Total scale	**19**	-	-	-

TABLE 2: Inter-correlations between latent counterproductive work behaviour dimensions, average variance extracted, and shared variance estimates (N = 304).

Subscales	*M*	SD	1	*2*
1. Interpersonal	15.6	8.5	**0.52**	0.71
2. Organisational	21.8	15.5	0.84	**0.68**

Note: N = 304; Correlations are below the diagonal, squared correlations are above the diagonal and average variance extracted (AVE) estimates (in bold) are presented on the diagonal.

SD, standard deviation; M, mean.

TABLE 3: Goodness-of-fit indices obtained for the counterproductive work behaviour first-order, second order, and bi-factor measurement models.

Model	RMSEA	SRMR	GFI	NFI	NNFI	CFI	IFI	RFI
First-order CFA	0.0746	0.0616	0.81	0.98	0.98	0.99	0.99	0.97
Second-order CFA	0.0739	0.0616	0.81	0.98	0.98	0.99	0.99	0.97
Bi-factor model	0.0436	0.0762	0.89	0.99	0.99	0.996	0.996	0.98

RMSEA, root mean square error of approximation; SRMR, standardised root mean residual; GFI, goodness-of-fit; NFI, normed fit index; NNFI, non-normed fit index; CFI, comparative fit index; IFI, incremental fit index; RFI, relative fit index; CFA, confirmatory factor analysis.

indicate a reasonable model fit. Regarding RMSEA, the first-order model shows a value of 0.0746, while the second-order model indicates an RMSEA value of 0.0739. The bi-factor model's RMSEA is 0.0436, falling below the cut-off point of 0.05, signifying a good fit. In terms of CFI, all models – first-order, second-order, and bifactor – show a similar value of 0.99. The SRMR for both first-order and second-order models stands at 0.0616. However, the GFI values for all models fell short of the 0.90 cut-off (refer to Table 3). An overview of the fit indices across the three models suggests that the bifactor model's fit indices generally meet the acceptable cut-off levels compared to the first-order, second-order, and single-factor models. This provides some support for the notion that the scale measures a general construct (such as CWB).

Table 4 illustrates the fact that among the 19 items, 16 exhibit higher loadings on the general factor compared to the group factors, whereas three items demonstrate higher loadings on the group factor. This suggests that the general factor does not hold dominance and exerts no influence on the group factors. The completely standardised factor loadings are detailed in Table 4. The values shown in the completely standardised solution loading matrix indicate the average change expressed in standard deviations in the item associated with one standard deviation change in the latent variable (Diamantopoulos & Siguaw, 2000). The factor loadings of the items are generally significant (>0.30) for the general factor. Ten items are loading below 0.30 for the group factors indicating that they are not measuring the latent construct.

TABLE 4: Standardised factor loadings for the bi-factor (counterproductive work behaviour, Inventory, $N = 304$).

Item	General factor	Interpersonal	Organisational
CWB1	0.43	0.54	-
CWB2	0.62	0.23	-
CWB3	0.32	0.60	-
CWB4	0.80	0.20	-
CWB5	0.57	0.66	-
CWB6	0.70	0.43	-
CWB7	0.79	0.18	-
CWB8	0.90	-	-0.06
CWB9	0.85	-	0.01
CWB10	0.79	-	0.21
CWB11	0.73	-	0.22
CWB12	0.77	-	0.25
CWB13	0.72	-	0.37
CWB14	0.69	-	0.47
CWB15	0.77	-	0.30
CWB16	0.81	-	0.40
CWB17	0.83	-	0.16
CWB18	0.77	-	0.42
CWB19	0.82	-	0.21

CWB, counterproductive work behaviour.

TABLE 5: Unstandardised gamma matrix.

Variable	*t*
Interpersonal	2.05
Organisational	0.41

t = *t*-values; *t*-values $\geq |1.96|$ indicate significant parameter estimates.

Parameter estimates

The unstandardised gamma matrix demonstrates the strength of association and influence of the exogenous latent variable (CWB) on its observable variables. The parameters are significant ($p < 0.05$) if *t*-values are $\geq |1.96|$ (Diamantopoulos & Siguaw, 2000). The *t*-values show that the *interpersonal* dimension is a significant indicator of the CWB higher-order factor, as the *t*-value is greater than 1.96, while the *organisational* dimension has a value below the cut-off. The results are shown in Table 5.

Discriminant validity

This study assessed discriminant validity by comparing the average variance extracted (AVE) for each construct with the shared variance between constructs (Farrell, 2010). The AVE represents the average amount of variance in the indicator variables explained by the latent variable relative to the variance attributed to measurement error (Diamantopoulos & Siguaw, 2000). If the AVE for each construct surpasses its shared variance with any other construct, it confirms discriminant validity. However, in this instance, the shared variance estimates between the *interpersonal* and *organisational* subscales are slightly higher than the AVE estimates for each construct (refer to Table 2). According to Diamantopoulos and Siguaw (2000), AVE values below 0.50 suggest that measurement error accounts for a larger portion of the variance in the indicators than the underlying variable, casting doubts on the reliability of the latent variable itself. Nevertheless, in this scenario, both AVE values exceed 0.50, enhancing confidence in the reliability of the two latent variables.

Power assessment

Power analysis was performed using the Rweb (1.03) translation of Statistical Analysis System (SAS) syntax (Preacher & Coffman, 2006) to determine power estimates for exact and close fit tests. The analysis involved inputs such as a significance level (α) of 0.05, a sample size of 304, and 151 degrees of freedom (refer to Table 6). A notably high power value of 0.996713 was obtained for the test of exact fit. In this context, the researchers rejected the

TABLE 6: Power assessment for the structural model for the tests of exact and close fit.

ALPHA	RMSEA (0)	RMSEA (A)	*N*	POWER	*df*
0.05	0.00	0.05	304	0.996713	151
0.05	0.05	0.08	304	0.9999107	151

RMSEA, root mean square error of approximation; *df*, degrees of freedom.

null hypothesis of exact fit. Additionally, the test for close fit yielded a high power of 0.9999107, indicating that, under the specific conditions of this study, approximately 99.9% of incorrect models would be rejected, thereby bolstering confidence in the model.

Discussion

This study aimed to evaluate the reliability and construct validity of Bennett and Robinson's (2000) WDS using a Zimbabwean sample, assessing its transportability to this context.

The Cronbach's alpha values obtained in the study indicate that the reliability coefficients for the two dimensions of the WDS surpass the 0.70 threshold (Nunnally & Bernstein, 1994), indicating acceptability. When treated as a uni-dimensional scale, the Cronbach's alpha coefficient was notably high (α = 0.97). These alpha coefficients align with those discovered by Bennett and Robinson (2000) during the scale's development, where they used samples from various sectors including retail, manufacturing, public and government services, hotel and restaurant, education, service industry, and MBA students. The reliability coefficients reported were α = 0.78 for interpersonal deviance and α = 0.81 for organisational deviance. These coefficients slightly exceed the estimates found in Dalal's (2005) meta-analytic study.

The inter-item correlation between the latent constructs was acceptable and higher than the one obtained by Bennett and Robinson (2000) during the development of the WDS. They obtained a moderate correlation coefficient of $r = 0.46$. The results also corroborate estimates from meta-analytic studies by Dalal (2005) and Berry et al. (2007) who obtained coefficients of $r = 0.70$ and $r = 62$ respectively. However, although the correlation coefficients between the latent constructs are not regarded as reflecting multicollinearity, the closer they are to the cut off level acceptable of reliability (e.g. 0.70), the more questionable is the distinctiveness between the constructs (Berry et al., 2007).

The interpersonal and organisational deviance subscales were found to be uni-dimensional and accounted for more than 50% of the variance. In terms of construct validity, CFA shows acceptable fit for the two-factor model. That confirms the results obtained by Bennett and Robinson (2000) during the development of the WDS. The results are also consistent with those of Sackett et al. (2006) whose conceptual approach suggested the existence of two distinct forms of workplace deviance, directed towards the organisation and towards its members. Moreover, the authors conducted tests for discriminant validity, revealing that the shared variance estimates were slightly higher than the AVE estimates for each of the constructs. This raised uncertainties regarding the discriminant validity of the interpersonal and organisational subscales. Nevertheless, the obtained AVE estimates for both subscales exceeded 0.50, dispelling concerns regarding the indicators' reliability or the latent variables themselves (Diamantopoulos & Siguaw, 2000).

Limitations of the study and suggestions for future research

While the study demonstrated less skewness concerning gender representation, the usage of a non-probability sampling technique may limit the sample's representativeness for the Zimbabwean population. This approach impacts the applicability of the study's findings. Subsequent research endeavours should aim to replicate this study using larger and more culturally diverse samples. Further, more decisive research concerning the psychometric properties of the WDS is warranted. Future studies should also focus on assessing the measurement equivalence and invariance of the WDS across various cultural groups in Zimbabwe.

Conclusion

The results of this study highlight the importance of considering a more randomised sampling approach and exploring a broader range of demographic variables when using the WDS in research within Zimbabwe. Despite this need for diversification, based on the initial purpose that prompted this investigation, it can be reasonably inferred that the WDS stands as a suitable tool. Its psychometric properties have been, to some extent, affirmed for studying CWB among a Zimbabwean research population.

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Competing interests

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

Authors' contributions

N.G. (University of the Western Cape) was the project leader and was responsible for the data collection and article write-up. This project is based on his PhD thesis; B.M. was responsible for the article write-up and statistical analyses.

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Data availability

Data sharing does not apply to this article as no new data were created or analysed in this study.

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