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Work–life balance: a longitudinal evaluation of a new measure across Australia and New Zealand workers

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The work–life balance literature has recently identified the need for construct refinement. In response to these discussions, this research describes the development and validation of a concise measure of work–life balance, based on individuals' subjective perceptions of balance between their work and other aspects of their lives. The structure, reliability and validity of this unidimensional, four-item measure was confirmed in four independent heterogeneous samples of workers employed in Australia and New Zealand ($N = 6983$). Work–life balance was negatively associated with work demands, turnover intentions and psychological strain, and positively associated with both family and job satisfaction, confirming the research hypotheses. Evidence of these relationships over time was also demonstrated. This research confirms that this new measure of work–life balance demonstrates robust psychometric properties and predicts relevant criterion variables.

Keywords: longitudinal; psychological strain; structural equation modelling; turnover; work demands; work–life balance

Introduction

The accurate evaluation of individual health and performance includes estimates of multiple role demands from work and non-work domains. Organisational researchers assessing the impact of the psychosocial work environment upon outcomes, such as occupational stress, employee well-being and commitment, increasingly include measures of non-work demands within their investigations (e.g. Burke and Cooper 2008). Recently identified methodological concerns focusing on work–life balance include appropriate construct definition and measurement (Brough and O'Driscoll 2010; Greenhaus and Allen 2011). One important concern is the absence of a specific measure of work–life balance. The current research provides a response to these methodological discussions and describes the validation of a new measure of work–life balance. The measure was comprehensively tested across multiple samples (utilising both cross-sectional and longitudinal research designs) and assessed with commonly recognised antecedent and criterion variables. This research also directly addresses calls for a more comprehensive approach to organisational theory testing and knowledge advancement, via the inclusion of non-US and non-European research samples (Tsui, Nifadkar and Ou 2007; Gelfand, Leslie and Fehr 2008; Cadogan 2010).

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Theoretical explanations of work–life balance

Research models developed from a number of theoretical perspectives describe specific *types* of multiple role demands, such as strain-based, behaviour-based and time-based demands (Greenhaus and Beutell 1985), and the specific *mechanisms* by which work and non-work roles interact with one another, such as spillover, compensation, conflict and interference (Carlson, Kacmar and Williams 2000; Greenglass 2000). Work–life balance research models based upon an occupational stress theoretical framework are common and include adaptations of the person–environment fit model (Edwards and Rothbard 1999), and models based on role theory (Greenhaus and Beutell 1985; Frone, Russell and Cooper 1992), cognitive appraisal (Edwards and Rothbard 1999), role salience (Noor 2004) and job-demands resources (Voydanoff 2005). Recent refinements to the theoretical explanations of work–life balance focus on the inclusion of *positive* as well as negative relationships between domains, largely via the recognition that multiple demands may facilitate, enrich and/or enhance some work–life balance outcomes (e.g. Hanson, Hammer and Colton 2006; Brough, O'Driscoll and Kalliath 2007; Wayne, Grzywacz, Carlson and Kacmar 2007; Odle-Dusseau, Britt and Greene-Shortridge 2012; Ratanen, Kinnunen, Mauno and Tement 2013).

The array of theoretical models describing work–life balance includes multiple definitions and research variables, with the identified antecedents, moderators and consequences of work–life balance varying across the respective models. Recent reviews of the literature have been useful in ascertaining common relationships among the key constructs (e.g. Allen, Herst, Bruck and Sutton 2000; Eby, Casper, Lockwood, Bordeaux and Brinley 2005; Brough, O'Driscoll, Kalliath, Cooper and Poelmans 2009). Evidence is generally consistent in identifying work and family demands and responsibilities for dependents as key antecedents of work–life balance; gender and social support as key moderating constructs; and satisfaction, performance and levels of both physical and psychological health as the core consequences of work–life balance.

For example, in their reviews of the literature, O'Driscoll, Brough and Biggs (2007) and Brough et al. (2007) discussed the occurrence of both work and family demands as the key negative antecedents of work–life balance. More specifically, the perception of *sufficient time* to meet acute work and family demands is the pertinent issue (Brough, O'Driscoll and Biggs 2009). Family demands are increased both by the *volume* of dependent responsibilities (caring for children, elderly parents, serious ill spouses and other family members) and by specific *acute situations* producing intense demands, such as the birth of a new baby or sudden serious illnesses of spouses/parents/other family members: 'the combination of reduced time available and increased work and family demands for many employed parents obviously creates additional role stress' (O'Driscoll et al. 2007, p. 196). In cases of acute family demands many employees report that where formal leave provisions from work are available and accessible, such leave provision is typically insufficient to adequately meet these additional family demands, thereby increasing levels of role stress and work–life *im*balance (Greenhaus and Parasuraman 2002; Boyar, Maertz, Pearson and Keough 2003; Brough, Holt, Bauld, Biggs and Ryan 2008; Brough et al. 2009; Gatrell, Burnett, Cooper and Sparrow 2013).

The assessment of the key consequences of work–life balance has focused on health, attitudinal and performance outcomes in both work and non-work (mostly family) domains. These family and work outcomes encompass both affective conditions, such as dissatisfaction and distress, and behavioural outcomes, such as absenteeism, lateness and poor performance (Brough and O'Driscoll 2005). In their review, Allen et al. (2000) described the existence of three groups of consequences of work–life balance: (1) work-

related outcomes (e.g. job satisfaction, turnover intentions, absenteeism and performance), (2) non-work-related outcomes (e.g. marital, family and life satisfaction, and family performance) and (3) stress-related outcomes (e.g. psychological strain, burnout and substance abuse). Associations between work–life imbalance/conflict and psychological distress have consistently identified a strong positive relationship: increased conflict is associated with increased psychological distress (Stephens, Townsend, Martire and Druley 2001; Major, Klein and Ehrhart 2002). For example, Kelloway, Gottlieb and Barham (1999), employing cross-lagged analyses, demonstrated that the experience of strain predicted *subsequent* levels of work–life conflict. Research has also demonstrated that the relationship between work–life balance and turnover behaviours is generally stronger compared to the association between job satisfaction and balance (e.g. Allen et al. 2000; Eby et al. 2005; O'Driscoll, Brough and Haar 2011). This strong association between work–life balance and turnover behaviours is explained by the decision of employees experiencing chronic imbalance to seek alternative employment with a more 'family-friendly' employer (Brough et al. 2008; O'Driscoll et al. 2011).

Measuring work–life balance

Specific definitions of work–life balance vary across theoretical models and contribute to the numerous measures employed to assess balance. Reviews (e.g. Kalliath and Brough 2008) have described at least six common definitions of work–life balance occurring within the literature, each with their corresponding measurement instruments. It is important to note that, while these definitions and measures of work–life balance have been successfully applied, empirical assessments of the actual structure of the work–life balance measures they describe are relatively scarce. This lack of empirical scrutiny has been widely acknowledged (e.g. Greenhaus, Collins and Shaw 2003; Kalliath and Brough 2008; Gatrell et al. 2013). A common definition of work–life balance, for example, describes it as a relationship between work/family conflict and work/family facilitation. This definition suggests that balance comprises two individual pathways of conflict (negative pathway) and facilitation (positive pathway), which interact in specific ways to produce balance (e.g. Frone 2003; Grzywacz and Bass 2003). Presumably, this definition considers that work–life balance is a second-order factor composed of the conflict and facilitation (first-order) factors, although this structure is rarely explicitly tested.

Greenhaus et al. (2003) described a measure of work–family balance based on three specific components: *time balance* (equal time between work and family roles), *involvement balance* (equal psychological involvement in work and family roles) and *satisfaction balance* (equal satisfaction with work and family roles). This study was instrumental in distinguishing the concept of 'balance' from work–family conflict and/or facilitation: 'that individuals can – and should – demonstrate equally positive commitments to different life roles; that is, they should hold a balanced orientation to multiple roles' (p. 512). However, Greenhaus et al.'s (2003) definition of balance as consisting of objectively *equal* components of time, involvement and satisfaction between multiple roles has been questioned (e.g. Kalliath and Brough 2008). It is feasible, for example, that a highly engaged employee may work long hours and have fewer hours available for their non-work activities, but perceive no adverse consequences of their 'unequal' roles. That is, they may still perceive their life to be 'balanced' because they enjoy their work, choose to work long hours and also enjoy their (smaller proportion of time spent on) non-work activities. Greenhaus et al.'s (2003) definition of balance also does not account for individuals who choose to work part-time in order to meet their

non-work commitments (e.g. family, sports, study). Such part-time workers may also perceive they have an effective *balance* between their multiple roles, despite the unequal time allocated to each role. It has been suggested that an effective definition of work–life balance should, therefore, also consider the *salience* of a role to each individual (Brough et al. 2007; O'Driscoll et al. 2007).

It is pertinent that new measures of work–life balance based upon the conflict perspective have recently emerged. The new measures aim to either expand the scope of the work–life conflict/balance construct, or else reduce the number of items from existing measures, suggesting that further refinement of the work–life balance concept is required. Fisher, Bulger and Smith (2009) described the development of a new *work/non-work interference and enhancement* four-dimensional, 17-item measure in recognition that aspects of the non-work domain beyond family life should be included in measures of work–life balance. Fisher et al. (2009) tested the structure of their new measure within two small samples of US workers ($N = 540$ and $N = 384$). However, the terminology of Fisher et al.'s (2009) items are complex (i.e. *work/non-work interference and enhancement*) and, we suggest, may present some difficulties for some employee samples to fully comprehend their meaning. Fisher et al. (2009) also only assessed this measure in cross-sectional data, and acknowledged the requirement to adopt a longitudinal methodology to test their hypothesised causal relationships more comprehensively.

A second measure of work–life balance was introduced by Matthews, Kath and Barnes-Farrell (2010), who shortened Carlson et al.'s (2000) work–family conflict measure to six items. Similar to Fisher et al. (2009), Matthews et al. (2010) also provided evidence that their measure was structurally sound within two samples of US workers ($N = 656$ and $N = 202$). Matthews et al.'s (2010) investigation had the advantage of also including longitudinal analyses, which validated their measure against recognised work–life balance antecedent and criterion variables. However, the sample sizes of the longitudinal analyses were small ($N = 95$ and $N = 101$), restricting the scope of the testing. A further significant limitation of Matthews et al.'s work was the conceptualisation of work–life balance as an *absence* of work–life conflict; equating work–life balance with low conflict is somewhat simplistic and provides no recognition of the positive component of work–life balance (e.g. work–life enrichment or work–life enhancement; e.g. Brough et al. 2007).

A third approach to conceptualising work–life balance was proposed by Carlson, Grzywacz and Zivnuska (2009), who focused on role expectations. Carlson et al. (2009) defined balance as a negotiation of role expectations between an individual and his/her partner within the home and work domains. One limitation of Carlson et al.'s (2009) instrument is the inclusion of the term 'family' within the measurement items, making its use problematic for employees with no immediate family members, but who do have other non-work commitments (e.g. study, travel, sporting or community commitments) that may interfere with their paid employment. A similar perspective was also adopted by Valcour (2007) in her development of a five-item measure assessing *satisfaction with work–family balance*, based on the premise that balance is 'an overall level of contentment resulting from an assessment of one's degree of success at meeting work and family role demands' (p. 1512). Valcour's measure is valuable for its recognition of both negative and positive consequences of dual (work and family) role expectations, and also emphasises the highly subjective nature of 'balance', i.e. as an individual's perception of how well he/she is able to 'balance the needs of your job with the needs of your family life' (p. 1517). Valcour (2007) demonstrated the validity of this measure in a test with 572 US employees. Again, the key limitations of Valcour's (2007) study are its cross-sectional analysis, the testing of

the measure only as a dependent variable (rather than also as a predictor of established consequences of work–life balance) and, importantly, an emphasis on *family* and the associated exclusion of other potential non-family non-work commitments. Researchers have repeatedly called for the development of an inclusive, empirically validated measure of work–life balance that is appropriate for all workers, regardless of their marital or family life status (e.g. Greenhaus et al. 2003; Kalliath and Brough 2008; Fisher et al. 2009).

It is apparent that the definition and measurement of work–life balance currently entail a variety of approaches. In their review, Kalliath and Brough (2008) proposed a theoretical definition of work–life balance drawn from the occupational stress theoretical framework. It emphasised the importance of individuals' subjective perceptions of balance, as opposed to objective measures of time and/or satisfaction expended in each domain, and the recognition that these perceptions may change over time in response to changing life priorities (i.e. role salience). These authors also highlighted the positive pathway of balance, in response to evidence that multiple life roles may facilitate and/or enhance health and performance across domains (e.g. Hanson et al. 2006; Wayne et al. 2007).

Kalliath and Brough (2008) defined work–life balance as 'the individual's perception that work and non-work activities are compatible and promote growth in accordance with an individual's current life priorities' (p. 326), although no empirical evidence testing this conceptualisation of work–life balance was provided. Kalliath and Brough (2008) also suggested that the assessment of work–life balance should include question items asking directly about 'balance', primary because the term 'work–life balance' has an increased validity for research participants in comparison to other terms such as 'conflict', 'interference' or 'facilitation'. It was suggested that one method to increase research survey participation by both individual respondents and organisations is to ensure that survey questions are clearly worded and understood (Kalliath and Brough 2008).

The current research

The current research builds upon Kalliath and Brough's (2008) theoretical definition of work–life balance and is also informed by the Conservation of Resources (COR) theory of stress (Hobfoll 1989), which emphasises an individual's drive to create, conserve and protect the quality of their resources. The COR theory is relevant to our conceptualisation of work–life balance in respect of three processes involving perceptions of resource gain or loss. First, work–life balance is a *resource* in the sense that at any given time individuals are able to assess how much of this resource they possess. Second, the assessment of this work–life balance resource is subjective, and cannot necessarily be verified through external observation (e.g. perceptions of co-workers or supervisors). Third, people can gain or lose this resource, and the nature of their work environment (e.g. inflexible work schedules) could be an influential factor in 'resource gain' or 'resource loss'. Drawing on these theoretical arguments, we therefore define work–life balance as *an individual's subjective appraisal of the accord between his/her work and non-work activities and life more generally.*

In consideration of these observations, we present the development and detailed validation of a new work–life balance measure, tested in large multiple independent samples and over multiple time points. We report results from three independent investigations, grouped here into two research studies for convenience. Study 1 describes the development of the work–life balance measure and thoroughly tests its psychometric structure, with the goal of demonstrating the reliable replication of this measure within four independent samples. Specifically, the aim of Study 1 is that the work–life balance

measure will demonstrate acceptable psychometric characteristics (specifically, good fit, reliability and validity) within four independent samples.

Study 1

Method

Participants

Self-report questionnaire data were collected from four independent samples of workers employed in two countries and constituting three separate investigations ($N = 6983$). Investigation 1 involved researchers from two countries who administered the same questionnaire to a local sample of employees; specifically, Australia 1 ($n = 5094$) and New Zealand ($n = 718$; total $N = 5812$). Research participants were purposefully recruited from a heterogeneous sample of industries, including public service, health, education, finance, manufacturing and non-government organisations. Specifically, 13 Australian organisations and 3 New Zealand organisations responded to invitations to participate with this research. Research sample recruitment purposefully included a wide selection of industries to enhance the ability of this research to be based on nationally representative samples of Australian and New Zealand workers. Investigations 2 and 3 consisted of two different research investigations, and the responses to only one measure (work–life balance) from these two investigations, are included here. Investigation 2 consisted solely of respondents from one Australian state education union (Australia 2; $N = 704$), the majority of which were teachers ($n = 607$; 86%). Investigation 3 consisted solely of respondents from one Australian state police service (Australia 3; $N = 467$), the majority of which were police officers ($n = 378$; 85%). Investigations 2 and 3 were included here for two reasons: first, to provide as large as sample as possible for the validation of this new work–life balance measure. Second, to demonstrate the new measure is valid both in occupational samples reporting work–life balance difficulties due to high workloads and/or performing shift work (e.g. Brough and Biggs 2010; Timms and Brough 2013) and in a large, heterogeneous sample of white-collar workers (Investigation 1). Response rates varied across the samples, ranging from 25% to 45%. Responses were higher from organisations who posted surveys to named employees; lower responses were received from organisations who distributed an anonymous mass mail-out of the survey. Response rates were also influenced by some initial technical problems with the electronic survey link for the Australia 1 sample. Table 1 describes the demographic characteristics of the four Study 1 samples of respondents. Details of marital status, dependents and education qualifications were not collected for the Australian 3 sample, due to the different priorities of this specific research investigation.

Procedure

Questionnaires were posted through each organisation's internal mail system to the research participants and returned via reply-paid post directly to the researchers at their respective local institutions. Research ethical approvals from each university and from some specific organisational research ethics committees (e.g. the police service) were granted for each research investigation.

Measures

Work–life balance scale development. A measure of work–life balance was developed by the investigators from a detailed review of the literature and from two exploratory

Table 1. Demographic characteristics of the four Study 1 research samples.

Variable	*Metric*	*Australia 1* % (*n*)	*New Zealand* % (*n*)	*Australia 2* % (*n*)	*Australia 3* % (*n*)
N		5094	718	704	467
Gender	Female:	67% (3413)	68% (488)	75% (528)	16% (75)
	Male:	33% (1681)	30% (215)[a]	25% (176)	84% (392)
Age	Range (years):	18–71	19–74	20–60	28–68
	M (years):	41	41	42	46
	SD:	10	11	5	7
Tenure	Range (years):	0.5–50	0.5–43	0.5–50	4–43
	M (years):	9	7	4	23
	SD:	9	8	9	8
Work hours per week	Range (hours):	2–90	2–90	2–75	2–80
	M (hours):	40	41	44	45
	SD:	12	11	13	11
Marital status	Married:	54% (2751)	72% (517)	79% (556)	–
	Divorced/single:	46% (2343)	23% (165)	20% (141)	
Dependents[b]	Range:	0–7	0–6	0–4	–
	None:	28% (1426)	58% (416)	22% (155)	
	≥1:	64% (3260)	42% (302)	78% (549)	
Education	Degree:	34% (1732)	44% (316)	69% (486)	–
	Post-graduate:	23% (1172)	12% (86)	15% (106)	

Note: – signifies data not collected.
[a] $n = 15$ (2%) data missing for New Zealand gender.
[b] dependent children, relatives or any other individuals.

(qualitative) studies. Qualitative face-to-face interviews were conducted with 81 workers in two countries: Australia ($n = 40$) and New Zealand ($n = 41$), to assess their perceptions and conceptions of work–life balance and to generate scale items (Brough, O'Driscoll and Biggs 2009). Nineteen potential scale items were developed from the qualitative component. The researchers reviewed the face validity of the items for workers (i.e. consideration was given to developing a short list of items that could be understood easily by workers at all levels), and in consideration of our definition of work–life balance. Items that were overly esoteric or complicated were deleted, resulting in four items pertaining to work–life balance.

The respondents were asked to respond to the items by reflecting on their work and non-work activities (i.e. regular activities outside of work such as family, friends, sports and study) over the past few months. The four items were: (1) 'I currently have a good balance between the time I spend at work and the time I have available for non-work activities', (2) 'I have difficulty balancing my work and non-work activities' (negatively worded item), (3) 'I feel that the balance between my work demands and non-work activities is currently about right' and (4) 'Overall, I believe that my work and non-work life are balanced'. Respondents indicated their agreement on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). High scores represent perceptions of high balance. The work–life balance measure is presented in full in the Appendix.

Demographic questions of gender, marital status, work hours, tenure and educational qualifications were also included in the survey. Respondents were asked to indicate whether they currently had responsibilities for dependent children, relatives or any other individuals.

Data analysis

The four-item work–life balance measure was subjected to confirmatory factor analysis (CFA) in each of the four samples. Preparation of the data sets for structural equation modelling (SEM) included the deletion of cases missing at least half of the item responses from each individual measure within SPSS Version 22 (e.g. Brough, O'Driscoll and Kalliath 2005). This resulted in the deletion of $n = 154$ cases from the Australia 1 data, $n = 19$ cases from the New Zealand data, $n = 0$ cases from the Australia 2 data and $n = 1$ case from the Australia 3 data. Missing values analysis employing expectation-maximisation (EM) was conducted (in SPSS) on each data set to facilitate analysis with SEM using Amos (Arbuckle 2006). Hu and Bentler's (1998) recommended two-index presentation strategy for the reporting of goodness-of-fit statistics was adopted (i.e. the inclusion of the χ^2 statistic *and* other alternative fit indices). Seven alternative fit statistics, plus the χ^2 statistic, are reported to overcome any effects of sample size, misspecifications or other violations of assumptions represented by each individual fit statistic.

Results

Structure of the work–life balance measure

The CFA results are presented in Table 2 and Figure 1. The fit indices indicate that the measure has a good fit overall. The GFI, TLI and CFI estimates exceeded or were equal to 0.97. The PCFI estimates were low (0.33), as were the SRMR estimates (≤ 0.03). The RMSEA estimates ranged from 0.02 to 0.07, indicative of a good fit, although not all of the

Table 2. Confirmatory factor analysis of the work–life balance measure.

Data samples	*n*	χ^2	*df*	χ^2/df	*SRMR*	*GFI*	*TLI*	*CFI*	*PCFI*	*RMSEA*
Australia 1	5094	81.14*	2	40.57	0.01	0.99	0.98	0.99	0.33	0.07
New Zealand	718	21.23*	2	10.61	0.03	0.99	0.97	0.99	0.33	0.07
Australia 2	704	8.32*	2	4.16	0.01	0.99	0.99	0.99	0.33	0.02
Australia 3	467	14.31*	2	7.16	0.01	0.99	0.98	0.99	0.33	0.06

*$p < 0.001$.

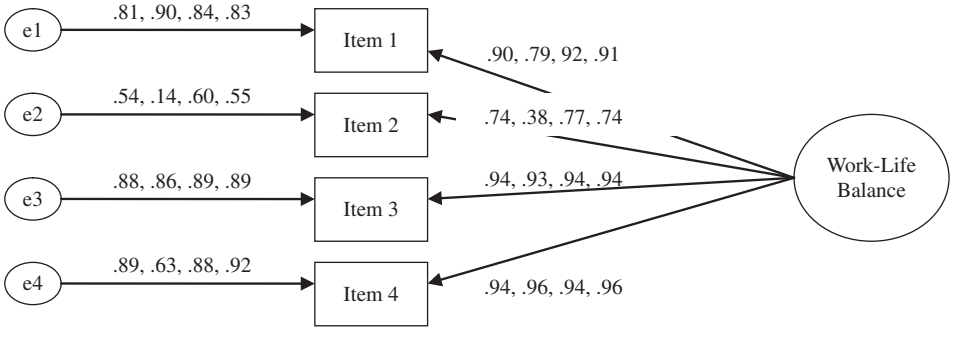

Figure 1. CFA standardised estimates of the work–life balance measure.
Note: Values to the left of the observed variables represent squared multiple correlations (R^2). Values to the right of the observed variables represent standardised factor loadings (β). Four sample results presented in order: Australia 1 ($n = 5094$), New Zealand ($n = 718$), Australia 2 ($n = 704$) and Australia 3 ($n = 467$).

normed χ^2 results (χ^2/df) met the recommended threshold levels. Figure 1 illustrates that the four work–life balance items accounted for acceptable proportions of variance (square multiple correlations [R^2] greater than 0.30). The internal reliability estimates (Cronbach's alpha) for the work–life balance measure for each sample were also acceptable, ranging from 0.84 to 0.94 (Table 3).

Discussion

The analyses validated the four-item work–life balance measure in four independent samples from two countries. The unidimensional factor structure of the work–life balance measure was replicated in each sample, producing adequate and comparable fit statistics. Each of the four work–life balance items accounted for acceptable levels of variance in the latent construct, and the measure produced high levels of internal reliability within all four samples. The work–life balance measure also produced acceptable goodness-of-fit in four independent samples. The psychometric structure of this new measure was thus found to be acceptable, thereby supporting the research aim. The large sample sizes and four independent samples provided a thorough test of the psychometric characteristics of this work–life balance measure, with the testing comparing favourably with recent descriptions of other work–life balance measures (Valcour 2007; Carlson et al. 2009; Fisher et al. 2009; Matthews et al. 2010). Therefore, further analysis to test the validity of the work–life balance measure (Study 2) was deemed worthwhile.

Study 2

Study 2 tested the criterion-related validity of the work–life balance measure with a recognised antecedent variable (work demands) and four recognised outcome variables (job satisfaction, family satisfaction, psychological strain and turnover intentions; e.g. Eby et al. 2005; Brough et al. 2007). Study 2 consisted of both cross-sectional and longitudinal analyses to compare our results with published (mostly cross-sectional) findings and to test the hypothesised research associations over time – a point that is still repeatedly requested (e.g. Brough and O'Driscoll 2010; de Jonge, van Vegchel, Shimazu, Schaufeli and Dormann 2010). Study 2 tested two specific research hypotheses:

Hypothesis 1 (cross-sectional): Work–life balance will exhibit significant negative cross-sectional relationships with work demands, turnover intentions and psychological strain, and significant positive cross-sectional relationships with job satisfaction and family satisfaction.

Hypothesis 2 (longitudinal): The work–life balance measure will demonstrate significant negative relationships over time with turnover intentions and psychological strain, and significant positive relationships over time with job satisfaction and family satisfaction.

Method

Participants

Study 2 consisted of two Study 1 samples: Australia 1 ($N = 5094$) and New Zealand ($N = 718$). Due to organisational attrition approximately half of the Australia 1 participants ($n = 2500$) were also administered the Time 1 questionnaire for a second time

Table 3. Descriptive statistics of the Study 1 and Study 2 research variables.

	Study 1			*Study 2*													
	Work–life balance			*Work demands*			*Family satisfaction*			*Job satisfaction*			*Turnover intentions*			*Strain*		
Sample	*M*	*SD*	α	*M*	*SD*	α	*M*	*SD*	α	*M*	*SD*	α	*M*	*SD*	α	*M*	*SD*	α
Australia 1 ($n = 5094$)	3.35	2.46	0.93	3.62	1.02	0.89	5.86	2.16	0.95	3.91	1.03	0.83	2.25	1.60	0.85	0.97	0.49	0.88
New Zealand ($n = 718$)	3.51	2.74	0.84	3.65	1.01	0.88	5.69	2.19	0.96	3.92	0.98	0.80	2.34	1.80	0.84	0.91	0.61	0.82
Australia 2 ($n = 704$)	2.58	2.30	0.94															
Australia 3 ($n = 467$)	3.39	2.15	0.94															

after 12 months (see discussion under Research Limitations). Thirty-two percent ($N = 823$) of the sampled Time 2 respondents could be matched as providing responses to *both* Time 1 and Time 2 questionnaires. Questionnaire matching was conducted using a self-generated password, noted on each questionnaire by each respondent. Study 2, therefore, tested both the cross-sectional and the longitudinal relationships between seven research variables with this matched subsample. No significant differences in the research variables were noted between those respondents who completed both Time 1 and Time 2 surveys and those respondents who completed Time 1 surveys only.

Measures

Work demands. Boyar, Carr, Mosley and Carson's (2007) five-item measure of work demands was included. A sample item is: 'My work demands a lot from me'. Respondents indicated their agreement with each item on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). High scores represent high work demands. Cronbach's alpha coefficients were assessed with the two Investigation 1 samples (Table 4) and produced coefficients of 0.89 (Australia 1) and 0.88 (New Zealand).

Job satisfaction. Job satisfaction was assessed with the three-item instrument from the Michigan Organisational Assessment Questionnaire (Seashore, Lawler, Mirvis and Cammann 1982). A sample item is: 'All in all I am satisfied with my job'. Responses were recorded on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). A high score indicates high job satisfaction. Cronbach's alpha coefficients were assessed with the two Investigation 1 samples (Table 4) and produced coefficients of 0.83 (Australia 1) and 0.80 (New Zealand).

Family satisfaction. Family satisfaction was assessed with three items from Edwards and Rothbard's (1999) instrument. A sample item is: 'In general, I am satisfied with my family/home life'. Responses were recorded on a seven-point scale from 1 (*strongly agree*) to 7 (*strongly disagree*). High scores indicate high family satisfaction. Cronbach's alpha coefficients were assessed with the two Investigation 1 samples (Table 4) and produced coefficients of 0.95 (Australia 1) and 0.96 (New Zealand).

Turnover intentions. The three-item turnover intentions measure described by Brough and Frame (2004) was included as a criterion variable. A sample item is: 'How often do you actively look for jobs outside your organization?' Items were measured on a frequency scale from 1 (*never*) to 5 (*a great deal*). High scores indicate high turnover intentions. Cronbach's alpha coefficients were assessed with the two Investigation 1 samples (Table 4) and produced coefficients of 0.85 (Australia 1) and 0.84 (New Zealand).

Psychological strain. The eight-item version (Kalliath, O'Driscoll and Brough 2004) of the General Health Questionnaire (Goldberg 1972) was utilised as a composite measure of psychological strain. Items were prefaced with the stem: 'Have you recently experienced the following in the past few weeks . . . ' and an example item is: 'been feeling unhappy or depressed?' Responses were recorded on a frequency scale from 0 (*more so than usual*) to 3 (*much less than usual*). High scores represent high levels of strain. Cronbach's alpha coefficients were assessed with the two Investigation 1 samples (Table 3) and produced coefficients of 0.88 (Australia 1) and 0.82 (New Zealand).

Data analysis

The longitudinal analysis utilised data matched to the same Australia 1 respondents at Time 1 and Time 2; unmatched cases were deleted. The longitudinal SEM controlled for

Table 4. Bivariate associations of the research variables ($N = 823$).

	Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
1	Gender													
2	Marital status	0.11**												
3	Dependents	−0.04	0.25**											
4	Work hours	−0.21***	−0.02	−0.15										
5	Demands (T1)	0.03	0.10**	0.01	0.46***									
6	WLB (T1)	0.04	0.06	−0.13	−0.37***	−0.50***								
7	Family satisfaction (T1)	0.12***	0.08*	−0.10	−0.11**	−0.05	0.30***							
8	Job satisfaction (T1)	0.16***	0.11***	−0.14	−0.05	−0.07*	0.29***	0.18***						
9	Turnover (T1)	−0.11**	−0.18***	0.13	0.07*	0.12***	−0.22***	−0.10**	−0.58***					
10	Strain (T1)	−0.05	−0.12***	0.27***	0.10**	0.15***	−0.37***	−0.40***	−0.44***	0.36***				
11	Family satisfaction (T2)	0.12***	0.05	−0.07	−0.12***	−0.08*	0.20***	0.59***	0.15***	−0.09**	−0.29***			
12	Job satisfaction (T2)	0.11**	0.08**	−0.21*	−0.03	−0.13***	0.28***	0.16***	0.54***	−0.37***	−0.28***	0.18***		
13	Turnover (T2)	−0.09**	−0.20***	0.10	0.13***	0.16***	−0.26***	−0.14***	−0.37***	0.53***	0.25***	−0.12***	−0.56***	
14	Strain (T2)	−0.01	−0.11**	0.29***	0.10**	0.14***	−0.27***	−0.23***	−0.24***	0.18***	0.41***	−0.36***	−0.44***	0.37***

Note: All tests are two-tailed. T1 = Time 1, T2 = Time 2, WLB = work–life balance. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

each Time 1 variable via correlated residuals with their respective Time 2 variable residuals.

Results

Scale descriptives and correlations

Scale descriptive statistics (mean scores and standard deviations) and bivariate associations for the research variables are reported in Tables 3 and 4. Bivariate associations were calculated to assess whether the work–life balance measure was associated with the research variables in the expected directions. For brevity, bivariate results only from the longitudinal sample are reported in Table 4. The work–life balance measure demonstrated significant relationships with the Time 1 and Time 2 variables in the expected directions; there were significant negative relationships with work demands, turnover intentions and psychological strain, and significant positive relationships with family satisfaction and job satisfaction.

SEM cross-sectional analyses

The criterion-related validity of the work–life balance measure was first tested in a cross-sectional structural model, via SEM (Hypothesis 1). The model assessed the extent to which the simultaneous testing of pathways replicated the bivariate associations between the research variables, and a summary of these results is presented in Table 5 and Figure 2. The majority of associations between work–life balance and the latent variables were statistically significant and in the expected directions. It can be observed that job demands were negatively associated with work–life balance ($\beta = -0.46$; $p < 0.001$). Work–life balance produced significant positive associations with both job satisfaction and family satisfaction, and significant negative associations with psychological strain and two of the four estimates of turnover intentions, offering support for Hypothesis 1. The goodness-of-fit statistics (Table 5) indicate that the SEM model accounted for a good fit to the data and acceptable proportions of variance (SRMR).

SEM longitudinal analyses

To provide an additional test of the criterion-related validity of the work–life balance measure, and to assess causal relationships, the ability of work–life balance to predict the criterion variables over time (Hypothesis 2) was assessed in a SEM model with the Australia 1 longitudinal data. No cross-sectional paths between the criterion variables were included in this model, to estimate variance produced only by the longitudinal associations. The results are depicted in Figure 3 and the goodness-of-fit statistics are presented in row 3 of Table 5. The work–life balance (Time 1) measure was significantly

Table 5. Cross-sectional and longitudinal SEM goodness-of-fit statistics.

Sample	*N*	χ^2	*df*	χ^2/df	*GFI*	*TLI*	*CFI*	*PCFI*	*SRMR*	*RMSEA*
Cross-sectional results										
1. Australia 1	5094	3345.86*	266	12.58	0.95	0.96	0.97	0.86	0.03	0.05
2. New Zealand	718	633.58*	266	2.39	0.94	0.96	0.97	0.86	0.06	0.04
Longitudinal results										
3. Australia 1	823	3309.27	793	4.17	0.83	0.89	0.90	0.83	0.16	0.06

*$p < 0.001$.

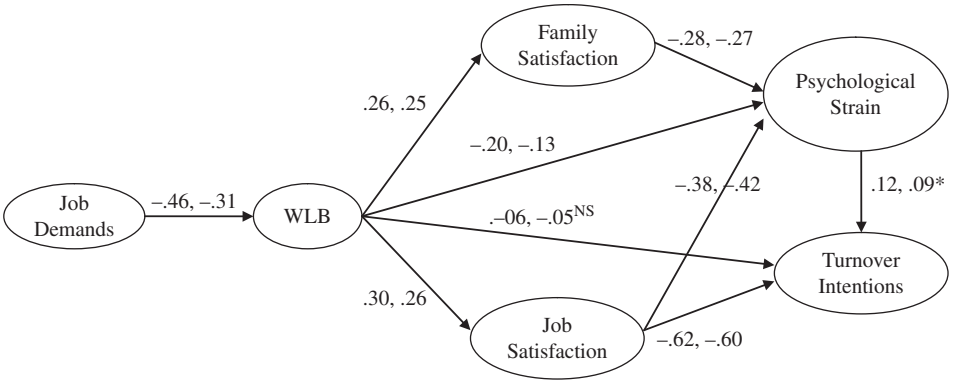

Figure 2. Cross-sectional SEM of work–life balance.
Note: Values represent standardised regression weights. Two sample results presented in order: Australia 1 ($n = 5094$) and New Zealand ($n = 718$). All loadings significant at $p < 0.001$, except for $*p < 0.05$ and NS = non-significant. WLB = work–life balance.

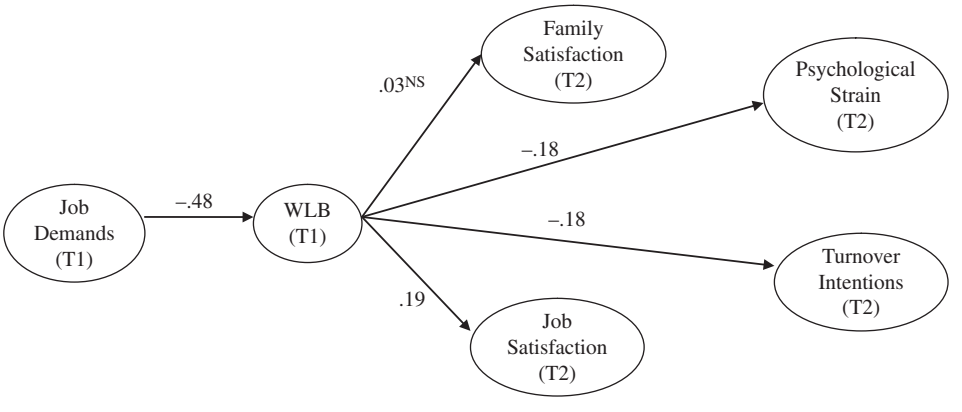

Figure 3. Longitudinal SEM of work–life balance ($N = 823$).
Note: Values represent standardised regression weights. All loadings significant at $p < 0.001$, except for NS = non-significant. WLB = work–life balance. T1 = Time 1, T2 = Time 2.

predictive of three of the four Time 2 criterion variables: job satisfaction, turnover intentions and psychological strain. The path between work–life balance and family satisfaction was not significant. The fit results were acceptable, although weaker in strength as compared to the cross-sectional results, supporting Hypothesis 2.

Discussion

The work–life balance measure demonstrated adequate levels of criterion-related validity in both the bivariate and multivariate analyses, supporting Hypotheses 1 and 2. These analyses demonstrated that the work–life balance measure had significant associations in the expected directions with a recognised antecedent of work–family balance (i.e. work demands) and four recognised criterion variables (i.e. psychological strain, turnover intentions, family satisfaction and job satisfaction). The work–life balance measure also demonstrated predictive validity over time for three of the four criterion variables within

the longitudinal analyses, offering support to previous observations describing strain, turnover intentions and satisfaction as the key consequences of work–life balance (Allen et al. 2000; Brough and O'Driscoll 2005; O'Driscoll et al. 2011). The validity of this work–life balance measure was therefore substantiated. The testing of longitudinal relationships within a large sample is noteworthy and supports documented causal relationships between work–life balance and key health, satisfaction and job turnover variables (e.g. Brough et al. 2009).

General discussion

Work–life balance

This research described the development and comprehensive testing of a concise measure of work–life balance. The measure was found to be psychometrically sound over time and in multiple samples and produced expected associations with key antecedent (job demands) and criterion variables (family satisfaction, job satisfaction, psychological strain and turnover intentions). Therefore, the structural integrity and predictive ability of the new work–life balance measure was considered satisfactory. Further, the new measure of work–life balance demonstrated significant associations in the hypothesised directions with a selection of work-based variables (e.g. work demands and job satisfaction), home-based variables (e.g. family satisfaction) and context-free variables (e.g. psychological strain).

A topical discussion within the work–life balance literature is the use of appropriate terminology. Since the mid-1970s, the term 'work–family' has been employed to describe the multiple demands of these two domains (e.g. Cooper and Marshall 1976). In this sense, 'family' was considered to largely encompass all non-work activities and also reflect the high levels of demand generated specifically by dependents (i.e. young children), for which 'balance' was sought. In response to issues such as the backlash against 'work–family' employment policies by employees without dependent responsibilities (e.g. Hegtvedt, Clay-Warner and Ferrigno 2002), a number of alternative terms have been employed, including 'job and off-job' (O'Driscoll, Ilgen and Hildreth 1992), 'work and non-work' (Burke 1998) and 'work–life' (Hilbrecht, Shaw, Johnson and Andrey 2008). Although each term has specific appeal, the term 'work–life balance' is commonly adopted by organisations and is widely cited within the human resources literature (Haar, Bardoel and De Cieri 2008; Timms, Brough, O'Driscoll, Siu and Kalliath, in press).

In view of the widespread reference to work–life balance by industry and workers (Haar et al. 2008; O'Driscoll et al. 2011), it is important to have a measure available that reflects the essential characteristics of this construct. In our opinion, the essential characteristics of work–life balance describe how employees successfully obtain joint commitments to their work and non-work roles according to their own perceptions of role salience, irrespective of their proportions of time and involvement physically spent in these roles; this successful subjective commitment, therefore, constitutes 'work-life balance'. We, therefore, concur with previous discussions of work–life balance which similarly described it as an 'evenhanded alertness' (Marks and MacDermid 1996, p. 421), encompassing all life domains of 'work, play, and love' (Kofodimos 1993, p. xiii), and measured 'as a matter of degree' (Greenhaus et al. 2003, p. 513) on its own continuum. We concur that this concept of work–life balance is distinct from work–family linking mechanisms such as role conflict or role enhancement which have been more commonly explored. We also argued above that an important element of work–life balance is an individual's subjective perception of balance. Our use of the term 'work–life balance' is intended to encompass the broad range of non-work demands and activities that

employees experience, and that are included within work–life balance organisational policies (e.g. personal relationships and health, family responsibilities, volunteer work, sporting commitments, study, religion and travel commitments). Our results offer support for the adoption of the simple work–life balance terminology, and acknowledge its wide appeal to both researchers and organisations.

The current research also illustrated the importance of widening the scope of the testing of organisational behaviour theories related to employee health and well-being. Repeated validation of theories and/or measures in small, cross-sectional, culturally comparable samples is a significant limitation to theory building and knowledge advancement. Researchers are increasingly recognising the value of producing theoretically sound results with broad and diverse samples (e.g. Allen et al. 2013; Brough et al. 2013). Calls for theory testing with samples residing in regions other than the USA and Europe have, for example, recently increased, in an attempt to address previous limitations and to widen the support for key organisational behaviour theories and measures (Tsui et al. 2007; Gelfand et al. 2008; Cadogan 2010; Brough et al. 2013; Siu et al., in press). In response, the current research directly addressed these calls by including multiple non-US and non-European research samples.

Research limitations

The level of respondent attrition within the longitudinal data collection was high, resulting in a smaller than anticipated matched Time 1–Time 2 data set ($N = 823$). This attrition was particularly unfortunate considering that specific steps had been included to avoid such an occurrence, namely the provision of detailed organisational Time 1 feedback reports and *individualised* Time 1 feedback reports to all interested participants. One potential reason for the high attrition was the timing of this study, which coincided with the aftermath of the Global Financial Crisis. Some of the participating organisations had been dissolved at Time 2, or they had merged with other organisations. Thus, our research participant sample pool was reduced by approximately 50% for the Time 2 survey administration. Specifically, at Time 1 the Australia 1 respondents totalled $N = 5094$ sampled from 14 organisations; but of these Time 1 respondents only 2500 participants sampled from eight organisations were available to receive a Time 2 survey. Further, against a backdrop of job losses and the question of their financial survival, the willingness of the surviving organisations to engage in a second round of questionnaire administrations focused on work–life balance noticeably declined, which resulted in reduced assistance with internal organisational survey promotion exercises. The reduction in priority of human resources initiatives for organisations during times of economic stress has been previously documented (e.g. Cooper 2009), and typically results in lean data collection periods for researchers. We note that the causal relationships between work–life balance and the key antecedents and criterion variables reported by this research do support previous observations (e.g. Eby et al. 2005; Siu et al. 2010) and, therefore, do not appear to be unduly influenced by this response rate.

A second research limitation to be considered is any potential clustering of the data. The data could be clustered in a number of ways including by sample, country, organisation, employment level, work role, and by various demographic groupings (single, dependents, age, income, etc.). We acknowledge that further testing of this measure should consider any impact of data clustering and any inflation of Type I estimates (Cohen, Cohen, West and Aiken 2003). The consideration of the extent to which multiple samples are required to be similar to each other is a highly pertinent point. Some researchers have

argued, for example, that differences between sample groups are beneficial in demonstrating the validity of theoretical frameworks across heterogeneous respondents (e.g. Spector et al. 2007; Brough et al. 2013), which was the approach adopted here. Researchers have also identified how the value of providing multiple sample research comparisons exceeds any concerns rising from the use of convenience samples which may not be complete random samples (e.g. Straus 2009).

A final research limitation is our use of the EM method of missing values analysis. Although EM is useful when conducting preliminary statistical analyses in SPSS (i.e. correlations, Cronbach's alpha test, etc.), we acknowledge that the EM method does not produce standard errors. The use of alterative methods of missing values analysis, most noticeably the full information maximum likelihood (FIML), when conducting SEM has been noted to be preferable by some authors (e.g. Graham 2009; Schlomer, Bauman and Card 2010), although any differences in results when using FIML compared to EM are typically noted to be small (Allison 2003). We do, therefore, acknowledge that a test of our results employing the FIML method and/or estimating bootstrapping confidence intervals would also be valuable.

Conclusions

This research presents a new short and valid measure of work–life balance, suitable for inclusion in subsequent investigations. The unidimensional structure of the balance measure was demonstrated in four independent samples ($N = 6983$), and its criterion-related validity was established. Specifically, work demands were found to be a significant antecedent of work–life balance, while job satisfaction, family satisfaction, psychological strain and turnover intentions were each significant outcomes of work–life balance. These results were replicated within longitudinal analyses (excepting family satisfaction). The research thus demonstrated that the items asking directly about 'work–life balance' had an acceptable level of face validity for the respondents. Overall, this research contributes to the work–life interface literature by validating a concise work–life balance instrument with robust psychometric properties.

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Appendix: Work–life balance measure

When I reflect over my work and non-work activities (your regular activities outside of work such as family, friends, sports, study, etc.), over the past three months, I conclude that:

Items	*Strongly disagree*	*Disagree*	*Neutral*	*Agree*	*Strongly agree*
1. I currently have a good balance between the time I spend at work and the time I have available for non-work activities.	1	2	3	4	5
2. I have difficulty balancing my work and non-work activities.	1	2	3	4	5
3. I feel that the balance between my work demands and non-work activities is currently about right.	1	2	3	4	5
4. Overall, I believe that my work and non-work life are balanced.	1	2	3	4	5

Note: Item 2 is reverse scored.