Retirement Resources Inventory: Construction, factor structure and psychometric properties

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A B S T R A C T

The scientific investigation of the relationship between resources and retirement well-being is impeded by the lack of proper measurement of resources. This study reports on the development of an inventory that assesses resources relevant to retirement well-being. The 35-item Retirement Resources Inventory (RRI) is a self-report measure consisting of three factors. The RRI was extensively evaluated in a sample of 267 Australian retirees aged 50 years or above. In general, the three subscales of the RRI were shown to possess good internal consistency (0.81–0.89) and test–retest reliability (0.83–0.88) within a one-month interval. Retirement resources, as assessed by the RRI, significantly accounted for additional variance in both retirement satisfaction (16%) and retirement adjustment (22%) above and beyond that explained by demographic variables. More importantly, results from cross-lagged panel analysis indicated that retirement resources predicted retirement well-being rather than the reverse. Findings from the current study provide strong support for the resource perspective, which proposes that resources are critical to well-being in retirement. Theoretical and practical implications of these findings for retirement planning and designing retirement interventions are discussed.

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1. Introduction

Retirement has the potential to be a stressful life transition in late adulthood, often inducing a wide range of significant changes such as a loss of stable income, detachment from colleagues at work and an increase in unstructured time. Although the vast majority gradually become and are well-adjusted to the changes in the retirement phase, a significant number of retirees still suffer from poor adjustment and well-being (Pinquart & Schindler, 2007; Wang, 2007). The problem of poor retirement well-being amplifies as more baby boomers enter the retirement phase. It is clear that greater efforts are needed in identifying and promoting the antecedents of retirement well-being. Amongst the numerous variables impacting on retirement well-being, resources stand out as a crucial variable generating research interest in more recent years (e.g., Kubicek, Korunka, Raymo, & Hoonakker, 2011; Wang, 2007; Wang, Henkens, & van Solinge, 2011; Wang & Shultz, 2010). Whilst the resource perspective is gaining momentum, due mainly to its flexibility in accommodating changes to well-being, its proximal distance to well-being (Wang et al., 2011), and its potential for convenient measurement, there is currently inadequate empirical evidence to support this theoretical perspective. By developing a comprehensive measure of resources that pertain to retirement well-being, we hope to test the key hypotheses underlying the resource perspective and promote its future use.

1.1. The resource perspective as a newly emerging perspective

The central assumption supported by the resource perspective is that resources, as a key element in stress coping, are critical to conditioning an individual's well-being (Hobfoll, 2002). Resources refer to the total capacity that one values or uses to fulfill his

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or her valued needs and goals (Hobfoll, 2002). The term 'retirement resources' has been adapted in this study to refer to resources that are crucial in the retirement phase. For example, good physical health enables retirees to engage in various daily activities such as gardening and grocery shopping; having access to a stable social network enables retirees to gather information about possible opportunities to structure their retirement lives.

The conservation of resources (COR, Hobfoll, 1988, 1989) theory is a prominent integrated resources model that views resources in a broad sense. Several key assumptions underlying this theory are useful in explaining the impact of resources on retirement well-being. First, conceptually related resources exist in clusters such that they are either present or absent in an aggregate manner. Second, positive well-being is experienced when there are resource surpluses. Third, a potential or actual loss of resource, or an absence of anticipated resource accumulation leads to a decline in well-being; on the contrary, a resource gain results in greater well-being. Fourth, resource loss can be offset by either direct or indirect resource replacement.

Theorists adopt divergent approaches when examining resources. Some theorists emphasize the importance of a single category of resources: the economic model (Hershey et al., 2010) focuses on financial resources; social–cognitive theory (e.g., Bandura, 1986) focuses on social support; and the transactional model of stress (Lazarus, 1991) emphasizes personal resources including commitment (motivational) and beliefs (cognitive). Conversely, other theorists promote multiple domains of resources as vital to well-being. Wang and Shultz (2010) and Wang et al. (2011) identified six domains of resources that were important to retirees: physical, financial, social, emotional, cognitive and motivational resources. Hendricks and Hendricks (1986) argued that three categories of resources including health, social–familial, and economic resources are crucial during the aging process.

Although theories promoting a single category of resources provide valuable and deep insights into the nature of these as well as the mechanisms by which these operate, we argue that a multidimensional model integrating these resources is optimal due to increased comprehensiveness and predictive power in the context of retirement well-being. One of the goals of this study is to seek empirical evidence for the underlying structure of the six-factor model proposed by Wang and Shultz (2010) and Wang et al. (2011), which like other multi-dimensional models, remains unproven.

1.2. Retirement Resources Inventory

The Retirement Resources Inventory (RRI) encompasses six resource domains recommended by Wang and Shultz (2010) and Wang et al. (2011). An overview of resources within these six domains and how these are relevant to retirement well-being is provided below.

1.2.1. Physical resources

Physical and financial resources are the two most researched resource categories in the retirement context. Past studies have shown that perceived health (Kim & Moen, 2002; Kubicek et al., 2011; Quick & Moen, 1998; van Solinge & Henkens, 2008), a lack of disability and high energy levels (Gall, Evans, & Howard, 1997) were examples of physical resources that correlated with retirement well-being.

1.2.2. Financial resources

Financial resources, including post-retirement income (e.g., Quick & Moen, 1998; van Solinge & Henkens, 2008) and a sense of income adequacy (e.g., Kim & Moen, 2001, 2002), are crucial in determining retirement well-being. Post-retirement income can be obtained from a variety of sources such as personal savings, investments, superannuations and government pensions. In particular, pension expectation (Mutran, Reitzes, & Fernandez, 1997) and eligibility (Reitzes & Mutran, 2004) were found to be positive predictors of retirees' attitude toward retirement.

1.2.3. Social resources

Social resources, often referred as social support, can be broken down into three sub-dimensions: sources and quality of social interactions, and the type of social support. Two main sources of social support in retirement are valued relationships (e.g., family, friends, and spouse) and activities (e.g., leisure engagement, group affiliations, and bridge employment) (Kim & Feldman, 2002; Kim & Moen, 2001, 2002; Taylor & Doverspike, 2003). The presence of marriage, family, friendship networks and group affiliations all play a role in enhancing retirement well-being (see Kim & Moen, 2001 for a review). Research also indicates that the quality of social interactions and the type of social support matter. Supportive interactions with friends and family (Hong & Duff, 1997; Levitt, Antonucci, Clark, Rotten, & Finley, 1985) and a sense of closeness to one's spouse (Kubicek et al., 2011) produce greater life satisfaction and psychological functioning among retirees respectively. The type of social support received by a retiree can be tangible, informational, or emotional (see Krause, 1997a, 1997b for details). All three types of social support significantly predicted retirement satisfaction among retirees 10 months after retirement (Taylor, Goldberg, Shore, & Lipka, 2008). In particular, emotional support positively predicted women's retirement satisfaction (Price & Balaswamy, 2009).

1.2.4. Emotional resources

Positive emotions and emotional intelligence emerged as two significant emotional resources that could potentially benefit retirement well-being. Recently, Lockenhoff, Terracciano and Costa (2009) reported a positive correlation between retirement satisfaction and the 'E6: positive emotions' facet of extraversion. This is a good indication that positive emotions are beneficial to a

person's retirement satisfaction thus well-being. In fact, growing evidence also points to the role of positive emotions in stress coping (see Folkman & Moskovitz, 2000 for review). A second key emotional resource, emotional intelligence (EI), is defined as the ability to perceive, generate, understand and manage emotions (Mayer & Salovey, 1997). In a series of two studies, Slaski and Cartwright (2002, 2003) found that EI was associated with less perceived stress and greater well-being; and the relationship between EI and wellbeing was causal such that EI training boosted both EI and well-being. Expanding these findings, it can be concluded that EI helps promote well-being during stressful situations like retirement transition.

1.2.5. Cognitive resources

RRI covers two major facets of cognitive resources—adaptive cognitions (self-esteem, mastery, and optimism) and normal cognitive functioning. Self-esteem (e.g., Mutran et al., 1997; Price & Balaswamy, 2009; Reitzes & Mutran, 2004) and mastery (e.g., Donaldson, Earl, & Muratore, 2010; Price & Balaswamy, 2009) were previously shown to predict various indices of retirement well-being. The broad construct 'mastery' captures self-efficacy and LOC (Skaff, Pearlin, & Mullan, 1996), which are also robust predictors of retirement well-being (self-efficacy: Taylor & Shore, 1995; van Solinge & Henkens, 2005; Wells & Kendig, 1999; internal LOC: Gall et al., 1997; Lowis, Edwards, & Burton, 2009). Optimism provides stress resistance (Hobfoll, 2002) and encourages goal setting and goal pursuit (Lent, 2004), and it is therefore hypothesized to be an important cognitive resource in retirement.

Cognitive abilities vital for successful aging include memory, processing speed, problem solving skills and learning ability (Fernández-Ballesteros et al., 2004; Park, 2000; Poon et al., 1992; Strawbridge, Wallhagen & Cohen, 2002). Previous studies reported that cognitive functioning predicted successful aging (Strawbridge et al., 2002), positive affect in older adults (Jones, Rapport, Hanks, Lichtenberg, & Telmet, 2003) and adaptation in older adults (Poon et al., 1992). We anticipate a positive relationship between normal cognitive functioning and retirement well-being in the current study.

1.2.6. Motivational resources

Two strategies are considered useful in helping retirees adapt to changes and manage their goals effectively—tenacious goal pursuit (TGP) and flexible goal adjustment (FGA) (Brändtstadter & Renner, 1990). TGP and FGA refer to the degree to which an individual can pursue his/her goals tenaciously despite hindrances and the degree to which one can adjust his/her goals to life circumstances at hand respectively. For example, TGP might be demonstrated if a retiree found it difficult to learn a new instrument, but invested more time practicing after class so that he could still achieve his goal (mastering the instrument). FGA might be demonstrated if a retiree abandoned her goal of traveling around the world when she did not have sufficient funds. In the retirement context, TGP and FGA positively predict self-esteem, life satisfaction, psychological functioning, but negatively predict depressive symptoms among retirees (Kubicek et al., 2011; Trépanier, Lapierre, Baillargeon, & Bouffard, 2001). Empirical evidence suggested that TGP and FGA not only increased retirement well-being, but they also promoted positive affect (Heyl, Wahl, & Mollenkopf, 2007) and well-being (Frazier, Newman, & Jaccard, 2007) among older adults.

1.3. A new measure of retirement resources—the Retirement Resources Inventory (RRI)

The RRI is designed to promote a holistic approach to examining retirement resources. The need for a new measure of retirement resources also arises because existing coping resources inventories (e.g., Coping Resources Inventory for Stress, Matheny, Aycock, Curlette, & Junker, 2003; Coping Resources Inventory, Hammer & Marting, 1988) are both difficult to obtain by the research community and non retirement-specific. The RRI is expected to help identify resources that need to be incorporated in retirement planning and assist practitioners in the field by guiding them in the design of appropriate interventions to address specific resource deficits of retirees.

1.4. Research aims and hypotheses

Building and extending on previous research advocating the use of resource perspective, this study aims to develop a standardized, comprehensive measurement tool with good psychometric properties for application in retirement studies. This tool would allow us to explore the dimensionality of retirement resources, to empirically test the resource perspective, and to determine if certain categories of retirement resources play a more important role than others in determining retirement well-being. Two indicators of retirement well-being, retirement adjustment and retirement satisfaction, are examined in this study. Retirement adjustment represents how well an individual adapts to the retirement transition and the associated changes (Wells, deVaus, Kendig, Quine, & Petralia, 2006); whereas retirement satisfaction is defined as the level of contentment one has with his or her life in retirement (van Solinge & Henkens, 2008).

Based on the resource perspective of retirement well-being, the following hypotheses are examined:

Hypothesis 1. The RRI has a six-factor structure (1a) and its subscales would possess sound internal consistency and test–retest reliabilities (1b).

Hypothesis 2. After controlling for demographic variables, retirement resources would significantly predict both retirement adjustment (2a) and satisfaction (2b).

Hypothesis 3. Aggregate retirement resources would promote retirement adjustment (3a) and satisfaction (3b) but not vice versa.

2. Method

2.1. Participants

A sample of Australian retirees aged 50 years or older was recruited from the National Seniors Australia (NSA). NSA is currently Australia's largest, not-for-profit organization representing individuals of age 50 or above. NSA members were invited to participate in a study investigating retirement well-being via an advertisement in an on-line newsletter.

2.2. Measures

2.2.1. Demographic information

Demographic information, including age, gender, relationship status, education, position in last job, current household income, time since retirement, current work activity, time worked since retirement (i.e. years worked after retirement as a volunteer or paid staff member) and the number of dependents, were collected from participants.

2.2.2. Retirement adjustment

Retirement adjustment was assessed with a 13-item measure reported in the Healthy Retirement Project (Wells et al., 2006). Participants rated their level of agreement with each of the 13 statements using a five-point scale ($1 =$ strongly disagree, $5 =$ strongly agree). Examples of items include "I am well adjusted to the changes" and "I have had to adjust to a big drop in my income". A total adjustment score is calculated by summing ratings across the 13 items with possible scores ranging from 13 to 65. This measure has demonstrated high internal consistency reliability ranging from $\alpha = .81$ to .88 across numerous studies (Donaldson et al., 2010; Wells et al., 2006; Wong & Earl, 2009), and the Cronbach's alpha in this study was .89.

2.2.3. Retirement satisfaction

Retirement satisfaction was assessed using the Retirement Satisfaction Inventory (RSI; Floyd et al., 1992), which has been reported in previous studies (e.g., Kupperbusch, Levenson, & Ebling, 2003; Price & Balaswamy, 2009). For the purpose of this study, ten items from the section 'satisfaction with life in retirement' were used. An example item is "Please indicate your current level of satisfaction with your level of physical activity". This measure has demonstrated high internal consistency reliability in the past ($\alpha = .81$; Price & Balaswamy, 2009), and the Cronbach alpha in this study was .66.

2.2.4. Retirement Resource Inventory.

2.2.4.1. Initial item development. During the first stage of the development of the RRI, the construct 'resources' was examined and then defined. Six major domains of resources crucial to retirement well-being were identified based on Wang and Shultz's (2010) and Wang et al.'s (2011) recommendation. These included physical, financial, social, emotional, cognitive and motivational. Subsequently, six subscale definitions and subscale items were generated based on a thorough literature search. Resources previously shown to predict retirement well-being were considered first, followed by those predicting successful stress-coping and aging. A majority of the items were designed by the authors, while some items were adopted from existing scales (Brändtstadter & Renner, 1990; Lachman & Weaver, 1998; Rosenberg, 1965). Across 52 items in the initial item pool, grammatical conventions were standardized, and standard 5-point Likert scales with appropriate anchors were used. For example, an item with a rating scale measuring the degree of abundance was "I have _____ financial support from my personal savings ($1 =$ very little/no, $2 =$ limited/inadequate, $3 =$ a moderate amount of, $4 =$ a substantial/fairly large amount of, $5 =$ plenty of/excess)".

2.2.4.2. Establishing construct validity of the RRI. To examine the construct validity of RRI, the initial item pool was presented to 17 current masters students from the organizational psychology program at the University of New South Wales. These students, previously given training in test development, had experience handling similar tasks albeit using different sets of constructs. Therefore, they were recruited as Subject Matter Experts (SMEs) for this study. During the process, SMEs were required to match the six subscale definitions to the appropriate subscale labels and allocate items in randomized order to the appropriate subscales according to their definitions. All SMEs (100%) successfully matched the six subscale definitions to the corresponding subscale labels. Averaged across all items and across 17 SMEs, items were correctly allocated to the relevant subscales on 82.5% of the time. Items were deleted if they were not correctly assigned to the relevant subscale on at least 70% of the time, except for items on the motivational subscale since these items were obtained from already published measures (TGP and FGA, Brändtstadter & Renner, 1990). Five items were deleted and five motivational items were slightly reworded so that they would better reflect the subscale definition. For example, "I create many problems for myself because of my high demands" was modified to become "I create … I set unrealistic goals". The final item pool of RRI consisted of 47 items: physical (5 items), financial (7 items), social (9 items), emotional (6 items), cognitive (11 items), and motivational (9 items).

2.3. Procedure

2.3.1. Data collection

NSA members who wished to participate were directed to a webpage to indicate consent via an embedded link in an on-line newsletter. Once consent was given, these individuals proceeded to the survey comprising of demographic items, items from the final item pool of RRI (in randomized order), and retirement adjustment and satisfaction measures. After a one-month interval (T2), participants were invited to complete the survey again for the purpose of establishing test–retest reliabilities.

3. Results

3.1. Demographic characteristics of the sample

A total of 267 retired individuals responded to the survey at Time 1 (T1). The demographic profile of participants loosely matched those of the local general population. The mean age of participants was 66.19 ($SD = 6.54$, range $= 52–88$ years). Participants consisted of 133 males (50.6%) and 130 females (49.4%), with four participants not reporting their gender and this ratio reflecting the mix of the broader Australian population (49.4% male) (Australian Bureau of Statistics, 2006). Marital status of participants (56.2% married, 14.2% separate or divorced) was also similar to those of the Australian population (49.5% married, 11.3% separated or divorced) (Australian Bureau of Statistics, 2006).

3.2. Validation of the RRI factor structure

An Exploratory factor analysis (EFA) using the Principle Axis Factoring method was conducted to investigate the factor structure of RRI. Three factors jointly accounting for 41.34% of total variance were retained after applying Cattell's rule (1966) to the screeplot (see Fields, 2009). Based on the expectation that different types of resources would correlate and share common variance, a Kaiser Oblimin rotation method was applied to the three extracted factors. After the initial EFA, seven items without substantial loading and five items failing to load onto the factor with the most conceptual relevance were deleted. We ran a second EFA with the remaining 35 items. A summary of the 35 items and their factor loadings, along with eigenvalues and percentages of variance explained by each factor, are displayed in Table 1. Full details of the final questionnaire can be found in Appendix A. Item 4, 18 and 22 loaded substantially on two factors, and they were assigned to the factor with the highest loading. Factor 1 contains 18 items that were previously identified as emotional, cognitive or motivational resources, and it is labeled as 'RT1'. Factor 2 contains only social resource items, and it is labeled as 'RT2'. Factor 3 contains physical and financial resource items, and it is labeled as 'RT3'. These factors will be referred to as subscales in the following sections.

Contrary to our expectation, RRI is represented by a three-factor structure instead of a six-factor structure. This finding is incongruent with Hypothesis 1a and with Wang and Shultz's (2010) and Wang et al.'s (2011) six-factor model. The implications of this finding will be discussed in more detail in the Discussion section.

3.3. Descriptive statistics and bivariate correlations

Based on the EFA results, RRI items were reorganized into these three subscales, and scores were calculated accordingly. Means, standard deviations, percentage scores of and correlations among continuous variables used in this study are presented in Table 2.

Three resource types correlated moderately with the two indicators of retirement well-being ($r = .33$ to $.48$, $ps < .001$). This provided a strong basis for conducting hierarchical multiple regression analysis predicting retirement well-being from retirement resources.

3.4. Psychometric properties of the measures used in the study

Table 3 presents estimates of internal consistency and test–retest reliabilities of RRI, retirement adjustment and satisfaction measures. In terms of the psychometric properties of RRI, all three resource subscales yielded good internal consistency reliabilities ($\alpha = .81–.89$) well above the recommended standard of .70 (DeVillis, 2003) and superior test–retest reliabilities ranged from .83 to .88 at a one-month interval. These results directly supported Hypothesis 1b. The retirement adjustment measure demonstrated good internal consistency ($\alpha = .89$) and test–retest reliability ($r = .82$, $p < .001$). In contrast, the retirement satisfaction measure was less internally consistent ($\alpha = .66$) and stable ($r = .61$, $p < .001$) over time.

3.5. Predicting retirement well-being from demographics and retirement resources

Two hierarchical multiple regression analyses (HMRAs) were conducted to assess the contribution of demographic variables and retirement resources as predictors of retirement well-being (i.e. retirement adjustment and satisfaction). The first and second

Table 1
Rotated factor loadings for the RRI.

Item	RT1	RT2	RT3
1. Perceived health	.16	−.21	**.64**
2. Physical illnesses	.14	−.29	**.57**
3. Mental disorders	.07	−.03	**.35**
4*. Energy level	.38	−.06	**.44**
5. Income adequacy	−.16	.07	**.80**
6. Financial support from own savings	−.13	.07	**.85**
7. Financial support from investments	−.24	.09	**.86**
8. Financial support from superannuation	−.18	.11	**.65**
9. Friends	.25	**.60**	.06
10. Family members	.14	**.55**	.10
11. Acquaintances	.15	**.52**	.09
12. Supportive interaction with friends	.20	**.56**	.14
13. Supportive interaction with family members	.12	**.60**	.20
14. Supportive interaction with acquaintances	.10	**.67**	.00
15. Informational support	−.28	**.64**	−.01
16. Emotional support	.07	**.71**	−.09
17. Tangible support	−.14	**.48**	−.16
18*. Positive emotions	**.48**	.36	.12
19. Ability to perceive emotions	**.59**	.15	−.08
20. Knowledge about emotions	**.50**	.17	−.10
21. Ability to facilitate thoughts and communications with Emotions	**.69**	.20	−.06
22*. Mastery (perceived control)	**.36**	.15	.33
23. Self-esteem	**.47**	.26	.02
24. Short term memory	**.65**	−.22	−.11
25. Long term memory	**.74**	−.05	−.16
26. Semantic memory	**.60**	−.03	−.06
27. Learning ability	**.68**	.00	.01
28. Processing speed	**.57**	−.11	.01
29. Problem-solving ability	**.75**	.02	−.08
30. Decision making ability	**.77**	.00	−.02
31. Tenacious goal pursuit 1 (TGP1)	**.48**	.11	.07
32. Tenacious goal pursuit 2 (TPG2)	**.40**	.07	−.01
33. Flexible goal adjustment 1 (FGA1)	**.46**	.07	.14
34. Flexible goal adjustment 2 (FGA2)	**.47**	−.05	.16
35. Flexible goal adjustment 3 (FGA3)	**.41**	−.11	.09
Eigenvalue	8.61	3.20	2.66
% variance	24.60	9.15	7.59

Notes: Tabachnick and Fidell (2001) recommended a factor loading of .32 or above to be substantial. For each item, the highest factor loading was presented with bold emphasis if greater than .32. Also, items marked with an asterisk are reverse-scored.

HMRA focused on retirement adjustment and retirement satisfaction respectively. For both analyses, eight demographic variables (gender, age, relationship status, education, years retired, years working since retirement, current yearly household income, and number of dependents) were entered in Block 1, and three resource types at T1 (RT3, RT2, and RT1) were entered in Block 2. The

Table 2
Means, standard deviations, percentage scores, and correlations among continuous variables at T1.

Variables	M	SD	%	1	2	3	4	5	6	7	8	9	10
1 Age	66.19	6.54		–									
2 Years working since retirement	2.58	4.30		.19**	–								
3 Years retired	6.56	5.72		.58***	.42***	–							
4 Dependents	1.69	.57		−.09	.10	−.05	–						
5 RT3	27.09	5.14	59.66%	.12	.00	.01	.13*	–					
6 RT2	28.39	6.14	53.86%	.17**	.08	.10	.00	.27***	–				
7 RT1	68.03	8.08	69.49%	−.02	.04	−.05	.03	.45***	.42***	–			
8 Total RRI score	123.84	15.08	63.46%	.11	.04	.03	.10	.70***	.74***	.86***	–		
9 Retirement adjustment	44.85	9.38	61.44%	.16*	.11	.20**	.04	.48***	.39***	.39***	.56***	–	
10 Retirement satisfaction	44.05	6.93	68.10%	.24***	−.07	.10	.29***	.46***	.34***	.33***	.50***	.40***	–

Notes: values in the column 'percentage' were calculated in the following way: $(M − \text{min. attainable score})/(\text{max. attainable score} − \text{min. attainable score})$. Take mean score on RT3 as an example, the percentage score 59.66% is calculated by $(27.09 − 8)/(40 − 8) \times 100\%$.

* $p < .05$, two-tailed.
** $p < .01$, two-tailed.
*** $p < .001$, two-tailed.

Table 3
Internal consistency and test–retest reliabilities of RRI, retirement adjustment and retirement satisfaction measures.

Subscale/measure	Cronbach's alpha coefficient (T1)	Crobach's alpha coefficient (T2)	Test–retest reliability
RT3	.81	.82	.88
RT2	.82	.83	.83
RT1	.89	.90	.83
RRI	.90	.89	.84
Retirement adjustment	.89	.89	.82
Retirement satisfaction	.66	.59	.61

Notes: Cronbach's alpha coefficients were calculated based on sample sizes of 213–252 (T1) and 132–153 (T2); test–retest reliabilities were calculated based on a sample size of 139–148.

variable relationship status was reduced from six levels to two levels such that participants who have previously chosen 1 (single or dating), 4 (separated but not divorced), 5 (divorced) or 6 (widowed) were assigned with a new score of '1'; while those who have chosen 2 (married) or 3 (couple, but not married) were assigned with a score of '2'. Therefore, a new score of 1 and 2 reflect the absence and presence of a stable partnership respectively.

The adequacy of sample size for multiple regression analysis (MRA) was checked by applying Green's rule (1991). The first and second HMRAs involved 214 and 212 participants and therefore the recommended minimum threshold of 138 participants were secured. In addition, four key assumptions underlying MRA including normality and homoscedasticity, and the absence of multicollinearity and outliers were confirmed (Fields, 2009).

Table 4 summarizes HMRA results for retirement adjustment (left) and retirement satisfaction (right). For retirement adjustment, the overall model (model 2) accounted for 36% of the total variance. Demographic variables accounted for 14% of the total variance (F (8, 205) = 4.18, $p<.001$), while retirement resources accounted for an additional 22% (F (3, 202) = 22.81, $p<.001$). Current household income ($\beta=.29$, $p<.001$) emerged as the only significant predictor in Block 1. That is, a person tended to be more well adjusted during retirement if he or she had greater household income. Entered in Block 2, all three resource types, RT3 ($\beta=.32$, $p<.001$), RT2 ($\beta=.20$, $p<.01$) and RT1 ($\beta=.16$, $p<.05$), significantly predicted retirement adjustment after controlling for the variance explained by demographic variables. Therefore, the more retirement resources (RT3, RT2, or RT1) a retiree had, the greater retirement adjustment he or she was likely to experience. Among all resource types, RT3 was the strongest predictor of retirement adjustment.

Table 4
Hierarchical multiple regression analyses predicting retirement adjustment and satisfaction at T1.

Independent variables	Retirement adjustment				Retirement satisfaction			
	Model 1	Model 2			Model 1	Model 2		
	B (SE)	β	B (SE)	β	B (SE)	β	B (SE)	β
Constant	29.86 (8.55)		7.19 (8.49)		17.96 (5.83)		3.30 (5.92)	
Demographics								
Gender	.66 (.14)	.04	.05 (1.19)	.00	−1.37 (.92)	−.10	−1.76 (.83)[*]	−.13
Age	.07 (.12)	.05	−.04 (.10)	−.03	.27 (.08)[#]	.26	.20 (.07)[**]	.19
Relationship status	3.33 (2.00)	.17	1.58 (1.76)	.08	4.78 (1.36)[#]	.33	3.68 (1.23)[**]	.26
Education	.34 (.60)	.04	−.17 (.53)	−.02	.30 (.41)	.05	−.03 (.37)	−.01
Years retired	.24 (.14)	.15	.31 (.13)[*]	.19	.00 (.10)	.00	.04 (.09)	.04
Years working	.07 (.16)	.03	.03 (.14)	.02	−.22 (.11)[*]	−.13	−.24 (.10)[*]	−.15
Current household income	.93 (.24)[***]	.29	.27 (.23)	.08	.34 (.16)[*]	.14	−.07 (.16)	−.03
Dependents	−.30 (1.69)	−.18	−1.56 (1.48)	−.09	−.12 (1.15)	−.01	.79 (1.03)	.06
Retirement resources								
RT3			.59 (.13)[***]	.32			.36 (.09)[***]	.27
RT2			.31 (.10)[**]	.20			.19 (.07)[**]	.17
RT1			.18 (.08)[*]	.16			.12 (.06)[*]	.14
R^2	.14		.36		.28		.44	
ΔR^2			.22				.16	
F	4.18[***]		10.23[***]		9.67[***]		13.93[***]	
df (regression/residual)	8, 205		11, 202		8, 203		11, 200	

Notes: B refers to unstandardized coefficients, β refers to standardized coefficients.
[*] $p<.05$, two-tailed.
[**] $p<.01$, two-tailed.
[***] $p<.001$, two-tailed.
[#] $p=.001$, two-tailed.

Regarding retirement satisfaction, the overall model accounted for 43% of variance in total. On top of the 28% of total variance accounted by demographic variables ($F(8, 203) = 9,67$, $p < .001$), retirement resources accounted for an additional 16% ($F(3, 200) = 18.58$, $p < .001$). In Block 1, age ($\beta = .26$, $p = .001$), relationship status ($\beta = .33$, $p = .001$), years working ($\beta = -.13$, $p < .05$), and current household income ($\beta = .14$, $p < .05$) emerged as significant predictors of retirement satisfaction. That is, a retiree tended to experience greater retirement satisfaction if he or she was older, had a stable partner, or had access to greater household income. Nevertheless, a retiree would experience lower retirement satisfaction if he or she had worked more years as a volunteer or as an employee since retirement. Analogous to the case of retirement adjustment, all three resource types, RT3 ($\beta = .27$, $p < .001$), RT2 ($\beta = .17$, $p < .01$) and RT1 ($\beta = .14$, $p < .05$), significantly predicted retirement satisfaction when entered in Block 2, and RT3 remained to be the strongest predictor.

On the whole, these results were in conformity with Hypothesis 2a and b. Moreover, these results showed that RRI had good criterion-related validity (concurrent) since all three resource subscales significantly predicted retirement well-being.

3.6. Direction of relationship between retirement resources and retirement well-being

Whilst earlier analysis investigated the predictive power of the RRI, this analysis did not elucidate the direction of the relationships. Whilst it might be true that resources promoted well-being, the converse might also be correct. To assess the direction of relationship between aggregate retirement resources and retirement well-being, a statistical method called Cross-Lagged Panel Correlations (CLPC) was used (Kenny, 1975). The logic underlying the CLPC method is that causes (i.e. A causes B) should have temporal precedence over effects (i.e. A influenced by B). When variables A and B are measured at two different time points, T1 and T2, A is then considered causally dominant if $r_{A1B2} > r_{A2B1}$. The two assumptions of CLPC – synchronicity and stationarity – were met in the current sample.

The correlation between total RRI score (T1) and retirement adjustment score (T2) ($r = .54$) was greater than that of total RRI score (T2) and retirement adjustment score (T1) ($r = .50$). Hence, it can be concluded that aggregate retirement resources is casually related to retirement adjustment. Similarly, it can be deduced that aggregate retirement resources causally relates to retirement satisfaction as the correlation between total RRI score (T1) and retirement satisfaction score (T2) ($r = .53$) exceeded the one between total RRI score (T2) and retirement satisfaction score (T1) ($r = .35$). These two findings confirmed the hypothesis that aggregate retirement resources would promote retirement adjustment (3a) and satisfaction (3b) but not vice versa and provided further evidence of the predictive validity of RRI.

4. Discussion

4.1. Main findings

The primary purpose of this study was to develop a comprehensive psychometric tool that assesses aggregate retirement resources. The study also aimed to explore the structure of a multidimensional model of retirement resources, the relationship between retirement resources and retirement well-being, and finally, the relative importance of resource domains. Overall, our results suggested that retirement resources could be represented by a three-factor model, and that these three resource domains predicted retirement well-being over and above demographic variables.

Contrary to our expectation (Hypothesis 1a), EFA results supported a three-factor structure of RRI of RT3, RT2 and RT1 instead of a six-factor structure (Wang & Shultz, 2010; Wang et al., 2011). A reasonable interpretation of this finding is that there may be significant conceptual similarities between certain resource types such that they could be combined. Items previously identified as physical and financial resources are relatively tangible and essential to everyday life, and therefore were grouped under 'RT3'; resource items previously identified as emotional, cognitive and motivational resources all contribute toward a person's mental capacity, and were grouped under 'RT1'; and 'RT2' items represented social resources. Although data garnered in this study support a three-factor model of retirement resources, we are unable to reconcile it with the results obtained in the validation process or with any existing theoretical models. This is an issue that bears further investigation.

In line with expectations, RRI demonstrated sound psychometric properties. Three resource subscales constructed based on the EFA results displayed high internal consistency and test–retest reliabilities (Hypothesis 1b supported). HMRAs revealed that all three resource types predicted retirement adjustment and satisfaction at T1 over and above demographic variables. Cross-lagged panel analysis confirmed a causal relationship between aggregate retirement resources and retirement adjustment (and satisfaction) at T2 such that the former led to an increase (or decrease) in the latter. These two findings provided evidence for Hypotheses 2 and 3 and for the criterion-related (concurrent and predictive) validity of RRI. They also reinforced previous findings that specific resources were predictive of retirement well-being (e.g., Kim & Moen, 2002; Kubicek et al., 2011; van Solinge & Henkens, 2008) and supported the recommendation of studying retirement well-being from a resource perspective (Wang & Shultz, 2010; Wang et al., 2011).

Although this study emphasizes the significance of resources in explaining variance in retirement well-being, other variables such as demographics also play a significant role. Our data showed whilst demographic variables accounted for 14% and 28% of variance in retirement adjustment and satisfaction respectively, retirement resources accounted for an additional 22% and 16% of variance in retirement adjustment and satisfaction respectively. These results suggest that adaptation to the retirement transition is more dependent on the availability of resources, whereas contentment with one's life in retirement is more dependent on demographic variables. More research focusing on the differential nature and predictors of various facets of retirement well-being

is recommended. Another noteworthy finding is that RT3 consistently emerged as the strongest predictor of both retirement adjustment and satisfaction. This confirmed the longstanding view that good health and financial resources are the most critical determinants of retirement well-being.

4.2. Theoretical implications

Findings in the current study provided strong empirical support for the resource perspective. Congruent with the prediction of the resource perspective, we found that a retiree's overall resource availability determined his or her retirement well-being during the present time or after 1 month. In addition, our data suggested that items on RRI could be grouped into three factors, and this supported the notion of resource clusters or caravans (Hobfoll, 1988, 1989). A three-factor structure of RRI, together with the finding that all three resource types predicted retirement well-being, leads us to conclude that a multi-dimensional approach to studying resources is preferable to a single domain approach. To our surprise, the data in this study did not seem to support the six-factor model proposed by Wang and Shultz (2010) and Wang et al. (2011) but instead were more compatible with the three-factor model advocated by Hendricks and Hendricks (1986), although mental resources (emotional, cognitive, motivational) were not accounted for.

4.3. Practical implications

The RRI, as an online survey, is a cost-effective way of measuring resources that pertain to retirement well-being. It has longer term goals of providing individuals with feedback to aid their future planning and of guiding the design of retirement interventions. It can also foster individually-tailored retirement interventions by identifying specific resource deficits for each retiree.

The fact that all three resource types predicted retirement well-being urges a multidimensional approach to be considered by various stakeholders including retirees, professionals assisting with retirement planning, researchers designing interventions and policy makers when determining retirement resource needs. Although RT3 was shown to be the strongest predictor and therefore deserves extra attention, other resource types should also be attended to in order to maximize retirement well-being. HMRA results highlighted certain individual differences in retirement well-being. It was noted that low household income consistently predicted poor retirement adjustment and satisfaction. In addition, retirees who were young, without a stable partner and who worked for many years after retiring suffered from poor retirement satisfaction. More retirement planning and intervention efforts should be directed to individuals with the above characteristics to help cultivate adaptive resources.

4.4. Limitations and future directions

In evaluating the results in this study certain limitations are to be considered. Firstly, the stability of the structure of RRI needs to be more fully tested by replicating studies using other diverse samples and applying confirmatory factor analysis to be sure that the EFA was not capitalizing on chance characteristics of the data. Validation of the RRI alongside other specific resource measures can also help confirm that the construct of resources is assessed appropriately. Secondly, the RRI as a new measure may be incomplete and requires refinement to include a wider range of resources. The RT1 may benefit from the inclusion of need for cognition (Bye & Pushkar, 2009), goal directedness or sense of purpose (Payne, Robbins, & Dougherty, 1991), intrinsic motivation for accomplishment, stimulation and leisure (Guinn, 1999; Stephan, Fouquereau, & Fernandez, 2008), and planning ability. The social resources subscale may benefit from the inclusion of marital items and the use of prorated subscale scores to deal with missing response on these items. Thirdly, the use of self-report measures may pose threats to the reliability of data and hence the validity of inferences due to the influence of social desirability and poor self-insight. The issue of social desirability can be dismissed in this study because participants on average scored from 54% to 69% on any measure. To deal with the issue of poor self-insight, researchers may obtain ratings from a retiree's spouse or close relatives to supplement self-report ratings.

The resource perspective, and our newly designed measure to capture it, make an important contribution in explaining variances in retirement adjustment and retirement satisfaction. Apart from addressing the issues raised in previous sections, researchers are encouraged to test out other hypotheses embedded in the resource perspective, specifically in the COR theory —for instance, whether a change (gain, restoration, or loss) in overall resource level would induce a change in one's retirement well-being; and whether the stress level of a person interacts with the resource level to determine one's retirement well-being.

Acknowledgments

Appendix A. Retirement Resources Inventory

RT3: (item 1–8); *RT2*: (item 9–17); *RT1*: (item 18–35) [*= reverse-scoring]

Please rate the following items according to your recent status.

(1) I would consider my general health condition to be _____.

| extremely poor | fairly poor | average | good | extremely good |

(2)* I am _____ affected by one or more major physical illnesses (e.g. heart disease, diabetes, foot problems, arthritis, hypertension).

| not | mildly | moderately | more than moderately | severely |

(3)* I am _____ affected by one or more mental disorders (e.g. dementia, depression, anxiety disorder, panic disorder).

| not | mildly | moderately | more than moderately | severely |

(4) I have _____ energy to carry out daily activities or activities that I am interested in.

| very little/no | limited/inadequate | a moderate amount of | a substantial amount of | excess |

(5) I possess _____ income to support my/my family living expenses.

| very little/no | limited/inadequate | a moderate amount of | a substantial amount of | excess |

(6) I have _____ financial support from my personal savings.

| very little/no | limited/inadequate | a moderate amount of | a substantial amount of | excess |

(7) I have _____ financial support from my investments.

| very little/no | limited/inadequate | a moderate amount of | a substantial amount of | excess |

(8) I have _____ financial support from my superannuation fund.

| very little/no | limited/inadequate | a moderate amount of | a substantial amount of | excess |

(9) I have _____ friends whom I can interact with regularly.

| Very few/no | few | a moderate number of | a substantial number of | many |

(10) I have _____ family members whom I can interact with regularly.

| Very few/no | few | a moderate number of | a substantial number of | many |

(11) I know_____ people from various sources (e.g. religious groups, leisure groups, sporting teams, volunteer groups, part-time employment).

| Very few/no | few | a moderate number of | a substantial number of | many |

(12) I would consider interactions with friends (in general) to be _____ supportive.

| not at all | fairly | moderately | quite | very |

(13) I would consider interactions with family members (in general) to be _____ supportive.

| not at all | fairly | moderately | quite | very |

(14) I would consider interactions with acquaintances from various sources (e.g. religious groups, leisure groups, sporting teams, volunteer groups, part-time employment) to be _____ supportive.

| not at all | fairly | moderately | quite | very |

(15) I _____ receive informational support from others, where informational support refers to receiving information or advice from someone on handling difficult circumstances, rectifying a situation, following through with a solution, following-up on a difficult event, and receiving constructive criticism.

| never | rarely | sometimes | often | very often |

(16) I _____ receive emotional support from others, where emotional support means someone was available to listen, to acknowledge my feelings, to support me in stressful situations, to act as a confidant, and to express interest in my well-being.

| never | rarely | sometimes | often | very often |

(17) I _____ receive tangible support from others, where tangible support refers to receiving help with meal preparation, temporary housing, household chores, shopping, respite, financial needs, transportation, care of the house when away, and the loan of something I needed.

| never | rarely | sometimes | often | very often |

(18) I experience _____ positive emotions (i.e. interested, excited, strong, enthusiastic, proud, determined, alert, inspired, attentive, active).

| very little/no | limited/inadequate | a moderate amount of | a substantial amount of | excess |

(19) I have _____ability to perceive my/others' emotions accurately.

| very little/no | limited/inadequate | a moderate | a substantial amount of | excess |

(20) I possess _____ knowledge about how emotions vary or influence behavior.

| very little/no | limited/inadequate | a moderate amount of | a substantial amount of | excess |

(21) In general, I feel that I have _____ ability to use emotions to facilitate my thoughts and communication.

| very little/no | limited/inadequate | a moderate | a substantial amount of | excess |

(22)* I have little control over the things that happen to me.

| strongly disagree | disagree | neutral | agree | strongly agree |

(23) I feel that I am a person of worth, at least on an equal plane with others.

| strongly disagree | disagree | neutral | agree | strongly agree |

(24)* I _____ forget things in the immediate past or where I have placed things.

| never | rarely | sometimes | often | very often |

(25) I have _____ ability to recall events that happened a while ago.

| very little/no | limited/inadequate | a moderate | a substantial | excess |

(26) I have _____ ability to recall meanings and spellings of different words/concepts.

| very little/no | limited/inadequate | a moderate | a substantial | excess |

(27) I have _____ ability to acquire new knowledge or skills.

| very little/no | limited/inadequate | a moderate | a substantial | excess |

(28) I would consider my speed of processing information (e.g. numbers, texts) to be generally _____.

| very slow | slow | moderate | fast | very fast |

(29) I have _____ ability to understand and solve problems.

| very little/no | limited/inadequate | a moderate | a substantial | excess |

(30) I have _____ ability to perform good decision making (i.e. selecting the most appropriate choice from the available options).

| very little/no | limited/inadequate | a moderate | a substantial | excess |

(31) When faced with difficulty, I usually increase my efforts.

| strongly disagree | disagree | neutral | agree | strongly agree |

(32) Even when things seem hopeless, I keep fighting to reach my goals.

| strongly disagree | disagree | neutral | agree | strongly agree |

Appendix A (*continued*)

Please rate the following items according to your recent status.

(33) I can easily adapt to changes in goals, plans or circumstances.

| strongly disagree | disagree | neutral | agree | strongly agree |

(34)* When I get stuck on something, it's hard for me to find a new approach.

| strongly disagree | disagree | neutral | agree | strongly agree |

(35)* I create many problems for myself because I set unrealistic goals.

| strongly disagree | disagree | neutral | agree | strongly agree |

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