Adjustment to retirement: effects of resource change on physical and psychological well-being

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Abstract A 1-year longitudinal study was conducted to examine the effects of retirement resources on the physical and psychological well-being of Hong Kong Chinese retirees during the transition to retirement. This study consisted of two assessments: Time 1 was conducted 6 months before retirement, while Time 2 was implemented 6 months after retirement. Personal resources and physical and psychological well-being were measured in the two assessments. The final sample contained 128 retirees who completed both assessments. Compared with Time 1, the retirees reported fewer financial resources at Time 2. Change in cognitive resources was significantly predictive of the changes in physical functioning, life satisfaction, psychological well-being, and psychological distress during the transition period. The findings of this longitudinal study reveal that in addition to financial, physical, and social resources that have often been emphasized in the past literature, mental resources also play an important role in positive adjustment to retirement. Future retirement planning programs are recommended to include modules for strengthening cognitive, emotional, and motivational resources of retired persons.

Keywords Hong Kong Chinese retirees · Newly retired persons · Psychological distress · Physical functioning · Retirement resources

Introduction

With an increasing number of baby boomers approaching retirement age, identifying the factors that affect adjustment to retirement is essential because poor adjustment during the retirement transition may result in psychological distress, life dissatisfaction, and physical illness in late life (Wang 2007; Wong and Earl 2009). Despite the common belief that retirement is a stressful and negative event, not every retiree experiences traumatic or negative changes and most of them could maintain their well-being after retirement (Fehr 2012; Wang 2007). The resource-based dynamic model proposed by Wang et al. (2011) attempted to explain the possible mechanism underlying different patterns of adjustment outcomes. According to their model, retirement adjustment is a function of personal resources and changes in these resources during retirement transition. Thus, the amount of resources possessed by each retiree influences his/her capabilities to meet the challenges during the retirement transition, which in turn affect his/her well-being. This study therefore aimed to investigate changes in personal resources among newly retired Hong Kong Chinese people and identify the types of resources most important to their physical and psychological well-being during the transition.

The resource-based dynamic model

Hobfoll (2002) defined resources as a person's total capability to accomplish his/her valued needs and goals. Inspired by his conservation of resources theory, retirement resources are defined as all types of resources crucial during the retirement transition (Wang 2007). Wang et al. (2011) classified various forms of personal resources into six types, namely physical (e.g., illness, physical strength),

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financial (e.g., savings, pension), social (e.g., social support, social network), emotional (e.g., mood, affectivity), cognitive (e.g., perceived control, memory ability, processing speed), and motivational resources (e.g., adaptability and flexibility in goal pursuit). According to the resource-based dynamic model, the quality of retirement adjustment varies by the amount of retirement resources and overall changes in total resources during the retirement transition. In particular, three possible patterns of adjustment outcomes exist: (1) Retirees will maintain their well-being if their total resources do not change significantly after retirement; (2) if retirees encounter a decline in their resources, they will experience poor adjustment and psychological distress; and (3) if retirees gain more resources after retirement, they will demonstrate positive adjustment to retirement (Wang et al. 2011).

A number of studies have examined the individual effects of various resources on post-retirement well-being. For instance, physical resources, such as perceived health and energy levels, were associated with post-retirement well-being (Gall et al. 1997; Kim and Moen 2002; van Solinge and Henkens 2008). Financial resources, such as perceived income adequacy and income obtained from investment and pensions, were predictive of positive attitudes toward adjustment to and satisfaction with retirement (Kim and Moen 2002; Stoller and Stoller 2003; van Solinge and Henkens 2008). Social resources, such as support from family members and friends as well as social interactions, are also important to the well-being of retirees (Chou and Chi 2003). Emotional resources, such as positive feelings, have been shown to correlate with greater retirement satisfaction (Löckenhoff et al. 2009). Cognitive resources, such as autonomy and internal locus of control, are predictive of well-being after retirement (Gall et al. 1997; Taylor and Shore 1995). In terms of motivational resources, perceived adaptability and flexibility play an important role in transitional situations because they affect retirees' ways of coping with the transition (Wessel et al. 2008).

As reviewed above, evidence shows that each type of resources has an individual impact on the retirement adjustment and well-being of retirees. However, to the best of my knowledge, there is not yet any longitudinal study examining *changes* in all these six types of retirement resources in a single examination, thereby making it difficult to verify the proposition of Wang et al. (2011) that physical and psychological well-being of retirees is determined by changes in total retirement resources during the transition period. Therefore, the present study aimed to fill the gap by investigating all six types of retirement resources in one single examination. By doing so, this study could help in the understanding of how various types of retirement resources change during the transition period

and in identifying which types of resources are more salient in predicting adjustment to retirement.

Aims and hypotheses of this study

Retirement has a remarkable impact on the physical and psychological well-being of retirees. Understanding the effects of retirement resources on their physical and psychological well-being is an important step in the development of appropriate intervention programs for retired persons. The current study had four aims: first, to examine the changes in physical, financial, social, emotional, cognitive, and motivational resources during the retirement transition; second, to investigate the retirees' adjustment to retirement, which is reflected in the changes in their physical and psychological well-being before and after retirement; third, to examine which types of resource change would be predictive of physical and psychological well-being during the retirement transition; and fourth, to explore the relationship between change in total resources (i.e., an overall change in various types of retirement resources) and changes in physical and psychological well-being between T1 and T2.

Four hypotheses were generated: (H1) The amount of retirement resources in various domains is hypothesized to decrease after retirement; (H2) the levels of physical and psychological well-being are hypothesized to decline after retirement; (H3) the changes in six retirement resources are predictive of the changes in physical and psychological well-being over time; and (H4) the change in total resources is associated positively with the changes in physical and psychological well-being.

With reference to prior research (Reitzes and Mutran 2004; Yeung 2013), this study consisted of two assessments: Time 1 was conducted 6 months prior to the expected retirement (T1), and Time 2 was carried out 6 months after the actual retirement (T2). Gall et al. (1997) defined retirement adjustment as “a complex process reflecting specific patterns of changes in a retiree's well-being at different points in time” (p. 110). In past studies on retirement (Gall et al. 1997; Nuttman-Shwartz 2004; Wang 2007), successful retirement adjustment is often indicated by whether physical and psychological well-being can be maintained (or even improved) after the persons retire from their full-time jobs. Therefore, this study measured the physical functioning, life satisfaction, psychological well-being, and psychological distress to reveal the level of well-being of retired persons.

Methods

Participants

In the first assessment, 197 working adults expected to retire in the next 6 months completed the pre-retirement questionnaire. Among them, 128 participants were successfully contacted in T2 and completed the post-retirement questionnaire. The participation rate in T2 was 65%. The mean age of the final sample was 59.78 years ($SD = 3.14$), with 63.3% males. Among them, 72% were white-collar workers, and 60% worked in the public sector. The majority of the current sample (52%) completed secondary education, which is comparable to the average educational attainment of local working population aged 50–65 years (Hong Kong Census and Statistics Department 2011). The participants who took part in both assessments were similar to those who joined only the first assessment in terms of their background characteristics, the amount of retirement resources, physical well-being, psychological well-being, and psychological distress; however, they exhibited higher level of life satisfaction than the retirees who only participated in T1 [$t(195) = -2.083$, $p = .039$].

Procedure

Human ethics approval was obtained from the institutional research ethics committee. In T1, target participants were recruited through the human resources department of both public and private organizations as well as through advertisement in a local newspaper. Full-time employees expected to retire in the next 6 months were invited to join this research. Employees who opted for early retirement scheme were excluded because their retirement decision might be affected by health or family issues, which could subsequently influence their physical and psychological well-being after actual retirement. The retirement age in Hong Kong varies across sectors, with the typical age of 55 years for disciplinary forces (e.g., police officers or firefighters), 60 years for the public sector, and 65 years for the private sector.

Informed written consent was obtained from each participant at the first assessment. They were informed of the longitudinal nature of this study and were requested to provide their contact information and the expected retirement date if they were interested in joining the follow-up assessment. The participants were contacted again 6 months after their actual retirement. In both assessments, participants completed the questionnaire by themselves and returned it to the researcher directly by post. Each participant received HKD250 (US\$32) supermarket voucher as

appreciation of his/her participation in the longitudinal study.

Measures

All measures were assessed in the pre- and post-retirement questionnaires. The measurement scales were translated into Chinese by two bilingual translators through the back-translation procedure, except those with the Chinese version. The Cronbach's alphas of the measures of T1 and T2 assessments are reported in Table 1.

Retirement resources

Leung and Earl (2012) developed the Retirement Resources Inventory (RRI) to measure the six resources suggested in the resource-based dynamic model (Wang et al. 2011). RRI consists of 35 items to measure the amount of physical (4 items), financial (4 items), social (9 items), emotional (4 items), cognitive (9 items), and motivational (5 items) resources possessed by the retirees at the moment of assessment. Sample items include “financial support from own savings” (financial resources), “experience positive emotions” (emotional resources), “have little control over the things that happen to me” (cognitive resources), “even when things seem hopeless, I keep fighting to reach my goals” (motivational resources), and “supportive interaction with friends” (social resources). Participants rated these items on five-point scale (1 = *very little* to 5 = *plenty*). Following the theoretical concepts of the resource-based dynamic model, the present study computed mean scores of the six types of resources to examine changes in these dimensions before and after retirement. Higher scores represent more resources possessed by the participant. Their reliability alphas in T1 and T2 were satisfactory, ranging from .80 to .90. Total resources were computed by averaging the amount of all retirement resources in each assessment.

Physical well-being

Physical well-being was measured by the validated Chinese version of Physical Functioning subscale of the Short-Form Health Survey (SF-36) (Lam et al. 1998; Ware and Sherbourne 1992). Permission to use the SF-36 scale was obtained. Participants rated the ten items on a three-point scale (1 = *limit a lot* to 3 = *no limit at all*) to reflect whether their daily activities were limited by their health. Higher scores represent better physical functioning.

Table 1 Descriptive statistics of retirement resources and physical and psychological well-being in Times 1 and 2

	Time 1			Time 2			<i>t</i> value
	Pre-retirement			Post-retirement			
	<i>M</i>	SD	α	<i>M</i>	SD	α	
<i>Retirement resources (1–5)</i>							
Physical resources	3.89	.53	.68	3.94	.47	.68	1.23
Financial resources	2.97	.65	.86	2.84	.77	.87	−2.60*
Social resources	2.77	.66	.85	2.73	.59	.81	−.95
Emotional resources	3.28	.68	.78	3.24	.65	.76	−.85
Cognitive resources	3.40	.48	.81	3.35	.52	.86	−1.412
Motivational resources	3.72	.52	.72	3.68	.50	.72	−1.00
Total resources	3.34	.41	.90	3.30	.43	.92	−2.04*
<i>Physical and psychological well-being</i>							
Physical functioning (1–3)	2.73	.30	.86	2.69	.33	.87	−1.80
Life satisfaction (1–7)	4.94	1.07	.87	4.82	1.19	.89	−1.22
Psychological well-being (1–5)	3.63	.47	.90	3.61	.47	.91	−.63
Psychological distress (1–4)	1.75	.44	.88	1.77	.44	.87	.59

N = 128. The range of scores for each variable is shown in the parentheses

* $p < .05$

Life satisfaction

The Chinese version of the Life Satisfaction Scale was utilized (Diener et al. 1985). This scale consists of five items that assess the retiree's satisfaction with life in general. Participants rated each item using a seven-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*), with higher scores presenting greater satisfaction with life.

Psychological well-being

The validated Chinese version of Ryff's (1989) psychological well-being was used in the present study (Cheng and Chan 2005). A sample item of this scale is "Some people wander aimlessly through life, but I am not one of them." Participants rated the 24 items on a five-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*), with higher scores denoting better psychological well-being.

Psychological distress

The validated Chinese version of the 12-item General Health Questionnaire (Shek 1989) was used to assess participants' psychological distress including depression, social dysfunction, and loss of confidence in the past 4 weeks. Participants rated the items on a four-point scale, with higher scores indicating a higher level of psychological distress.

Demographic variables and covariates

Age, gender, and education level were recorded in T1. The occupation prior to retirement was also recorded, with 1 = white-collar and 0 = service-oriented workers or technicians. Law et al. (2006) measure of pre-retirement planning activities was also assessed in T1 as a control variable because past research has demonstrated its significant influence on retirement adjustment (Law et al. 2006; Reitzes and Mutran 2004; Yeung 2013). Participants rated the 20 items on a dichotomous scale (1 = *Yes*, 0 = *No*), with higher scores indicating greater preparation for retirement. Preliminary analyses showed that education level and occupation before retirement did not correlate significantly with changes in physical and psychological well-being; therefore, these two variables were excluded from the following analysis.

Analytical plan

The first and second hypotheses about the changes in retirement resources and well-being during the retirement transition will be tested by paired samples *t* tests. Hierarchical regression analyses will be performed to examine H3 to identify which types of resource changes are predictive of the changes in physical and psychological well-being. The fourth hypothesis on the relationships between total resource change and changes in physical and psychological well-being will be tested by correlation analyses.

To ensure there is no endogeneity issue in the current measures of physical resources [as an independent variable (IV)] and physical functioning [as a dependent variable (DV)], as well as in the measures of emotional resources (as an IV) and psychological well-being (as a DV), two confirmatory factor analyses (CFA) were performed using MPlus 7 (Muthén and Muthén 2012). In particular, one CFA was conducted on physical-related items (including the items from the physical resource subscale of RRI and the physical functioning subscale of SF-36), and the other on psychological-related items (including items from the emotional resource subscale of RRI and the Ryff's Psychological Well-being Scale). The results of the CFAs showed that the two-factor model fitted the data better than the one-factor model. Specifically, in the CFA on the physical-related items, the goodness of fit of the two-factor model containing a physical resource factor and a physical functioning factor [AIC = 1667.084; BIC = 1789.044; χ^2 (76) = 172.378; CFI = .858, RMSEA = .080] is better than that of the one-factor model [AIC = 1730.668; BIC = 1849.792; χ^2 (77) = 237.963; CFI = .764, RMSEA = .110], $\Delta\chi^2$ (1) = 65.585, $p < .001$. The correlation between these two factors is small ($r = .099$, $p = .006$). In the CFA on the psychological-related items, the goodness of fit of the two-factor model containing an emotional resource factor and a psychological well-being factor [AIC = 2452.170; BIC = 2546.287; χ^2 (32) = 81.736; CFI = .914, RMSEA = .081] is better than that of the one-factor model [AIC = 2552.321; BIC = 2637.882; χ^2 (35) = 187.887; CFI = .736, RMSEA = .159], $\Delta\chi^2$ (3) = 106.151, $p < .001$. The correlation between these two factors is also small ($r = .095$, $p = .002$). These CFA results demonstrate that the resource and well-being variables measured in this study are fully independent.

Results

Changes in retirement resources and well-being

Table 1 summarizes the means and standard deviations of the six types of retirement resources and the four well-being outcomes in T1 and T2. Paired samples t tests were performed on the six types of retirement resources to address the first hypothesis on the changes in retirement resources during the retirement transition. Results showed that there was a significant decrease in financial resources [$t(127) = -2.60$, $p = .010$] after retirement. To control for the overall Type I error in multiple t tests, this p value is compared with the adjusted p level of .042 using the Benjamini and Hochberg's (1995) false discovery rate. The raw p value is smaller than the adjusted p value, thereby suggesting the difference in financial resources between T1

and T2 remains significant even after adjustment. The amount of total resources in T2 was smaller than that in T1 [$t(127) = 2.04$, $p = .043$], revealing fewer overall resources possessed by the retirees after retirement. As a result, H1 is partially supported.

To test the second hypothesis on the changes in well-being before and after retirement, paired samples t tests were performed on the four well-being variables. No significant change was found in physical well-being, life satisfaction, psychological well-being, and psychological distress. Therefore, H2 is not supported.

Effects of resource changes on well-being

Hierarchical regression analyses were performed to test H3 regarding which types of resource changes are more salient in predicting the changes in physical and psychological well-being. Taking the suggestion of van Breukelen (2006) and Eriksson and Häggström (2014), a change score (T2 score minus T1 score) was computed for each of the six retirement resources and each of the four well-being variables. Separate regression analysis was conducted for each of the four well-being outcomes. Participant's age and gender were entered into Block 1, followed by pre-retirement planning activities in Block 2. The change scores of the six types of retirement resources were added to Block 3. Results of the regression analyses are presented in Table 2.

Change in cognitive resources significantly predicted the changes in physical functioning ($\beta = .41$, $p < .001$), life satisfaction ($\beta = .18$, $p = .042$), psychological well-being ($\beta = .23$, $p = .016$), and psychological distress ($\beta = -.17$, $p = .040$) even after controlling for age, gender, and pre-retirement planning activities. Change in financial resources was also predictive of the changes in physical functioning ($\beta = .18$, $p = .039$) and life satisfaction ($\beta = .21$, $p = .009$). Changes in physical resources predicted the change in physical functioning ($\beta = .19$, $p = .028$). Changes in social, emotional, and motivation resources did not significantly predict any of the four well-being outcomes when other resources were included in the regression model. Therefore, H3 is partially supported.

Relationship between total resource change and well-being

The proposition of the resource-based dynamic model that total resource change (i.e., an overall change in various retirement resources between T1 and T2) is predictive of retirees' well-being (H4) was tested by conducting a correlation analysis to examine the relationships between total resource change and changes in physical and psychological

Table 2 Hierarchical regression analyses on changes in physical and psychological well-being during the retirement transition

	Standardized beta			
	Δ Physical functioning	Δ Life satisfaction	Δ Psychological well-being	Δ Psychological distress
<i>Block 1</i>				
Age	−.18	−.08	−.02	.09
Gender	−.03	.06	.02	−.02
R^2 change	.03	.01	.00	.01
<i>Block 2</i>				
Pre-retirement planning activities	−.01	.04	−.01	−.29***
R^2 change	.00	.00	.00	.08***
<i>Block 3</i>				
Δ Physical resources	.19*	.05	.14	−.11
Δ Financial resources	.18*	.21**	−.17	−.02
Δ Social resources	−.05	.05	−.01	−.03
Δ Emotional resources	−.17	.02	.15	−.07
Δ Cognitive resources	.41***	.18*	.23*	−.17*
Δ Motivational resources	−.04	.07	.11	−.04
R^2 change	.21***	.08*	.19***	.11*

$N = 128$. Gender was coded as 1 = male and 2 = female. Δ denotes change in well-being and retirement resources (T2 score minus T1 score)

* $p < .05$; ** $p \leq .01$; *** $p \leq .001$

well-being. Results showed that change in total resources during the transition was correlated positively with the changes in physical functioning ($r = .25$, $p = .004$), life satisfaction ($r = .28$, $p = .001$), and psychological well-being ($r = .24$, $p = .007$) and negatively correlated with change in psychological distress ($r = -.29$, $p = .001$). Therefore, H4 is supported.

Discussion

This study applied the resource-based dynamic model of Wang et al. (2011) to understand resource changes during the retirement transition and their effects on retirement adjustment among Hong Kong Chinese retirees. Four hypotheses were tested to examine changes in retirement resources and well-being during the transition to retirement, and the associations between changes in retirement resources and well-being. On average, the retirees did not exhibit significant changes in their physical and psychological well-being 6 months after retirement. However, they reported fewer financial and total resources after retiring from the full-time employment. Consistent with Wang et al.'s (2011) proposition, change in total resources was significantly predictive of the retirees' adjustment quality. By including the six types of retirement sources in a single examination, the present study demonstrates that

cognitive resources are the most salient predictor of retirement adjustment during the transition.

Changes in retirement resources

Compared with the pre-retirement assessment, the retirees in the present study reported fewer financial resources after retirement. Unlike other Western countries, Hong Kong does not have a universal retirement protection scheme in Hong Kong. Retirees often rely on their own savings to support their post-retirement living. Without regular income from full-time employment, it is not surprising that the amount of financial resources declined after retirement. Even though other types of retirement resources, such as physical, social, emotional, cognitive, and motivational resources, did not show a sizable change between the 1-year intervals, the overall amount of total resources did decline after retirement. As shown in the correlation analyses, change in total resources was correlated significantly with changes in physical and psychological well-being. Therefore, it is important to keep up the level of available resources for retirees in order to maintain their well-being in late life.

Similar to previous studies (Kim and Moen 2002; Wang 2007; Yeung 2013), no significant changes in physical and psychological well-being were observed in the current sample of retirees. These findings suggest that retirement is not always detrimental to the well-being of the retired

persons. With sufficient retirement planning and adequate retirement resources, the retirees can experience smooth adjustment to this important life event. However, it should be noted that some other Western studies did exhibit significant changes in subjective well-being (e.g., Horner 2014) and self-rated health (e.g., Westerlund et al. 2009) over a longer period of the retirement transition. Therefore, whether the retirees can maintain their post-retirement well-being requires further investigation.

Effects of retirement resources

Wang et al.'s (2011) resource-based dynamic model stresses that retirement resources are crucial in the process of retirement adjustment. The model has proposed six types of retirement resources, namely physical, financial, social, emotional, cognitive, and motivational resources, which are regarded as important in predicting the quality of retirement adjustment. Past studies only focused on a few types of these resources (e.g., Kim and Moen 2002; Kubicek et al. 2011). The present study therefore advances the past literature by including all of these six resources in a single examination, assessing their changes during the transition period and comparing the relative importance of each type of resource change in predicting post-retirement well-being. Results showed that among various types of personal resources, cognitive resources, such as perceived autonomy and cognitive functioning abilities, could reliably predict the quality of adjustment to retirement, which were reflected in the changes in physical functioning, life satisfaction, psychological well-being, and psychological distress before and after retirement. The benefits of having more cognitive resources have also been shown in the past cross-sectional and longitudinal research on post-retirement well-being because these resources could provide retirees with greater sense of control and mastery to handle the challenges during the retirement transition (Donaldson et al. 2010; Earl et al. 2015; Fisher et al. 2014; Kim and Moen 2002; Kubicek et al. 2011). Moreover, changes in financial and physical resources also predicted the level of changes in physical functioning and life satisfaction. These results are consistent with previous studies which showed that retirees with greater financial and physical resources reported better physical and subjective well-being (Kim and Moen 2002; van Solinge and Henkens 2008).

The present study provides empirical evidence to the resource-based dynamic model (Wang et al. 2011). In particular, the findings of this study support their proposition that quality of retirement adjustment is strongly dependent on the amount of total resources possessed by the retired person. For the retirees with less total resources after retirement, such as loss of income and reduced social network, they are more likely to report life dissatisfaction,

psychological distress, or poor physical and psychological well-being. Smooth adjustment is observed among the retirees who can maintain their overall resources after retirement. The retirees' well-being is improved when they possess more resources post-retirement, such as more physical exercises and participation in community services. The resource-based dynamic model therefore provides a flexible theoretical framework to understand retirement adjustment by recognizing individual differences in and dynamic nature of retirement adjustment process, and specifying the relationship between retirement resources and quality of adjustment. It also helps to clarify that retirement is not necessary a stressful and negative event. Adjustment outcome is strongly tied with the changes in total resources over time. However, it is worth noting that this model views all the six resources as equally important. It is possible that some retirees may value social support and emotional stability to a greater extent than the other types of resources. As a result, resource changes in the personally valued domains will impose stronger impact on retirement adjustment than those in the less-important domains. Future studies should take into consideration of the potential weighted effect of certain resources in predicting quality of retirement adjustment.

By investigating the various types of resources in one single examination, the present study revealed that cognitive resources are more important than other resources to enable Chinese retirees to adjust positively to this initial transition. Most of the existing retirement planning programs focus only on preparatory behaviors in financial, physical, and social domains, without placing much emphasis on mental resources, such as cognitive, emotional, and motivational aspects. Therefore, future programs should therefore strengthen pre-retirees' planning activities in the mental domain, such as knowledge on developmental changes in cognitive functioning, emotional experiences, and goal pursuit, in order to better prepare them to face the challenges in this critical life event.

Furthermore, majority of past studies investigated a single or small number of indicators of retirement adjustment (Wang et al. 2011). The present study contributes to the literature on retirement by examining four indicators of both physical and psychological well-being (namely physical functioning, life satisfaction, psychological well-being, and psychological distress) to offer a more comprehensive picture of retirement adjustment. The results of this study reveal that cognitive resources can predict both physical and psychological indicators of adjustment, implying that it is not necessary and physical well-being is more sensitive to changes in physical resources, whereas psychological well-being is only sensitive to changes in emotional and cognitive resources whereas.

Limitations and future directions

A few limitations should be taken into consideration when interpreting the findings of this study. First, this longitudinal study examined the association between retirement resources and adjustment in a small sample of Hong Kong Chinese retirees; as a result, the generalizability of the findings may be limited. Future studies should investigate the phenomenon in a larger sample to confirm the patterns of relationships found in the present study. Second, this study only measured the short-term effects of resource change on physical and psychological well-being 6 months after retirement. The long-term effect of resource changes on well-being awaits further investigation. Third, this study relied on self-reported data, which may cause a bias in the result findings. Hence, future studies should include an objective measure, such as assessment of cognitive abilities and physical health, to obtain a more accurate understanding of the relationships between retirement resources and well-being. Fourth, the working status of the retiree's spouse was not measured in this study. It is likely that quality of adjustment is better when the couple are both retired so that they can provide emotional and social support to each other during the transition. Future studies should compare adjustment quality of retirees with different household patterns. In addition, some of retirees may take up short-term employment after retirement (e.g., bridge employment in different fields, part-time jobs) (Wang et al. 2008). Future studies should compare the well-being of retirees with and without paid job during the transition to systematically examine the impact of post-retirement employment on resources and health. Fifth, the resource-based dynamic model (Wang et al. 2011) regards the six types of personal resources as equally important to each retiree. Future studies should also measure one's perceived importance of each resource to take into account of their weighted effects on adjustment outcomes. Last but not least, the model has proposed some individual-level antecedents of resource changes over time, such as health behaviors and dispositional factors (e.g., psychological resilience, openness to change). Future studies should also include these factors in the longitudinal assessment to uncover the underlying mechanism of resource changes and retirement adjustment.

Conclusions

The present study revealed that most Hong Kong Chinese retirees maintained their physical and psychological well-being in the initial retirement transition. However, they reported fewer financial and total resources after retirement. In addition to financial, physical, and social

resources, which have been emphasized often in the past literature on retirement adjustment, enhancing the cognitive resources of the retired persons should also be promoted to facilitate positive adjustment to this important life event.

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References

- Benjamini Y, Hochberg Y (1995) Controlling the false discovery rate: a practical and powerful approach to multiple testing. *J R Stat Soc Ser B* 57:289–300
- Cheng ST, Chan ACM (2005) Measuring psychological well-being in the Chinese. *Pers Individ Differ* 38:1307–1316. doi:[10.1016/j.paid.2004.08.013](https://doi.org/10.1016/j.paid.2004.08.013)
- Chou KL, Chi I (2003) Reciprocal relationship between social support and depressive symptoms among Chinese elderly. *Aging Ment Health* 7:224–231. doi:[10.1080/136031000101210](https://doi.org/10.1080/136031000101210)
- Diener E, Emmons RA, Larsen RJ, Griffin S (1985) The satisfaction with life scale. *J Pers Assess* 9:71–75. doi:[10.1207/s15327752jpa4901_13](https://doi.org/10.1207/s15327752jpa4901_13)
- Donaldson T, Earl JK, Muratore AM (2010) Extending the integrated model of retirement adjustment: incorporating mastery and retirement planning. *J Vocat Behav* 77:279–289. doi:[10.1016/j.jvb.2010.03.003](https://doi.org/10.1016/j.jvb.2010.03.003)
- Earl JK, Gerrans P, Halim VA (2015) Active and adjusted: investigating the contribution of leisure, health and psychosocial factors to retirement adjustment. *Leis Sci* 37:354–372. doi:[10.1080/01490400.2015.1021881](https://doi.org/10.1080/01490400.2015.1021881)
- Eriksson K, Häggström O (2014) Lord's Paradox in a continuous setting and a regression artifact in numerical cognition research. *PLoS ONE* 9(4):e95949. doi:[10.1371/journal.pone.0095949](https://doi.org/10.1371/journal.pone.0095949)
- Fehr R (2012) Is retirement always stressful? The potential impact of creativity. *Am Psychol* 67:76–77. doi:[10.1037/a0026574](https://doi.org/10.1037/a0026574)
- Fisher GG, Stachowski A, Infurna FJ, Faul JD, Grosch J, Tetrick LE (2014) Mental work demands, retirement, and longitudinal trajectories of cognitive functioning. *J Occup Health Psychol* 19:231–242. doi:[10.1037/a0035724](https://doi.org/10.1037/a0035724)
- Gall TL, Evans DR, Howard J (1997) The retirement adjustment process: changes in the well-being of male retirees across time. *J Gerontol Psychol Sci Soc Sci* 52B:110–117. doi:[10.1093/geronb/52B.3.P110](https://doi.org/10.1093/geronb/52B.3.P110)
- Hobfoll SE (2002) Social and psychological resources and adaptation. *Rev Gen Psychol* 6:307–324. doi:[10.1037/1089-2680.6.4.307](https://doi.org/10.1037/1089-2680.6.4.307)
- Hong Kong Census & Statistics Department (2011) 2011 Population census: working population aged 50–65 by educational attainment. Census & Statistics Department, Hong Kong
- Horner EM (2014) Subjective well-being and retirement: analysis and policy recommendations. *J Happiness Stud* 15:125–144. doi:[10.1007/s10902-012-9399-2](https://doi.org/10.1007/s10902-012-9399-2)
- Kim JE, Moen P (2002) Retirement transitions, gender, and psychological well-being: a life-course, ecological model. *J Gerontol Psychol Sci Soc Sci* 57:P212–P222. doi:[10.1093/geronb/57.3.P212](https://doi.org/10.1093/geronb/57.3.P212)
- Kubicek B, Korunka C, Raymo JM, Hoonakker P (2011) Psychological well-being in retirement: the effects of personal and gendered contextual resources. *J Occup Health Psychol* 16:230–246. doi:[10.1037/a0022334](https://doi.org/10.1037/a0022334)

- Lam CLK, Gandek B, Ren XS, Chan MS (1998) Tests of scaling assumptions and construct validity of the Chinese (HK) version of the SF-36 Health Survey. *J Clin Epidemiol* 51:1139–1147. doi:[10.1016/s0895-4356\(98\)00105-x](https://doi.org/10.1016/s0895-4356(98)00105-x)
- Law KWK, Wan P, Wong TKY (2006) Retirement planning. In: Leung SW, Wan P, Wong SL (eds) *Indicators of social development Hong Kong*. Hong Kong Institute of Asia-Pacific Studies, Chinese University of Hong Kong, Sha Tin, pp 157–185
- Leung CSY, Earl JK (2012) Retirement resources inventory: construction, factor structure, and psychometric properties. *J Vocat Behav* 81:171–182. doi:[10.1016/j.jvb.2012.06.005](https://doi.org/10.1016/j.jvb.2012.06.005)
- Löckenhoff CE, Terracciano A, Costa PT Jr (2009) Five-factor model personality traits and the retirement transition: longitudinal and cross-sectional associations. *Psychol Aging* 24:722–728. doi:[10.1037/a0015121](https://doi.org/10.1037/a0015121)
- Muthén LK, Muthén BO (2012) *Mplus user's guide*, 7th edn. Muthén & Muthén, Los Angeles
- Nuttman-Shwartz O (2004) Like a high wave: adjustment to retirement. *Gerontol* 44:229–236
- Reitzes DC, Mutran EJ (2004) The transition to retirement: stages and factors that influence retirement adjustment. *Int J Aging Hum Dev* 59:63–84. doi:[10.2190/NYPP-RFFP-5RFF-8EB8](https://doi.org/10.2190/NYPP-RFFP-5RFF-8EB8)
- Ryff CD (1989) Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *J Pers Soc Psychol* 57:1069–1081. doi:[10.1037/0022-3514.57.6.1069](https://doi.org/10.1037/0022-3514.57.6.1069)
- Shek D (1989) Validity of the Chinese version of the general health questionnaire. *J Clin Psychol* 45:890–897. doi:[10.1002/1097-4679\(198911\)45:6<890::AID-JCLP2270450610>3.0.CO;2-G](https://doi.org/10.1002/1097-4679(198911)45:6<890::AID-JCLP2270450610>3.0.CO;2-G)
- Stoller MA, Stoller EP (2003) Perceived income adequacy among elderly retirees. *J Appl Gerontol* 22:230–251
- Taylor MA, Shore LM (1995) Predictors of planned retirement age: an application of Beehr's model. *Psychol Aging* 10:76–83. doi:[10.1037/0882-7974.10.1.76](https://doi.org/10.1037/0882-7974.10.1.76)
- van Breukelen GJP (2006) ANCOVA versus change from baseline had more power in randomized studies and more bias in nonrandomized studies. *J Clin Epidemiol* 59:920–925. doi:[10.1016/j.jclinepi.2006.02.007](https://doi.org/10.1016/j.jclinepi.2006.02.007)
- van Solinge H, Henkens K (2008) Adjustment to and satisfaction with retirement: two of a kind? *Psychol Aging* 23:422–434. doi:[10.1037/0882-7974.23.2.422](https://doi.org/10.1037/0882-7974.23.2.422)
- Wang M (2007) Profiling retirees in the retirement transition and adjustment process: examining the longitudinal change patterns of retirees' psychological well-being. *J Appl Psychol* 92:455–474. doi:[10.1037/0021-9010.92.2.455](https://doi.org/10.1037/0021-9010.92.2.455)
- Wang M, Zhang Y, Liu S, Shultz K (2008) Antecedents of bridge employment: a longitudinal investigation. *J Appl Psychol* 93:818–830. doi:[10.1037/0021-9010.93.4.818](https://doi.org/10.1037/0021-9010.93.4.818)
- Wang M, Henkens K, van Solinge H (2011) A review of theoretical and empirical advancements. *Am Psychol* 66:204–213. doi:[10.1037/a0022414](https://doi.org/10.1037/a0022414)
- Ware JE, Sherbourne CD (1992) The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. *Med Care* 30:473–483. doi:[10.1097/00005650-199206000-00002](https://doi.org/10.1097/00005650-199206000-00002)
- Wessel JL, Ryan AM, Oswald FL (2008) The relationship between objective and perceived fit with academic major, adaptability and major related outcomes. *J Vocat Behav* 72:363–376. doi:[10.1016/j.jvb.2007.11.003](https://doi.org/10.1016/j.jvb.2007.11.003)
- Westerlund H, Kivimäki M, Singh-Manoux A, Melchior M, Ferrie JE et al (2009) Self-rated health before and after retirement in France (GAZEL): a cohort study. *The Lancet* 374(9705):1889–1896. doi:[10.1016/S0140-6736\(09\)61570-1](https://doi.org/10.1016/S0140-6736(09)61570-1)
- Wong JY, Earl JK (2009) Towards an integrated model of individual, psychosocial, and organizational predictors of retirement adjustment. *J Vocat Behav* 75:1–13. doi:[10.1016/j.jvb.2008.12.010](https://doi.org/10.1016/j.jvb.2008.12.010)
- Yeung DY (2013) Is pre-retirement planning always good? An exploratory study of retirement adjustment among Hong Kong Chinese retirees. *Aging Ment Health* 17:386–393. doi:[10.1080/13607863.2012.732036](https://doi.org/10.1080/13607863.2012.732036)