



An integrated model on purchase intentions of typical and tax-deductible saving products: The roles of retirement goal clarity and age

Dannii Y. Yeung^{*}, Alvin K.K. Ho, Alfred H.K. Lam, Alvin C.H. Lam

Department of Social and Behavioural Sciences, City University of Hong Kong, Tat Chee Avenue, Kowloon Tong, Hong Kong

ARTICLE INFO

Keywords:

Financial planning for retirement
Goal clarity
Social norms
Purchase intentions of financial products

ABSTRACT

Previous research on retirement planning largely focuses on the general tendency to save for retirement. By integrating two theoretical models, namely, interdisciplinary psycho-motivation model and the theory of reasoned action, the present study aims to advance the previous work to examine the effects of social (social norms and social support) and psychological (future time perspective and financial literacy) factors on behavioral intentions for purchasing specific financial products for retirement. Cross-sectional data were obtained from 598 Hong Kong Chinese working adults of a wide age range. Mediation analysis showed that retirement goal clarity could partly account for the effects of financial literacy, social norms, and social support on the purchase intentions of both annuity and other saving products in the commercial market. Additional moderated mediation analyses revealed a stronger mediating effect of retirement goal clarity on the relationship between social norms and annuity products in younger workers than that in older workers. Findings of this study provide valuable insights into the roles of retirement goal clarity and age in the purchase intentions of financial products for retirement. The examination of the newly launched tax-deductible products in younger and older workers further discloses these products are relatively more attractive to younger individuals as a means of financial retirement planning.

1. Introduction

Like many countries across the globe, Hong Kong faces the challenge of an aging population, with life expectancies at birth having risen to 82.7 and 88.1 years for men and women, respectively (Hong Kong Department of Health, 2021). While the retirement age in Hong Kong varies across public and private sectors, the current civil servants of Hong Kong are set to retire at the age of 65 (Civil Service Bureau, 2018). Moreover, there is no universal pension system in Hong Kong; as a result, workers do not receive any financial aids from the government after their retirement. Currently, retirement protection in Hong Kong is largely based on the Mandatory Provident Fund (MPF) scheme, which was implemented by the Hong Kong SAR Government in 2000 as a mandatory retirement savings program to safeguard the entire workforce in Hong Kong. Both employees and their employers are mandated to make a contribution of 5% of the salary of the employees [with a capped amount of HK\$1,500 (approximately USD192) per month]. Given the high life expectancy of the Hong Kong population, retirees will have prolonged post-retirement lives. If post-retirement protection is not

sufficient, retirees may not be able to maintain a quality of life in late adulthood.

In Hong Kong, longitudinal findings have demonstrated that individuals with greater pre-retirement planning exhibited better physical and psychological well-being after retirement (Yeung, 2013; Yeung & Zhou, 2017). A reduction in post-retirement financial resources also contributed to declines in life satisfaction and physical health after retirement (Yeung, 2018). Yet, numerous studies have indicated a lack of retirement savings among Hong Kong's working adults (Chung, Lee, & Pang, 2018; Yeung & Zhou, 2017; Young & Tong, 2019). At the same time, more than half of the respondents in a local survey on young-old Hong Kong adults (aged 55 to 74) reported that their post-retirement quality of life would most likely decrease compared to their current living standards (Hong Kong Ideas Centre, 2014). If this trend continues, the insufficiency of financial resources of retired persons will eventually exacerbate an imbalance of the current available social security system being shared by an exponentially growing aging population. This reveals the essential need to identify the influential factors that affect working adults' financial preparatory behaviors for their retirement. This study

^{*} Corresponding author.

E-mail address: dannii.yeung@cityu.edu.hk (D.Y. Yeung).

<https://doi.org/10.1016/j.socec.2023.101995>

Received 18 April 2022; Received in revised form 12 February 2023; Accepted 21 February 2023

Available online 24 February 2023

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therefore aims to fill this knowledge gap and identify the psychosocial factors to increase working adults' intention to financially prepare for retirement.

1.1. Financial retirement planning

Financial planning is one of the dominant preparatory behaviors for retirement (Lee & Law, 2004). The beneficial effects of financial retirement preparation on retirement adjustment have been well documented in the literature (Noone, Stephens, & Alpass, 2009; Reitzes & Mutran, 2004; Wang, Henkens, & van Solinge, 2011; Yeung, 2013; Yeung & Zhou, 2017). To promote financial planning for retirement, recent research has utilized an interdisciplinary approach to uncover the predictors of these preparatory behaviors. For example, Hershey, Henkens, and Van Dalen's (2010) interdisciplinary psycho-motivation model of financial planning has identified the psychological, social, and institutional factors preceding retirement goals in an adult sample whose age ranged from 25 to 64 years. Specifically, psychological factors include future time perspective, retirement goal clarity, and financial knowledge; social factors include the social support received from important others, such as one's partner, family members, and friends; and institutional factors are quality of employer pension and trust in government.

Hershey et al. (2010) model was later replicated in a Hong Kong Chinese sample of a similar age range by Chou et al. (2015). Their study further demonstrated a sequential relationship among psychological factors and financial retirement planning: future time orientation → goal clarity → financial knowledge → retirement savings planning → savings adequacy. In this sequential model, goal clarity acted as a partial mediator between future time orientation and financial knowledge, whereas financial knowledge was found to partially mediate the effect of goal clarity on retirement savings planning. While social factors, such as spousal support and friend support, indirectly influence retirement savings planning through future time orientation and goal clarity, the effect of institutional factors (including trust in banks and quality of employer pension) was mainly shown on the participants' perceived savings adequacy. These results suggest that relative to social and institutional factors, psychological factors are the proximal predictors of general tendency to perform retirement planning activities.

Theory of reasoned action (TRA; Fishbein & Ajzen, 1977), a social-cognitive model emphasizing the roles of attitudes and beliefs, has also been used to predict retirement planning behaviors. Together with its extension - theory of planned behavior (TPB; Ajzen, 1991), TRA has been adopted to reveal that young Italians' purchase intentions of longevity annuities were predicted by various psychosocial factors, including attitude, social norms, and normative beliefs (Nosi, D'Agostino, Pagliuca, & Pratesi, 2014, 2017). These results are similarly observed in Hong Kong (He & Chou, 2020).

Yet, most of the above-mentioned studies (e.g., Chou et al., 2015; Hershey et al., 2010) only focused on general tendency to plan for retirement, in which the participants were asked to indicate whether they had tried to figure out how much money they need to save for retirement (Chou et al., 2015). However, specific financial products have been launched in different countries to encourage retirement preparation. Given the critical differences between a general need of retirement saving and purchase intentions of specific financial products, whether the predictive factors shown in Hershey et al.'s interdisciplinary psycho-motivation model and TRA are still applicable for specific financial products remains unclear. Therefore, the present study aims to integrate these two theoretical models by investigating the predictiveness of the psychosocial factors on the purchase intentions of specific financial products for retirement.

1.2. Purchase intentions of specific financial products for retirement

Financial retirement planning was often measured by a single item

such as saving behaviors for retirement (e.g., Lusardi & Mitchell, 2011; Noone et al., 2009; Sekita, 2011), or indicated by one's ownership of financial assets such as savings, private pensions, or funds (Chou et al., 2015; Hershey et al., 2010; Niu, Zhou, & Gan, 2020; Noone, Alpass, & Stephens, 2010). While this measure helps to understand one's general intention, it fails to capture the specific behaviors one has planned to financially prepare for retirement. It is only until the recent decades where the literature on retirement planning has slowly extended into the scope of purchasing behaviors of specific financial products, such as annuity products, including immediate annuities [with the return income typically occurs one year after the premium is paid (Hu & Scott, 2007)], and longevity annuities [with the return income occurs after a delayed number of years (Nosi et al., 2014; 2017)].

In attempt to encourage working adults to financially prepare for their retirement, the Hong Kong SAR Government has launched a new policy known as the "Tax Deductions for Annuity Premiums and Mandatory Provident Fund (MPF) Voluntary Contributions Ordinance" in March 2019 to offer tax deduction incentives to tax payers if they make extra contribution (in addition to the mandatory 5% contribution) to their MPF scheme or purchase annuity products. The new ordinance introduces a tax deduction cap of HKD60,000 (~USD7736) for making tax deductible MPF voluntary contributions (MPF-TVC) and subscribing to qualifying deferred annuity policies (QDAP) (HKLEGCO, 2019). The tax-deductible incentive associated with these two financial products should be attractive to working adults to actively plan for their retirement. However, it is not certain whether the psychological and social factors emphasized in the interdisciplinary psycho-motivation model (Hershey et al., 2010) and TRA (Fishbein & Ajzen, 1977) are still predictive of the purchase intentions of these government-initiated policies. This study thereby integrates Hershey et al. (2010) interdisciplinary model and TRA to examine the effects of psychological and social factors on four types of purchase intentions of financial products, including 1) the general purchase intention of financial products for retirement, and purchase intentions of specific financial products including 2) MPF-TVC, 3) QDAP, and 4) other saving products available in the commercial market.

Advancing the traditional single-item measure of financial retirement planning, this study focuses on the purchase intentions of specific financial products for retirement preparation that are available in Hong Kong as well as other countries (e.g., in the USA, the Roth Individual Retirement Account (IRA) provides tax-deferral or tax-deduction incentives when the individuals make voluntary contribution; Adelman & Cross, 2010). The reasons of including and comparing different types of preparatory behaviors for retirement are as follow: First, due to increased life expectancy, the interest rate earned from a bank savings account is generally low (Chetty et al., 2016; Demary & Voigtländer, 2018). The development of financial retirement preparatory behaviors has evolved from traditionally saving cash in one's bank accounts to opting in financial products as a means for better investment. One of these products is annuities, a safer option compared to stocks, yet provides higher returns compared to the interest rate of a savings account. The inclusion of these financial products would provide important information to the policy makers and financial planners regarding the psychological factors hindering working adults' purchase intentions of these products. Second, while the research focusing on the incremental effects brought by psychosocial factors on financial retirement saving has been well established (e.g., Chou et al., 2015; Hershey et al., 2010; Niu et al., 2020; Noone et al., 2010), it would be intriguing to understand if these factors could be applied to the tax-deductible incentive for the purchase of QDAP or making MPF-TVC. Finally, the inclusion of general purchase intentions of financial products for retirement captures individuals' overall intention to financially prepare for retirement especially for those who may not have an explicit idea of which types of financial products to opt in.

In addition, the effect of age will also be examined in this study. Older adults often have more thoughts about retirement as they are

chronologically closer to retirement than younger adults. Evidently, older workers demonstrated more concrete retirement goals compared with their younger counterparts (Hershey, Jacobs-Lawson, & Neukam, 2002). Zhu and Chou (2018) also revealed that the positive effect of retirement saving needs estimation on financial planning was only shown in older workers aged above 44 years but not in younger workers. Inspiring from the past studies, it is estimated that the positive effect of retirement goal clarity on purchase intention of financial products is weaker in younger workers than in older workers. Therefore, this study further proposes that the effects of psychological and social factors on purchase intention of financial products may vary by age.

1.3. The present study

To the best of our knowledge, the element of tax-deductible incentive, and its role in encouraging financial preparation for retirement has yet been examined in the literature on retirement planning. By investigating the newly launched initiatives on promoting retirement preparation, findings of this study will provide valuable insights to both local and international policymakers to identify effective means to promote financial preparation among their working populations, especially through the purchase of financial products for retirement with tax-saving benefits. Inspiring from the past literatures on financial retirement planning and annuity purchasing behavior (Chou et al., 2015; Hershey et al., 2010; Nosi et al., 2014; 2017), the present study integrates two theoretical models, namely, interdisciplinary psycho-motivation model (Chou et al., 2015; Hershey et al., 2010) and TRA (Fishbein & Ajzen, 1977), to investigate the effects of psychological (including future time perspective and financial literacy) and social factors (including social norms and social support) on working adults' purchase intentions of financial products for retirement. The conceptual framework of this study is illustrated in Fig. 1.

Specifically, this study will first explore the relationships between social and psychological factors with purchase intentions of financial products for retirement. The financial products for retirement available

within the current Hong Kong context are chosen, namely, the general purchase intention of financial products for retirement, and purchase intentions of MPF-TVC, QDAP, and other saving products in the commercial market. Based on prior work of Chou et al. (2015) and Nosi et al. (2014), whether retirement goal clarity and retirement attitudes would mediate the abovementioned relationships will also be tested. Lastly, based on the notion that the concreteness of retirement goals may be substantially higher in older workers compared to their younger counterparts (Hershey et al., 2002), it is further hypothesized that age would moderate the mediating effects of retirement attitudes and retirement goal clarity. Three hypotheses for the study are formulated below:

Hypothesis 1 (H1). Financial literacy, future time perspective, social norms, social support, retirement goal clarity, and retirement attitude will be positively associated with purchase intentions of retirement financial products in general, tax-deductible voluntary contributions (MPF-TVC), qualifying deferred annuity policies (QDAP), and other saving products in the commercial market.

Hypothesis 2 (H2). Retirement goal clarity and retirement attitude will partially mediate the effects of social and psychological factors on purchase intentions of financial products for retirement in general, MPF-TVC, QDAP, and other saving products in the commercial market.

Hypothesis 3 (H3). Age will moderate the mediating effects of retirement goal clarity and retirement attitude as proposed in H2.

2. Research method

2.1. Participants

The participants were recruited via a local research marketing company using stratified sampling by age, gender and income groups. Five hundred and ninety-eight Hong Kong Chinese working adults were successfully recruited and completed an online survey, including 15.7% of the participants aged 18–29 years, 23.9% aged 30–39 years, 24.6%

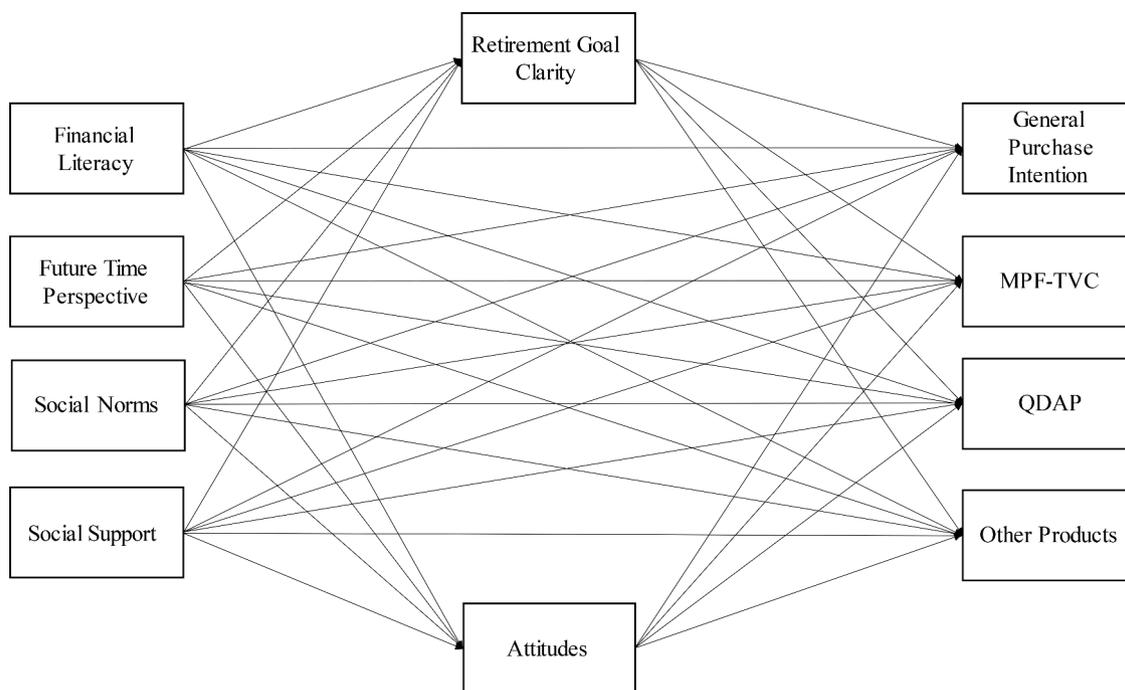


Fig 1. Conceptual model of psychological and social factors predicting purchase intentions of financial products for retirement, with retirement goal clarity and retirement attitude as mediators.

Note. MPF-TVC = purchase intention of mandatory provident fund – tax deductible voluntary contributions; QDAP = purchase intention of qualifying deferred annuity policies; Other products = purchase intention of other saving products in the commercial market.

aged 40–49 years, and 27.3% aged 50–59 years, and the remaining (8.5%) aged 60–65 years. This largely resembles the age distribution of the labor force in Hong Kong (Hong Kong Census & Statistics Department, 2017). A roughly even distribution was shown across the two genders (Male = 52%; Female = 48%), as well as across the four income groups (\leq HK\$19,999 = 23.1%, HK\$20,000–\$29,999 = 27.1%, HK\$30,000–\$49,999 = 27.8%, \geq HK\$50,000 = 22.1%). The majority of the participants (90.8%) were working full-time at the time of data collection, with the rest of them being a part-time (6%) or self-employed (3.2%) worker. The majority of the participants obtained a Bachelor's degree (46.3%), while the remaining obtained a diploma (30.8%) or a postgraduate degree (22.9%).

2.2. Procedure

Ethical approval for human research was first obtained from the Human Subjects Ethics Sub-Committee of the affiliated university. Participants who had a full-time or part-time job were recruited by the research marketing company. Interested parties were directed to an online questionnaire via Qualtrics. The study introduction was first shown on the cover page of the online survey. Two screening questions regarding the potential risks or benefits of participating in this study were devised to ensure that participants fully understood the study purpose and procedure. Incorrect answers for these questions resulted in termination of the research participation. It took approximately 30 min to complete the online survey, and a token of appreciation was provided by the marketing company to the participants who had completed the survey.

2.3. Measures

An online bilingual survey (traditional Chinese and English) was developed. Translation and back-translation procedures were conducted to ensure the linguistic consistency between the Chinese and English versions. Discrepancies between two language versions were discussed and resolved by the research team.

2.3.1. Financial literacy

Based on the Investor and Financial Education Council's (2019) financial competence framework for adults, 35 items covering the following seven aspects of financial knowledge were developed to measure the participants' level of financial literacy, including (1) money and banking, (2) income and taxation, (3) saving and investing, (4) spending and credit, (5) consumer right and responsibilities, (6) financial planning, and (7) protection and risks. Participants were asked to indicate to what extent they were capable to perform each finance-related activity on a 7-point scale ranging from 1 (totally incapable) to 7 (totally capable). A sample item for this measure is "I am able to explain the possible factors affecting exchange rate fluctuations." Higher scores represent greater levels of financial literacy. The Cronbach's alpha of the financial literacy measure in the present study was 0.98.

2.3.2. Future time perspective

Participants' time perception towards the future was measured using the Future Time Perspective (FTP) scale (Carstensen & Lang, 1996; Yeung, Fung, & Chan, 2015). Participants were asked to indicate the extent to which they agreed with each of the 10 items concerning their perceived future time in life on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). A sample item for this measure is "Many opportunities await me in the future." Higher scores represent that participants perceive greater amount of time and opportunities in their future. The Cronbach's alpha of the future time perspective scale was 0.77.

2.3.3. Social norms

Participants' perceived social norms was measured with 4 items used in previous studies on financial retirement planning (Chou et al., 2015; Nosi et al., 2014) to capture whether participants felt obliged to purchase financial products for retirement preparation because of social influences and whether participants had learnt to save since childhood. Participants were asked to rate to what extent they agreed with each of the corresponding items on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). A sample item for this measure is "Most of the people I care about think I should purchase financial products for retirement preparation." Higher scores represent greater levels of social norms perceived by participants. The Cronbach's alpha of the social norm measure was 0.81.

2.3.4. Social support

Participants' perceived social support was measured with 2 items assessing their perceived support from spouse and friends to save for retirement (Chou et al., 2015). Participants were asked to rate to what extent they agreed with each of the two items on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). A sample item for this measure is "My spouse (or partner) believes it is important to save for retirement." Higher scores represent greater levels of social support perceived by participants. The Cronbach's alpha of the social support measure was 0.70.

2.3.5. Retirement goal clarity

Participants' retirement goal clarity was measured with three items adopted from Chou et al. (2015), with each item examining to what extent participants thought they had clear retirement goals. Participants responded to these items on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). A sample item for this measure is "I have thought a great deal about quality of life in retirement." Higher scores represent greater clearer retirement goals possessed by participants. The Cronbach's alpha of the retirement goal clarity was 0.85.

2.3.6. Attitudes towards retirement

Participants' attitudes towards retirement were measured with five items regarding participants' view towards retirement (Chan, Chung, & Yeung, 2021; Glamser, 1976). Participants responded to these items on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). A sample item for this measure is "Retirement is mostly good for a person." Higher scores represent more positive attitudes towards retirement. However, two reverse-coded items were shown to have poor total-item correlations and were thus removed from this measure. The Cronbach's alpha of the 3-item attitudes towards retirement was 0.80.

2.3.7. Purchase intention of financial products for retirement

Participants' intention to purchase financial products for retirement preparation available in Hong Kong were adapted from Nosi et al. (2014) subscale of behavioral intentions to purchase financial products. Participants' general tendency to purchase a financial product for retirement in the next two years was assessed with three items. A sample item for this measure is "I intend to purchase a financial product for retirement preparation in the next two years." Moreover, purchase intention of each of the following three financial products in the next two years, including (1) mandatory provident fund – tax deductible voluntary contributions (MPF-TVC), (2) qualifying deferred annuity policies (QDAP), and (3) other saving products in the commercial market, was also measured with three items per product. A sample item for the measure on the purchase intention of MPF-TVC is "I intend to make MPF Tax Deductible Voluntary Contributions in the next two years." These items were rated on a 7-point Likert scale ranging from 1 (extremely unlikely) to 7 (extremely likely), with higher scores representing stronger purchase intention. The Cronbach's alphas of the measurement on the general purchase intention of retirement financial product, the purchase intention of MPF-TVC, QDAP, and other saving

products in the commercial market were 0.94, 0.97, 0.97, and 0.96, respectively, indicating a high level of internal consistency for the measures on various financial products.

2.3.8. Covariates

Participants' age (1 = 18–29 years; 2 = 30–39 years; 3 = 40–49 years; 4 = 50–59 years; 5 = 60–65 years), gender (1 = male; 2 = female), personal monthly salary (1 = ≤HK\$19,999; 2 = HK\$20,000–\$29,999; 3 = HK\$30,000–\$49,999; 4 = ≥HK\$50,000) were recorded as covariates. In addition, the highest education obtained (1 = diploma or below; 2 = Bachelor's degree; 3 = Master's degree or above) and employment status (1 = full-time employee; 0 = part-time employee or self-employed) were also controlled as covariates. Past research showed that work stress was associated with early retirement intention (Toczek, Bosma, & Peter, 2022) and younger retirement age (Mäcken, 2019), which could presumably affect both retirement goal clarity and attitudes towards retirement. As a result, participants' level of work stress [which were measured by 10 items from Cohen, Kamarck, and Mermelstein (1983) and Yeung and Wong (2020) on a 5-point rating scale] was included as a covariate. Lastly, trust in stakeholders (which was measured by 3 items from Chou et al., 2015 on a 7-point rating scale) was also included in the analyses as covariates.

2.4. Analytical plan

To test H1, correlation analyses were performed to see if the psychological and social variables (i.e., financial literacy, future time perspective, social norms, social support, retirement goal clarity, and retirement attitudes) were correlated with the purchase intentions of the four financial products (i.e., general purchase intention, MPF-TVC, QDAP, and other saving products in the commercial market). The mediating effects of retirement goal clarity and retirement attitude (H2) were tested in a regression model where financial literacy, future time perspective, social norms, and social support were entered as independent variables; retirement goal clarity and retirement attitude as mediators; and the purchase intentions of the four financial products as dependent variables. H3 was tested by examining the possible moderating effect of age on each significant IV-M-DV pathway (i.e., moderated mediation) included in H2.

3. Results

3.1. Descriptive analyses

The descriptive statistics of and the correlation among the major variables are presented in Table 1. Financial literacy was significantly correlated with retirement goal clarity ($r = 0.52$), attitudes towards retirement ($r = 0.33$), and the purchase intention of four financial products (r ranged from 0.30 to 0.43), all $ps < 0.001$. Likewise, significant correlations were found between FTP and the following variables, including retirement goal clarity ($r = 0.40$), attitudes towards retirement ($r = 0.37$), and purchase intention of four financial products (r ranged from 0.23 to 0.34), all $ps < 0.001$. Moreover, social norms were found to be significantly correlated with retirement goal clarity ($r = 0.60$), attitudes towards retirement ($r = 0.34$), and all kinds of purchase intention (r ranged from 0.34 to 0.51), all $ps < 0.001$. Similarly, it was found that social support was significantly correlated with retirement goal clarity ($r = 0.55$), attitudes towards retirement ($r = 0.36$), and all kinds of purchase intention (r ranged from 0.18 to 0.45), all $ps < 0.001$. Nonetheless, all kinds of purchase intentions were also significantly correlated with retirement goal clarity (r ranged from 0.28 to 0.57) and retirement attitudes (r ranged from 0.23 to 0.33), all $ps < 0.001$. Given the significant positive correlations among all psychological and social variables and the purchase intention of four financial products, H1 is therefore supported.

Table 1
Descriptive statistics and correlation among major variables (N = 598).

Variable	M	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
(1) Age	-	-	1.00																
(2) Gender (Male)	52%	-	-0.05	1.00															
(3) Salary	-	-	.12**	-0.22***	1.00														
(4) Education	-	-	-0.16***	-0.09*	.43***	1.00													
(5) Employment status (full-time)	90.8%	-	-0.11**	-0.09*	.20***	.08*	1.00												
(6) Work stress	2.87	.58	-0.21***	.11**	-0.10*	.03	.07	1.00											
(7) Trust	3.85	1.25	.09*	-0.07	.16***	.04	.03	-0.14**	1.00										
(8) FL	4.59	1.03	.13**	-0.15***	.28***	.23***	.04	-0.26***	.40***	1.00									
(9) FTP	4.33	.74	-0.02	-0.03	.14**	.10*	.02	-0.33***	.38***	.47***	1.00								
(10) SN	4.81	.99	.11**	.01	.15***	.11**	.00	-0.13**	.40***	.47***	.37***	1.00							
(11) SS	4.95	1.14	.16***	-0.03	.12**	.06	.00	-0.17***	.23***	.39***	.26***	.60***	1.00						
(12) Retirement goal clarity	4.52	1.20	.18**	-0.01	.22***	.09*	.02	-0.19***	.39***	.52***	.40***	.60***	.55***	1.00					
(13) Attitudes	4.63	1.14	.03	-0.05	.14**	.14**	.04	-0.08	.32***	.33***	.37***	.34***	.36***	.50***	1.00				
(14) GPI	4.49	1.37	.12**	.00	.18***	.11**	.07	-0.10*	.38***	.43***	.29***	.51***	.45***	.57***	.33***	1.00			
(15) MPF-TVC	3.87	1.61	-0.01	.03	.12**	.11**	.05	.06	.44***	.30***	.27***	.34***	.18***	.28***	.23***	.45***	1.00		
(16) QDAP	3.98	1.55	.06	.03	.14**	.12**	.05	.00	.38***	.35***	.23***	.38***	.24***	.38***	.27***	.55***	.70***	1.00	
(17) Others	4.16	1.48	.00	.04	.10*	.09*	.06	.01	.40***	.37***	.34***	.44***	.34***	.45***	.30***	.65***	.59***	.65***	1.00

Note. FL = financial literacy; FTP = future time perspective; SN = social norms; SS = social support; GPI = general purchase intention of retirement financial product; MPF-TVC = purchase intention of mandatory provident fund – tax deductible voluntary contributions; QDAP = purchase intention of qualifying deferred annuity policies; Other products = purchase intention of other saving products in the commercial market. Age was coded as 1 = 18–29 years; 2 = 30–39 years; 3 = 40–49 years; 4 = 50–59 years; 5 = 60–65 years. Gender was coded as 1 = male and 2 = female. Salary was coded as 1 = ≤HK\$19,999; 2 = HK\$20,000–\$29,999; 3 = HK\$30,000–\$49,999; 4 = ≥HK\$50,000. Education was coded as 1 = diploma or below; 2 = a Bachelor's degree; 3 = Master's degree or above. Employment status was coded as 1 = full-time employee and 0 = part-time employee or self-employed. * $p < .05$; ** $p < .01$; *** $p < .001$.

3.2. Mediation analysis

The R package lavaan (Rosseel, 2012) was used to perform a mediation analysis to test the second hypothesis. Financial literacy, future time perspective, social norms, and social support were inputted to the model as independent variables, with both retirement goal clarity and attitudes as mediators, and the general purchase intention of retirement financial product, the purchase intentions of MPF-TVC, QDAP, and other saving products in the commercial market as dependent variables (which were examined altogether in a single mediation model). Participants' age, gender, personal monthly salary, education, employment status, level of work stress, and trust in stakeholders were controlled as covariates. The results of the mediation analysis are shown in Fig. 2 and Table 2.

The model fit of the mediation model was satisfactory, $\chi^2(14) = 44.72, p < .001, CFI = 0.99, TLI = 0.91, RMSEA = 0.06, SRMR = 0.02$. Partially in consistent with the predictions in H2, retirement goal clarity was found to be a significant mediator. In particular, significant indirect effects of financial literacy through retirement goal clarity were found on the general purchase intention of retirement financial product ($B = .09, SE = .02, p < .001$), the purchase intentions of QDAP ($B = .04, SE = .02, p = .030$) and other saving products ($B = .06, SE = .02, p = .002$). Retirement goal clarity partially mediated the effects of financial literacy on these purchase intentions. Moreover, retirement goal clarity could also account for the effects of future time perspective on the general purchase intention of retirement financial product ($B = .07, SE = .02, p = .002$) and the purchase intention of other saving products in the commercial market ($B = .04, SE = .02, p = .012$). Retirement goal clarity fully mediated the effect of future time perspective on the general purchase intention of retirement financial product, and partially mediated its effect on the purchase intention of other saving products in the commercial market.

Similarly, retirement goal clarity could also account for the effects of social norms on the general purchase intention of retirement financial product ($B = .12, SE = .03, p < .001$), the purchase intentions of QDAP ($B = .05, SE = .03, p = .028$) and other saving products in the

commercial market ($B = .08, SE = .02, p = .002$). Retirement goal clarity partially mediated the effects of social norms on these purchase intentions. Likewise, significant indirect effects of social support through retirement goal clarity were found on the general purchase intention of retirement financial product ($B = .09, SE = .02, p < .001$), the purchase intentions of QDAP ($B = .04, SE = .02, p = .028$) and other saving products in the commercial market ($B = .06, SE = .02, p = .002$). However, none of the indirect effects through retirement goal clarity was found on the purchase intention of MPF-TVC. Therefore, retirement goal clarity only partially mediated the effect of social support on the general purchase intention of retirement financial product, and fully mediated its effect on the purchase intentions of QDAP and other saving products in the commercial market.

Contrary to the prediction in H2, attitudes towards retirement could not account for the effects of social and psychological factors on the purchase intentions of financial products. Hence, H2 is partly supported.

3.3. Moderated mediation analyses

Given the significant mediating effects of retirement goal clarity, additional moderated mediation analyses were performed to test H3, which aimed to investigate whether age could moderate the mediating effects of retirement goal clarity in each of the IV-DV pathways in the mediation models. In these analyses, age was treated as the moderator with three levels: 1 = 18-29 years; 2 = 30-49 years; and 3 = 50 years or above. With gender, monthly income, education, employment status, level of work stress, and trust being controlled as covariates, PROCESS macro (model 59; Hayes, 2018) was used to test whether age moderates the mediating effects of goal clarity on the relationship between IVs (financial literacy, future time perspective, social norms, and social support) and DVs. Four moderated mediation analyses were conducted on each of the DVs, including general purchase intention of retirement financial product, the purchase intentions of MPF-TVC, QDAP, and other saving products in the commercial market in the present study. Among all the possible mediating pathways, it was observed that age could moderate the indirect effect of social norms through retirement goal

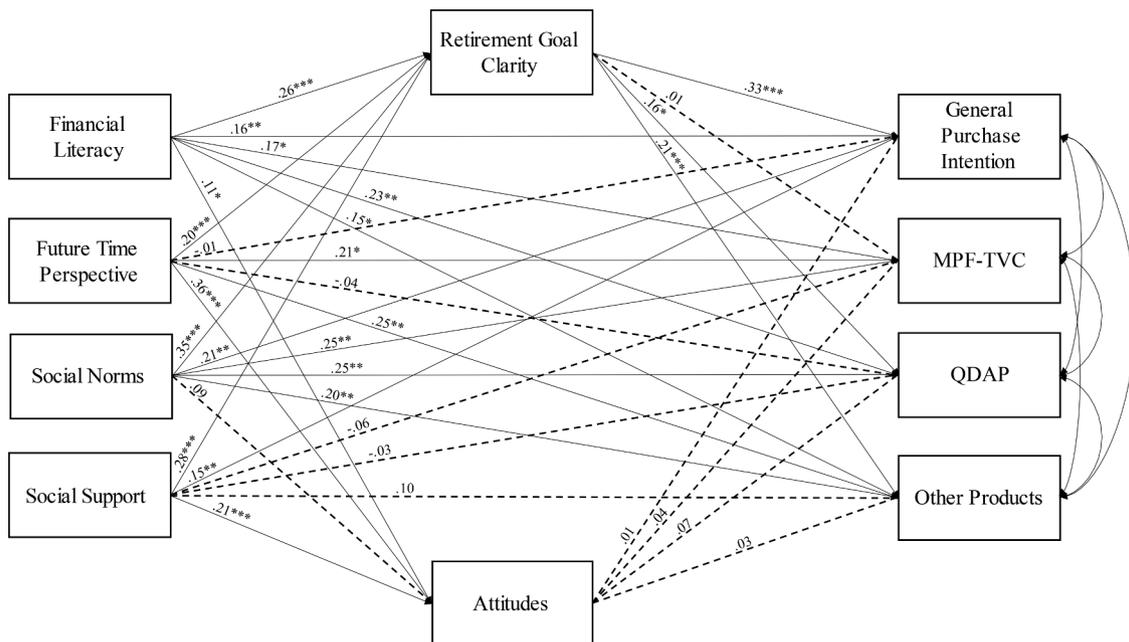


Fig 2. The unstandardised coefficients of the mediation analysis.

Note. MPF-TVC = purchase intention of mandatory provident fund – tax deductible voluntary contributions; QDAP = purchase intention of qualifying deferred annuity policies; Other products = purchase intention of other saving products in the commercial market. Numbers next to each IV-M/IV-DV pathway denotes its corresponding unstandardized coefficient. Numbers next to each M-DV pathway denotes the unstandardized coefficient of respective mediators on each of the DVs. The solid lines denote significant associations between variables at $p < .05$ while dashed lines denote non-significant associations. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2
The total, direct, and indirect effects of financial literacy, future time perspective, social norms, and social support on purchase intentions through retirement goal clarity and attitudes towards retirement.

Financial Literacy	General Purchase Intention <i>B (SE) [95% CI]</i>	MPF-TVC <i>B (SE) [95%CI]</i>	QDAP <i>B (SE) [95%CI]</i>	Other Products <i>B (SE) [95%CI]</i>
Total effect	.24*** (0.06)	.16* (0.07)	.27*** (0.07)	.21** (0.06)
Direct effect	.15** (0.08)	.16* (0.08)	.22** (0.07)	.15* (0.07)
Indirect via retirement goal clarity	.09*** (0.02) [.047, 0.124]	.00 (02) [−.034, .036]	.04* (0.02) [.004, 0.076]	.06** (0.02) [.020, 0.091]
Indirect via attitudes towards retirement	.00 (0.01) [−.009, 0.011]	.00 (0.01) [−.009, 0.017]	.01 (0.01) [−.006, 0.022]	.00 (0.01) [−.009, 0.015]
Future Time Perspective				
Total effect	.06 (0.08)	.23* (0.10)	.02 (0.09)	.30*** (0.09)
Direct effect	−0.01 (0.08)	.21* (0.10)	−0.04 (0.10)	.25** (0.09)
Indirect via retirement goal clarity	.07** (0.02) [.025, 0.110]	.00 (0.01) [−.027, 0.028]	.03 (0.02) [−.00, 0.063]	.04* (0.02) [.010, 0.078]
Indirect via attitudes towards retirement	.01 (0.02) [−.029, 0.036]	.01 (0.02) [−.030, 0.056]	.03 (0.02) [−.016, 0.068]	.01 (0.02) [−.028, 0.047]
Social Norms				
Total effect	.32*** (0.06)	.25** (0.08)	.31*** (0.08)	.28*** (0.07)
Direct effect	.21** (0.06)	.24** (0.08)	.24** (0.08)	.20** (0.07)
Indirect via retirement goal clarity	.12*** (0.03) [.068, 0.164]	.00 (0.02) [−.046, 0.049]	.05* (0.03) [.006, 0.102]	.08** (0.02) [.028, 0.121]
Indirect via attitudes towards retirement	.00 (0.00) [−.007, 0.009]	.00 (0.01) [−.008, 0.015]	.01 (0.01) [−.006, 0.019]	.00 (0.01) [−.007, 0.012]
Social Support				
Total effect	.25*** (0.05)	−0.05 (0.07)	.03 (0.06)	.17** (0.06)
Direct effect	.15** (0.05)	−0.05 (0.07)	−0.03 (0.07)	.10 (0.06)
Indirect via retirement goal clarity	.09*** (0.02) [.052, 0.130]	.00 (0.02) [−.036, 0.039]	.04* (0.02) [.005, 0.081]	.06** (0.02) [.022, 0.096]
Indirect via attitudes towards retirement	.00 (0.01) [−.017, 0.021]	.01 (0.01) [−.017, 0.032]	.02 (0.01) [−.010, 0.040]	.01 (0.01) [−.016, 0.027]

Note. MPF-TVC = purchase intention of mandatory provident fund – tax deductible voluntary contributions; QDAP = purchase intention of qualifying deferred annuity policies; Other products = purchase intention of other saving products in the commercial market. * $p < .05$; ** $p < .01$; *** $p < .001$.

clarity on the purchase intention of QDAP, with the significant mediating effect only shown among workers who were aged 18–29 years relative to those who were aged 30–49 years ($B = -.23, SE = 0.12, 95\% CI = [−.475, −.002]$) as well as those who were aged 50 years or above ($B = -.24, SE = 0.12, 95\% CI = [−.487, −.013]$). Accordingly, H3 is partly supported.

4. Discussion

There is a growing need to promote financial retirement planning to ensure that retirees’ quality of life can be maintained during the

retirement transition period as well as in late age. For example, the Hong Kong SAR government launched new initiatives to promote purchasing annuities and making voluntary contributions for retirement. Integrating the theoretical frameworks of the interdisciplinary psycho-motivation model (Chou et al., 2015; Hershey et al., 2010) and TRA (Fishbein & Ajzen, 1977), this study investigates the social and psychological factors that may affect working adults’ purchase intentions of the newly-initiated financial products for retirement, including MPF-TVC, QDAP and other saving products in the commercial market, which helps extend the existing work from understanding the general saving behavior to explaining the intended purchase behaviors for specific financial products for retirement. The findings of the study highlight the importance of retirement goal clarity in influencing the purchase intentions of both general and specific financial products for retirement, as well as the moderating role of age in the framework of financial planning for retirement. Results of the present research indicate the mediating effects of retirement goal clarity are not universal across all age groups as well as different financial products for retirement. In particular, while retirement goal clarity was found capable to mediate the relationship between social norms and purchase intention of qualifying deferred annuity policies (QDAP), such an effect was only shown among the youngest workers in the current sample (aged 18–29 years), but not those who were aged 30–49 or 50 and above, which suggests the variability in such a mediating effect among different age groups. Moreover, the effect of retirement goal clarity has been found to vary across different financial products for retirement (e.g., retirement goal clarity mediated the effects of all psychosocial factors except for future time perspective on the purchase intention of QDAP, but such mediating effect was not shown on the purchase intention on MPF-TVC at all).

4.1. The role of retirement goal clarity on general purchase intentions and other saving products in the market

The positive effect of retirement goal clarity on general purchase intention of financial products for retirement is in line with Fishbein and Ajzen’s (1977) TRA and its extended model of TPB (Ajzen, 1991), and the past literature on retirement preparation (Chan & Stevens, 2008; Chou et al., 2015; Hershey, Jacobs-Lawson, McArdle, & Hamagami, 2007, 2010; Neukam & Hershey, 2003). Similar to the findings of interdisciplinary psycho-motivation model (Chou et al., 2015), social support and social norms encourage discussions about financial plans and retirement aspirations, which in turn may have facilitated one’s retirement goal clarity when these plans and aspirations are visualized. On the other hand, individuals who have higher levels of financial literacy may have a clearer understanding of how much is needed to prepare for their retirement, and as such may also cultivate clearer retirement goals (Antoni, Saayman, & Vosloo, 2020). Similarly, individuals with a more open-ended future time perspective may have a clearer realization of the need to prepare for retirement due to their relatively prolonged vision of their future (Jacobs-Lawson & Hershey, 2005). This realization may become a source of motivation for them to develop clearer retirement goals.

Consistent with past studies on TRA and TPB (Ajzen, 1991; Fishbein & Ajzen, 1977) and retirement preparation (e.g., Chan & Stevens, 2008; Chou et al., 2014; Hershey et al., 2007; 2010; Neukam & Hershey, 2003; Nosi, D’Agostino, Pagliuca, & Pratesi, 2017), all psychological and social factors were significantly associated with the purchase intentions of other saving products in the commercial market. These findings reveal that working adults, regardless of their cultural backgrounds, show a higher purchase intention of other saving products if they have higher financial literacy, open-ended future time perception, greater social support, and favorable perceived social norms.

The findings of this study further indicated that retirement goal clarity explained the effects of financial literacy on intentions to purchase other saving products in the commercial market. Individuals with

better financial numeracy, a component of financial literacy (Atkinson & Messy, 2012), are more likely to set clearer retirement goals (Antoni et al., 2020). Subsequently, the elevated levels of retirement goal clarity may have led to higher purchase intentions of saving products in the commercial market, as having a clear retirement goal may allow better and more suitable appreciation of appropriate financial products catered to achieve their goals. Additionally, as discussed, one's retirement goal is also likely to be clarified with a more open-ended future time perspective. An individual who perceives a significant amount of time remaining in his/her life is likely to develop clearer retirement goals, as it is a necessary action to plan ahead and ensure that quality of life can be sustained throughout his/her entire lifespan. This may have led to higher purchase intentions of saving products in the commercial market, as it provides an effective strategy to ensure financial income at older ages.

Social support and social norms may have also influenced retirement goal clarity due to peer influence. Compared to social norms that could directly influence the purchasing behaviors, it may be more likely that one's peers, acquaintances, or significant others can affect an individual's aspirations for the future. For instance, it is not uncommon for a married couple to discuss on retirement life, or for a group of friends to discuss their lives after retirement, as it provides positive effects towards retirement (Yeung, 2013). Social support has also been suggested to have a salient influence on career development (Greller & Richtermeyer, 2006). Hence, the effect of social support should be strengthened to enhance retirement preparation and clarify retirement goals, which may have subsequently led to higher purchase intentions of saving products in the commercial market, as a means to effectively achieve the goals. Whereas even if a saving product is well marketed and recommended by others, an individual without a clear retirement goal may have less intention to purchase the product since it is not viewed as a need. Spouses, partners, and close friends should be encouraged to actively discuss retirement plans and aspirations with each other to set a clear retirement goal which will guide their actual preparatory behaviors such as purchasing saving products for their retirement.

4.2. Purchase intentions of QDAP and MPF-TVC products

One of the major findings in the present study is the identification of the direct and mediating effects of retirement goal clarity on the purchase intentions of various specific financial products for retirement that were newly initiated in Hong Kong. The current findings extended Chou et al. (2015) work where the direct and mediating impacts of retirement goal clarity were shown on retirement planning activity, which was operationalized by a single-item question concerning if participants were aware of how much money they will need to retire. This study further reaffirmed that a similar pattern can be, to a certain extent, observed to understand the intention to purchase specific financial products for retirement, which is a more deliberate way to actively prepare for one's own retirement. An intriguing finding in the present study is that while retirement goal clarity mediated the effects of all four psychosocial factors on general purchase intention and the purchase intention of other saving products, this was not the case for the purchase intention of QDAP. Particularly, while the indirect effects of higher financial literacy, social norms, and social support on purchase intentions of QDAP through retirement goal clarity were observed, the indirect effect of future time perspective through retirement goal clarity was not significant. This is rather unexpected due to the similar nature between QDAP and other saving products in the commercial market. The possible explanation could be due to the tax-deductible incentive element of the QDAP, which provides an immediate and short-term reward for those who purchase this financial product. The immediate and short-term reward (i.e., tax deduction) provided in the payment period may have overridden its long-term benefits, thus making those with a more open-ended future time perspective being less influenced by their retirement goal clarity when deciding to purchase QDAP for

retirement preparation.

Another unexpected finding was that retirement goal clarity was not significantly associated with MPF-TVC. While financial literacy, future time perspective, and social norms were independently and directly associated with retirement goal clarity and purchase intentions of MPF-TVC, retirement goal clarity did not account for these relationships, which may be due to its lack of a significant main effect on purchase intentions of MPF-TVC. MPF is a retirement protection scheme that allows financial returns through investment. To further increase the financial returns through voluntary contributions, a large sum of money over time will be required to significantly enhance the amount of possible return at the retirement age. Moreover, the MPF pension scheme is best maximized when it is regularly monitored, such as switching investment fund options during changes in societal and financial environments. Those who have clearer retirement goals may opt to use money to subscribe into annuity plans or other financial products that may provide better return and require less deliberate decision-making to ensure that their retirement goal can be safely fulfilled. Therefore, this finding suggests that providing tax incentive for voluntary contribution does not seem to be an optimal option for financial retirement planning. Policymakers need to gather working adults' views on the MPF-TVC to understand the effectiveness of this new initiative.

The absence of the significant mediating role of retirement goal clarity in accounting for the effects of various psychosocial effects on the purchase intention of MPF-TVC is inconsistent with the prediction. Even though both MPF-TVC and QDAP share the same feature of tax-deduction, MPF-TVC is not likely to be predicted by psychosocial factors via a clearer retirement goal. This result suggests that providing tax incentive to increase contribution to MPF account does not seem to be welcomed by working adults, which may be due to the high management costs or low return rate of MPF.

Taken together, the observed significant predictive effects of the various psychological and social factors on the purchase intentions of the general and specific financial products for retirement offer empirical evidence to the integrated model combining the interdisciplinary psycho-motivation model (Chou et al., 2015; Hershey et al., 2010) and TRA (Fishbein & Ajzen, 1977). Future work could adopt this integrated model to predict diverse financial planning behaviors for retirement.

4.3. The influence of social norms on younger adults

The present study also examined the moderating role of age in the mediation effects as hypothesized in H3. Findings of the study indicated that the indirect effect of social norms on the purchase intention of QDAP through retirement goal clarity were stronger among younger adults compared to their older counterparts. However, the pattern of the moderating effects of age in this mediation model is less straightforward. Specifically, while greater level of perceived social norms alone could not directly predict higher purchase intentions of QDAP for the youngest workers, its indirect predictive power through enhancing one's retirement goal clarity was, unexpectedly and exclusively, observed in the youngest group of workers (aged 18 - 29 years) in the present study.

The moderating effect of age on the mediating effect of retirement goal clarity on the relationship between social norms and purchase intentions of QDAP is most likely due to a combination of age differences in personal goals and the effects of social norms. Past studies have indicated that older adults tend to pursue goals more actively than their younger counterparts (Riediger, Freund, & Baltes, 2005; Stawski, Hershey, & Jacobs-Lawson, 2007), implying that older adults are likely to have already developed retirement plans as entirely leaving the workforce would happen in the next few years. This proposition could be verified by the additional independent sample *t*-tests, in which the level of retirement goal clarity among the youngest workers aged 18–29 being significantly lower ($M = 4.07$) than that of the workers aged 30–49 ($M = 4.52$) and aged 50 or above ($M = 4.72$) in the current sample. With the

well-established and relatively higher level of retirement goal clarity among older workers, their retirement planning behaviors may therefore be less contingent on the level of perceived social norms. On the other hand, younger workers tend to have vaguer ideas about how much to save and less concrete goal perception due to a longer remaining period before retirement and that it develops over the course of physical and mental changes with life experience (Hershey et al., 2002; Stawski et al., 2007; Zhu & Chou, 2018). Moreover, compared with their older counterparts, younger adults' decisions are often more influenced by social context (Mandrik, Fern, & Bao, 2005). Therefore, the substantially higher effects of social norms on retirement goal clarity in younger workers may have been due to their lack of experiences relative to that of older workers, thus resulting in younger workers to be more reliant on and influenced by their peer groups for decision-making and goal setting.

Taken together, the positive effect of age shown in the present study discloses that tax deductible annuities can be an especially effective measure to promote younger workers to start financially planning for their retirement at an earlier age. The policy on retirement preparation will be especially effective when the product is specifically marketed among younger adults by cultivating a beneficial social perspective of the product. Alternatively, enhancing the retirement goal clarity of younger workers is also of high importance to increase their intentions to purchase these products for financial retirement planning.

4.4. Limitations and future directions

This study was conducted in a stratified sample and included newly launched financial products for retirement. However, several limitations and considerations should be considered when interpreting the results of this study. Firstly, two financial products, namely, QDAP and MPF-TVC, examined in the study are largely restricted to the Hong Kong context. In addition to these products, we had also included a general purchase intention and other saving products (such as annuity plans) in the commercial market as the outcome variables of financial planning for retirement, suggesting that our findings could still be of interest to other cultural contexts. Moreover, other countries also offer tax-deductible financial products to increase retirement planning. For example, similar to the tax-deductible features of MPF-TVC, the traditional and the Roth IRA in the United States are the government-initiated policies which aim to incorporate tax-advantaged element for reinforcing citizens' retirement preparation by providing tax-deferral or tax-deduction when making the voluntary contribution or withdrawing the contribution at a later stage (Adelman & Cross, 2010). As a result, international policymakers could still derive from the findings of this study to understand the influential factors and benefits of implementing tax deductible products to encourage retirement planning in younger workers, whereas future studies can also incorporate a similar design to investigate on financial products that are specific to their local market.

Secondly, the outcome measures utilized in this study were the measures of one's purchase intention. While the TRA and TPB (Ajzen, 1991; Fishbein & Ajzen, 1977) suggest that purchase intentions will likely be associated with the actual behaviors, it does not actually capture whether the product is eventually purchased. Future studies can adopt a longitudinal design to examine whether the effects presented in the study can be translated to actual purchasing behaviors of the products in the near future, and explore the factors that contribute to bringing intentions into actions for purchasing financial products.

Finally, the findings obtained are based on cross-sectional data, thus causal and longitudinal effects cannot be identified. Future studies are recommended to utilize a longitudinal research design to investigate on the long-term mediating effects of retirement goal cultivation on the relationship between different psychosocial factors and the relevant purchase intentions of financial products for retirement preparation. Nonetheless, this study provides valuable insights to understand the important role of retirement goal clarity in individuals' purchase

intentions of financial products for retirement preparation, and provides implications for other countries to utilize a similar design to evaluate their own policies for promoting retirement preparation.

5. Conclusion

The present study examined the influence of psychological and social factors, namely, financial literacy, future time perspective, social norms, and social support on purchase intentions of a range of saving products either locally or internationally available in the market. Findings emphasized the role of retirement goal clarity in explaining most of the psychological and social effects on purchase intentions of financial products, and conveyed a significant moderating role of age, where the effects of social norms on purchase intentions of QDAP were better explained by retirement goal clarity in younger workers but not in older workers. This study provides valuable insights for the effectiveness of implementing tax-deductible annuity products as an effective means to promote and encourage saving behaviors starting at a young age. Policymakers or private financial institutions can develop programs and interventions to enhance the retirement goal clarity of workers across all ages to promote the purchase intentions of financial products for adequate savings to support post-retirement life. For example, goal-based retirement planning workshops could be implemented by the government or private financial institutions to provide the required financial knowledge (e.g., differentiating essential and aspirational goals for retirement) to enable Hong Kong working adults to select the best products to fit their unique needs and personal plans after retirement. Additionally, more tax-deductible incentive may also be introduced as an incentive to promote financial planning for retirement starting at a young age.

Funding

This study was supported by the funding of the Investor and Financial Education Council (Project No: 9211233) and the Research Grants Council of the Hong Kong SAR Government under General Research Fund (Reference No: CityU11610022), which were awarded to Danni Yeung.

Ethic approval consent

Ethical approval for human research was obtained from the Human Subjects Ethics Sub-Committee of the affiliated university [H002420].

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The link to the data has been included in the Supplementary File

Acknowledgments

We sincerely thank Investor and Financial Education Council and the Research Grants Council of the Hong Kong SAR Government for their financial support to this project. We also appreciate the participation of all the respondents in this project.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.soccc.2023.101995](https://doi.org/10.1016/j.soccc.2023.101995).

References

- Adelman, S. W., & Cross, M. L. (2010). Comparing a traditional IRA and a Roth IRA: Theory versus practice. *Risk Management and Insurance Review*, 13(2), 265–277. <https://doi.org/10.1111/j.1540-6296.2010.01186.x>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Antoni, X. L., Saayman, M., & Vosloo, N. (2020). The relationship between financial literacy and retirement planning, Nelson Mandela Bay. *International Journal of Business and Management Studies*, 12(2), 579–593.
- Atkinson, A., & Messy, F. (2012). Measuring financial literacy: Results of the OECD /International Network on Financial Education (INFE) Pilot Study. In *OECD working papers on finance, insurance and private pensions*, 15 pp. 1–73. OECD Publishing. <https://doi.org/10.1787/5k9cfs90fr4-en>
- Carstensen, L. L., & Lang, F. R. (1996). *Future time perspective scale (Unpublished manuscript)*. Stanford University.
- Chan, M. C. H., Chung, E. K. H., & Yeung, D. Y. (2021). Attitudes toward retirement drive the effects of retirement preparation on psychological and physical well-being of Hong Kong Chinese retirees over time. *The International Journal of Aging and Human Development*, 93, 584–600. <https://doi.org/10.1177/0091415020926843>
- Chan, S., & Stevens, A. H. (2008). What you don't know can't help you: Pension knowledge and retirement decision-making. *The Review of Economics and Statistics*, 90(2), 253–266. <https://doi.org/10.1162/rest.90.2.253>
- Chetty, R., Stepner, M., Abraham, S., Lin, S., Scuderi, B., Turner, N., et al. (2016). The association between income and life expectancy in the United States. *JAMA*, 315(16), 1750–1766. <https://doi.org/10.1001/jama.2016.4226>
- Chou, K. L., Yu, K. M., Chan, W. S., Chan, A. C., Lum, T. Y., & Zhu, A. Y. (2014). Social and psychological barriers to private retirement savings in Hong Kong. *Journal of Aging & Social Policy*, 26(4), 308–323. <https://doi.org/10.1080/08959420.2014.939840>
- Chou, K. L., Yu, K. M., Chan, W. S., Wu, A. M., Zhu, A. Y., & Lou, V. W. (2015). Perceived retirement savings adequacy in Hong Kong: An interdisciplinary financial planning model. *Ageing & Society*, 35(8), 1565–1586. <https://doi.org/10.1017/S0144686X14000373>
- Chung, T. Y. R., Lee, W. Y. W., & Pang, S. K. E. (2018). *Survey on Hong Kongers' sense of security on savings*. Retrieved on September 4, 2021, from https://www.hkupop.hku.hk/english/report/hkdpb2018/hkdpb_savings_rpt_ENG_pc_POP.pdf
- Civil Service Bureau. (2018). Retirement. Retrieved on September 4, 2021, from <https://www.csb.gov.hk/english/admin/retirement/183.html>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 386–396. <https://doi.org/10.2307/2136404>
- Demary, M., & Voigtländer, M. (2018). *Reasons for the declining real interest rates. (IWF Report 47/18)*. Retrieved on March 31, 2022, from <https://www.econstor.eu/bitstream/10419/190944/1/1043462937.pdf>
- Fishbein, M., & Ajzen, I. (1977). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Glanser, F. D. (1976). Determinants of a positive attitude toward retirement. *Journal of Gerontology*, 31(1), 104–107. <https://doi.org/10.1093/geronj/31.1.104>
- Greller, M. M., & Richtermeyer, S. B. (2006). Changes in social support for professional development and retirement preparation as a function of age. *Human Relations*, 59(9), 1213–1234. <https://doi.org/10.1177/0018726706069766>
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach (2nd ed.)*. New York, NY: The Guilford Press.
- He, A. J., & Chou, K. L. (2020). What affects the demand for long-term care insurance? A study of middle-aged and older adults in Hong Kong. *Journal of Applied Gerontology*, 39(4), 413–422. <https://doi.org/10.1177/0733464818766598>
- Hershey, D. A., Henkens, K., & Van Dalen, H. P. (2010). Aging and financial planning for retirement: Interdisciplinary influences viewed through a cross-cultural lens. *The International Journal of Aging and Human Development*, 70(1), 1–38. <https://doi.org/10.2190/AG.70.1.a>
- Hershey, D. A., Jacobs-Lawson, J. M., McArdle, J. J., & Hamagami, F. (2007). Psychological foundations of financial planning for retirement. *Journal of Adult Development*, 14(1–2), 26–36. <https://doi.org/10.1007/s10804-007-9028-1>
- Hershey, D. A., Jacobs-Lawson, J. M., & Neukam, K. A. (2002). Influences of age and gender on workers' goals for retirement. *The International Journal of Aging and Human Development*, 55(2), 163–179. <https://doi.org/10.2190/6WCP-TMJR-AR8B-BFC6>
- HKLEGCO (March (2019)). Inland revenue and mpf schemes legislation (Tax deductions for annuity premiums and mpf voluntary contributions) (Amendment) ordinance 2019. Retrieved on September 4, 2021, from <https://www.legco.gov.hk/yr18-19/english/ord/2019ord007-e.pdf>
- Hong Kong Census & Statistics Department. (2017). Labour force, labour force (Excluding foreign domestic helpers) by sex, working age and year. Retrieved on 10 January 2023, from <https://www.byensus2016.gov.hk/en/bc-mt.html?search=C105a>
- Hong Kong Department of Health. (2021). Life expectancy at birth (Male and female), 1971–2020. Retrieved on September 4, 2021, from <https://www.chp.gov.hk/en/s/statistics/data/10/27/111.html>
- Hong Kong Ideas Centre (2014). Study on young elderly in Hong Kong. Retrieved on September 4, 2021, from <http://www.ideascentre.hk/wordpress/wp-content/uploads/2009/02/Elderly-Main-Report-Final.pdf>
- Hu, W. Y., & Scott, J. S. (2007). Behavioral obstacles in the annuity market. *Financial Analysts Journal*, 63(6), 71–82. <https://doi.org/10.2469/faj.v63.n6.4928>
- Investor and Financial Education Council. (2019). Hong Kong financial competency framework. Retrieved on September 4, 2021, from <https://www.ifec.org.hk/comm/on/pdf/fcf/hong-kong-financial-competency-framework.pdf>
- Jacobs-Lawson, J. M., & Hershey, D. A. (2005). Influence of future time perspective, financial knowledge, and financial risk tolerance on retirement savings behaviors. *Financial Services Review*, 14(4), 331–344.
- Lee, W. K. M., & Law, K. W. K. (2004). Retirement planning and retirement satisfaction: The need for a national retirement program and policy in Hong Kong. *Journal of Applied Gerontology*, 23(3), 212–233. <https://doi.org/10.1177/0733464804268591>
- Lusardi, A., & Mitchell, O. S. (2011). Financial literacy and retirement planning in the United States. *Journal of Pension Economics and Finance*, 10(4), 509–525. <https://doi.org/10.1017/S147474721100045X>
- Mäcken, J. (2019). Work stress among older employees in Germany: Effects on health and retirement age. *PLoS one*, 14(2), Article e0211487. <https://doi.org/10.1371/journal.pone.0211487>
- Mandrik, C. A., Fern, E. F., & Bao, Y. (2005). Intergenerational influence: Roles of conformity to peers and communication effectiveness. *Psychology & Marketing*, 22(10), 813–832. <https://doi.org/10.1002/mar.20087>
- Neukam, K. A., & Hershey, D. A. (2003). Financial inhibition, financial activation, and saving for retirement. *Financial Services Review*, 12(1), 19.
- Niu, G., Zhou, Y., & Gan, H. (2020). Financial literacy and retirement preparation in China. *Pacific-Basin Finance Journal*, 59, Article 101262. <https://doi.org/10.1016/j.pacfin.2020.101262>
- Noone, J. H., Stephens, C., & Alpess, F. M. (2009). Preretirement planning and well-being in later life: A prospective study. *Research on Aging*, 31(3), 295–317. <https://doi.org/10.1177/0164027508330718>
- Noone, J., Alpess, F., & Stephens, C. (2010). Do men and women differ in their retirement planning? Testing a theoretical model of gendered pathways to retirement preparation. *Research on Aging*, 32(6), 715–738. <https://doi.org/10.1177/0164027510383531>
- Nosi, C., D'Agostino, A., Pagliuca, M. M., & Pratesi, C. A. (2014). Saving for old age: Longevity annuity buying intention of Italian young adults. *Journal of Behavioral and Experimental Economics*, 51, 85–98. <https://doi.org/10.1016/j.socec.2014.05.001>
- Nosi, C., D'Agostino, A., Pagliuca, M. M., & Pratesi, C. A. (2017). Securing retirement at a young age. Exploring the intention to buy longevity annuities through an extended version of the theory of planned behavior. *Sustainability*, 9(6), 1069. <https://doi.org/10.3390/su9061069>
- Reitzes, D. C., & Mutran, E. J. (2004). The transition to retirement: Stages and factors that influence retirement adjustment. *The International Journal of Aging and Human Development*, 59(1), 63–84. <https://doi.org/10.2190/NYPP-RFFP-5RFF-8EB8>
- Riediger, M., Freund, A. M., & Baltes, P. B. (2005). Managing life through personal goals: Intergoal facilitation and intensity of goal pursuit in younger and older adulthood. *Journal of Gerontology: Psychological Sciences*, 60B, P84–P91. <https://doi.org/10.1093/geronb/60.2.p84>
- Rosseel, Y. Lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(2), 1–36. doi:10.18637/jss.v048.i02.
- Sekita, S. (2011). Financial literacy and retirement planning in Japan. *Journal of Pension Economics and Finance*, 10(4), 637. <https://doi.org/10.1017/S1474747211000527>
- Stawski, R. S., Hershey, D. A., & Jacobs-Lawson, J. M. (2007). Goal clarity and financial planning activities as determinants of retirement savings contributions. *International Journal of Aging and Human Development*, 64(1), 13–32. <https://doi.org/10.2190/13GK-5H72-H324-16P2>
- Toczek, L., Bosma, H., & Peter, R. (2022). Early retirement intentions: The impact of employment biographies, work stress and health among a baby-boomer generation. *European Journal of Ageing*, 19, 1479–1491. <https://doi.org/10.1007/s10433-022-00731-0>
- Wang, M., Henkens, K., & van Solinge, H. (2011). Retirement adjustment: A review of theoretical and empirical advancements. *American Psychologist*, 66(3), 204–213. <https://doi.org/10.1037/a0022414>
- Yeung, D. Y. (2013). Is pre-retirement planning always good? An exploratory study of retirement adjustment among Hong Kong Chinese retirees. *Ageing & Mental Health*, 17(3), 386–393. <https://doi.org/10.1080/13607863.2012.732036>
- Yeung, D. Y. (2018). Adjustment to retirement: Effects of resource change on physical and psychological well-being. *European Journal of Ageing*, 15(3), 301–309. <https://doi.org/10.1007/s10433-017-0440-5>
- Yeung, D. Y., Fung, H. H., & Chan, D. K.-S. (2015). Positive effect of social work-related values on work outcomes: The moderating role of age and work situation. *Journal of Gerontology: Series B: Psychological Sciences*, 70(2), 235–246. <https://doi.org/10.1093/geronb/gbt094>
- Yeung, D. Y., & Wong, S. (2020). Effects of cognitive reappraisal and expressive suppression on daily work-related outcomes: Comparison between younger and older Chinese workers. *International Journal of Psychology*, 55(6), 983–994. <https://doi.org/10.1002/ijop.12661>
- Yeung, D. Y., & Zhou, X. (2017). Planning for retirement: Longitudinal effect on retirement resources and post-retirement well-being. *Frontiers in Psychology*, 8, 1300. <https://doi.org/10.3389/fpsyg.2017.01300>
- Young, A., & Tong, S. (2019) (September 12.). Franklin templeton 2019 rise survey: savings attitudes in Hong Kong and China are not keeping up with societal change. Retrieved on September 4, 2021, from <https://global.beyondbullsandbears.com/2019/09/12/franklin-templeton-2019-rise-survey-savings-attitudes-in-hong-kong-and-china-are-not-keeping-up-with-societal-change/>
- Zhu, A. Y. F., & Chou, K. L. (2018). Retirement goal clarity, needs estimation, and saving amount: Evidence from Hong Kong, China. *Journal of Financial Counseling and Planning*, 29(2), 328–342. <https://doi.org/10.1891/1052-3073.29.2.328>