

A theoretical investigation of the development of physical activity
habits in retirement.

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Abstract

Objectives. This study examined the impact of retirement on physical activity patterns. More specifically, the process of initiating and maintaining behaviour changes in physical activity were explored using a self-determination theory perspective (Deci & Ryan, 1991, 2000).

Design. Semi-structured interviews were conducted to explore the formation of lifestyle habits post-retirement, and the role of physical activity within these. Interviews were analysed using thematic analysis and an informal comparison made between physically active and inactive retired adults.

Methods. Eleven participants (7 female, 4 male; 6 physically active, 5 physically inactive) were recruited from churches and a local newspaper advertisement in South West England. On average, participants (M age = 62.91 years; $SD=2.3$) had been retired 2 years and 8 months ($SD= 20.03$).

Results. Three main themes emerged from the interviews specific to retired adults; *social factors*, *lifelong tendencies*, and *sense of purpose*. All retired adults searched for purpose in their lives, and for physically active adults having an exercise schedule contributed to this on a daily basis. Physical activity also represented a source of personal challenge, whereas physically inactive retirees sought meaning and challenge from non-exercise domains. All participants were acutely aware of their mortality, but active participants felt that physical activity would increase their chances of enjoying a healthy retirement, rather than accepting a decline in physical function.

Conclusions. The results highlighted how global aspirations for life after retirement can influence one's post-retirement lifestyle. The implications for future research and potential health promotion approaches are discussed.

A theoretical investigation of the development of physical activity habits in retirement

Introduction

Life expectancy has increased throughout the twentieth century with more adults living beyond 60 years than at any point in history (McMurdo, 2000). In 2002, 20.8% of the UK population were aged 60 years or over and it is estimated that this figure will rise to 29.4% by 2025 (World Health Organization, 2002). Accordingly, looking at ways to promote healthy ageing has become an important priority and a worthy area of research. Physical activity (PA) has been identified as a lifestyle behaviour that is central to adaptive aging (e.g., American College of Sports Medicine, 2006) as it reduces the age-related loss in muscle mass and strength which are linked with declines in the performance of activities of daily living (Hazell, Kenno, & Jakobi, 2007), cardiovascular risk (USDHHS, 1996), obesity, stroke, diabetes, osteoporosis and some forms of cancer (Foster, Hillsdon & Thorogood, 2005). Furthermore, PA has been shown to be associated with improved memory capacity (Whitbourne, Neupert & Lachman, 2008), reduced risk of depression (Lampinen, Heikkinen & Ruoppila, 2000), and better quality of life (Atlantis, Chow, Kirby & Singh, 2004).

Past empirical work has shown previously sedentary adults (Frye, Scheinthal, Kemarskaya & Pruchno, 2007), and adults living with a chronic illness (Heath & Stuart, 2002) to benefit from performing PA in older adulthood. However, PA decreases with age (Department of Health, 2004), and explanations for this decline include the belief that it is less appropriate as one ages (Ostrow & Dzewaltowski, 1986), or that daily errands are sufficient activity for health (Skelton, Young, Walker & Heinville, 1999). In a 20 year longitudinal study, Levy and Myers (2004) reported that perceptions of ageing influence the adoption of preventative health behaviours; that is individuals who had positive perceptions practiced more preventative health behaviours in comparison to individuals who held negative perceptions. Such work indicates that general beliefs can impact on ageing by influencing the behaviours that are performed.

Interventions aimed at promoting changes in adult's exercise behaviours have often shown limited results (e.g., Baranowski, Cullen, Nicklas, Thompson, & Baranowski, 2003). One explanation for this is the failure to account for the role that existing habits play in determining behaviour. Habits

relate to types of behaviour that occur almost automatically in response to familiar environmental cues, bypassing conscious decision-making processes (Verplanken & Wood 2006). Behavioural automaticity makes it difficult to instigate behaviour change in the presence of existing habits. However, points of transition in life such as retirement, represent a period of environmental change when prior habits are disrupted, and there may be greater opportunity for people to successfully change behaviours as behaviour becomes more aligned with conscious decision-making processes (Evenson, Rosamund, Cai, Diez-Roux, & Brancati., 2002). In addition, retirement removes time barriers such as work, alters support networks, and increases concerns regarding health and independence (King, 1991). To explore the potential for retirement as a point to target public health interventions, the present study aimed to extract recently retired adults' accounts of how they selected goals and activities to take part in post-retirement, with a focus on PA. That is, to explore how new PA habits are formed following retirement.

In studying any form of behaviour change, habitual or otherwise, to obtain a full picture the motivation driving it needs to be taken into account. Behaviour change has been conceptualized as a process encompassing two phases; (i) a motivational phase and (ii) a volitional (action) phase (Gollwitzer, 1996). A framework of motivation that has proved useful in studying both the initiation and maintenance of behaviour is self-determination theory (SDT; Deci & Ryan, 1985, 1991, 2000). Within SDT, it is suggested that intentional behaviours are motivated by either autonomous or controlled forms of motivation (Deci & Ryan, 2000). Autonomous motivation refers to occasions when individuals endorse their own actions, and behaviour is carried out with a sense of volition because an activity holds inherent interest and/or personal value (Ryan & Deci, 2006). Controlled motivation occurs when an individual's behaviour is governed by external and/or internal pressures such as being coerced, persuaded, and/or seduced (Ryan & Deci, 2006). Research has consistently shown autonomous forms of motivation to be positively associated with increased behavioural persistence, alongside other positive psychological well-being and adaptive cognitive outcomes (see Deci & Ryan, 2000). From an applied perspective, SDT is appealing as the extent to which one's motivation is autonomous can be modified in response to a number of malleable antecedents within the social environment. The most central of these relate to the degree to which the social context

satisfies three basic psychological needs; autonomy (i.e. a person's need for agency and to perceive oneself as the origin of their own behaviour), competence (i.e. the perception that one is effective and has opportunities to demonstrate these capabilities), and relatedness (i.e. the feeling that one is connected to and cared for by others) (Ryan & Deci 2000). Research in numerous settings (e.g., health-care, education, exercise) has supported the basic needs approach outlined within SDT (Deci & Ryan, 2008).

SDT and habit theory provide a complementary theoretical approach for this investigation as they encompass different aspects of behaviour change: SDT seeks to explain how the social environment can influence the quality of motivation for a given activity, relating this to adaptive psychological and behavioural outcomes (e.g., continued participation). Habit theory examines ways in which past behaviour can influence the success of attempts to change behaviour, and how (given sufficient self-determined motivation to sustain regular participation) behaviours develop to become routine and regular. Recent work couched within SDT has suggested that both autonomous and controlled motives can be primed and non-consciously activated (see Levesque, Copeland, & Sutcliffe, 2008), that is that motivation too can operate at a non-conscious level as do habits. Thus, research exploring the nature of motivational processes underpinning automatic behaviours, their ontogenesis, and application represents an exciting avenue of work (Levesque et al., 2008).

A further aim of the present work was therefore to evaluate the utility of psychological theories such as SDT and habits theory and their applicability in the retired population. Accordingly, we conducted in-depth qualitative interviews with recently retired adults both physically active and inactive to explore the factors underpinning their motivation towards PA during the retirement transition. By interviewing both active and inactive retirees, we were able to explore differences in the decision making processes and motivations between the two groups.

Method

Participants

Participants were recruited using a purposeful sampling strategy to include both active (i.e., \geq two bouts of purposeful exercise per week) and inactive (i.e., $<$ two bouts purposeful exercise per week) adults of both genders, who had retired within the past five years. Participants remained

eligible if they had taken on a part-time job in retirement. The inclusion criteria specified that all adults must be medically fit for low intensity exercise to allow a comparison of psychological rather than physical determinants of PA. Recruitment was through advertisements (posters and leaflets) in local shops, libraries, allotments, hairdressers, and leisure centres, and an article in a local newspaper. Local churches and housing associations were also approached to assist in identifying potential participants.

The final participant group comprised of 11 retired adults recruited from a church congregation (N=6) and newspaper adverts (N=5). Participant demographics are displayed in Table 1. Length of retirement ranged from 6 months to 5 years and 2 months, with a mean of 2 years and 8 months ($SD= 20.03$ months). Participants' participation in PA ranged from no purposeful PA at all, to daily PA.

Table 1

Materials

A semi-structured interview schedule was designed. The first section contained questions about retirement and changes to lifestyle, daily routines and PA levels. In section two, questions focused on the reasons for choosing a particular PA and the lifestyle changes required to accommodate it. For inactive participants, the final section of the interview focused on past attempts to engage in PA and past PA experiences. The schedule was piloted with a 68 year old male to ensure ease of understanding. No changes were made to the interview schedule.

Procedure

Ethical approval was granted by the local institutional Ethics Committee. Participants interested in the project were given an information sheet, and an interview date was arranged for approximately one week later. Interviews took place in church buildings or University property. Immediately prior to the interview participants were reassured that the information exchanged would be confidential and that they would remain anonymous. Participants were informed that they had the right to refuse to answer questions and terminate the interview at any point if they did not wish to continue. Written consent for the interview and its recording was then obtained.

Following the interview participants were given the opportunity to ask questions and make comments. After data analysis was complete, participants were sent a profile of their motivations and beliefs about exercise, and given an opportunity to comment. This was conducted to clarify the accuracy of interview content but did not inform the analysis. Interviews lasted between thirty minutes and one hour and were digitally recorded and transcribed verbatim.

Analysis

The data were analysed using thematic analysis (Braun & Clarke, 2006). This form of analysis allows flexibility as one is guided by the data and the themes that emerge from it (Braun & Clarke, 2006). The thematic analysis was *theoretical* as the interview questions were designed to investigate concepts relevant to SDT and habit theory (e.g., relatedness, autonomy, challenge-seeking, planning, and regularity). However, the initial data coding and extraction of themes was conducted without recourse to theory, and this is what is reported within the *Results* section. Such an approach permitted topics to emerge regardless of their relation to the research question. Subsequently, the raw themes were interpreted in the *Discussion* section in relation to the original theoretical perspective.

Data coding was assisted by the use of the NVivo 8 software program (NVivo, 2008). The interview transcripts were read and reread by the first and second authors, until they were familiar with the content. These authors then coded the data independently. All data were coded first as free nodes on the NVivo software and then grouped into clusters.. For example to form the theme of *lifelong tendencies*, the free nodes of active childhood, family history, long established pattern to behaviour, being in control of one's health, beliefs about retirement, retirement filled with tasks, retirement as a challenge, and enjoying retirement were grouped together with related nodes to form clusters described by the sub-themes of continuation of physical activity habits and visions of ageing and retirement.

Results

Three major themes emerged for the determinants of PA habits in retirement; (i) social factors (ii) lifelong tendencies and (iii) sense of purpose.

Theme 1: Social factors

Social factors such as identifying with a group and feeling supported were important determinants of PA.

Being part of a group

Being valued by a social group was an important reason for attending exercise classes for female participants. For example, participant four chose an exercise class specifically because it facilitated social contact;

P4(F): "I wanted to be able to do something...with other people... I mean swimming they say is very good exercise...I love swimming but then that is an individual sort of thing and I wanted to do something with another group of people so that you had the social side of it".

Participant five discussed the feeling that you would be missed if you did not attend;

P5(F): "People will notice and it makes you feel nice...but it makes you feel...a bit special if people *notice* that you are not there".

Not fitting into a group was identified by inactive participants as a perceived barrier to adopting PA:

P7 (M): "Our church had a keep fit class a while back on a Monday night and a friend and myself were gonna go to it, but the first day I couldn't go...when he got there he was outnumbered [by women] twenty to one... so I didn't go".

Inactive participants reported similar wishes to be part of a social group, but achieved this in non-exercise domains. For example, participant eight discussed her dissatisfaction with a book club;

P8(F): "You can join a book club at the library then I dropped out because it wasn't personal enough; you just met the people once a month you never got to know them".

The fact that inactive participants engaged in other activities suggested that the difference in activity levels was not due to social inadequacy but due to motivation. In the face of difficulty breaking into the group, individuals suggested they needed strong motivation towards this form of exercise to keep

persisting. This is illustrated by participant five, who discussed the difficulty in joining a new exercise-group;

P5(F): “I found it quite difficult to break in to the group...I guess...because people do come and go...so it’s almost an expectation that, you know, it sounds awful ‘we won’t bother to get to know you unless you’re gonna stay’. I found that very hard...but because I wanted to do it... I kind of thought that was very off putting I didn’t like it at all, but I thought ‘I’m gonna break through this’ ”.

In contrast, participant nine (inactive) described her attempt to join a yoga class and how she felt she did not fit into the group;

P9(F): “I did do yoga. That only lasted three weeks because I went with my next door neighbour...she wanted some company but we were both terrible at it and everybody else took it so seriously, so we felt like we was holding back everybody”.

Social support

Being part of a structured group was less important to men in determining PA. Participant three discussed how although he walks regularly with friends, he would not like to be part of a structured group. He stated;

P3(M) “I like a mixture; I like to go on my own sometimes or just one to one with a friend - we’re the same age. But also I like the ones [group walks] from here where we sort of we just move around between people, walk with them for a bit and that’s really good. I wouldn’t join something like the ramblers club though I think they’re too big and a bit regimented. You couldn’t just shoot off up a little lane that you fancy”.

Participant six also stated how he felt having an exercise partner may be beneficial in the initial stages of PA but he preferred the autonomy of exercising alone;

P6(M) “I think that’s the one reason I didn’t go in the first place was you need someone to encourage you. And so in a sense if I had a gym partner someone ... But no, I don’t particularly want one, now I go because either I feel guilty or I want to not because somebody else wants me too”.

Thus, the social theme highlights the potential for gender differences in the determinants of PA.

Theme 2: Lifelong Tendencies

Continuation of Physical Activity habits

Lifelong PA habits were linked with the continuation of PA in retirement (see Table 2).

Table 2

All of the individuals who were physically active in retirement reported that they had increased their PA levels since leaving work, except for participant one whose free time had not increased as she replaced her former working hours with caring responsibility for her grandchild. For other participants, the increase in PA was achieved by increasing the time spent in activities they had engaged in throughout their lives, or by using retirement as a launch pad to take up the physical activities they had enjoyed in childhood. For example;

P5(F)“Because I had more time...tap dancing is something I have always wanted to do. I mean I did ballet and tap when I was younger, it’s a question of you don’t get round to finding out whether there is a class in your area”.

Participant four stated how PA has become a new facet to her life and retirement;

P4 (F) “Well that’s improved 100% because I never used to do any [PA], when I was working I didn’t do any exercise at all. And you’re sat down in an office all day, so my exercise level, my keep fit level has improved 100%”.

However, previous performance of PA did not always equate to the continuation of PA in retirement. Some inactive participants had been active previously, blaming injury for the reduction of PA in later life. Physical inactivity also appeared to persist following retirement. For some, this reflected a lack of motivation to be active;

P9(F)“I never liked physical activity anyway...I’ve got along not doing it for 60 odd years”.

Some of the inactive group made lifestyle changes such as walking for leisure in attempts to become active but failed to maintain these. In these examples, participants explained their failure to maintain their chosen activity through lack of enjoyment, or lack of perceived benefits. The remainder intended to become more active, but made no concrete attempts to do so. Some argued that this was due to a transition period between retirement beginning and settling into a post-retirement routine. Transitional roles were a common feature in retirement for most participants; three participants took on the temporary upheaval of moving house, three took on part-time paid or voluntary work, and four took on caring roles for elderly parents that persisted until that parent died. Thus, in many cases there was an extended period of adjustment between the habits of working life, and the final development of daily habits in retirement. For example, participant eleven has a clear plan of what physical activities she intends take up once other aspects of life have settled down;

P11(F) “I’m sure we will finally establish a routine whereby I’ll probably go back to Rosemary Connelly, and then I’ll start my sort of exercise programme and swimming and stuff like that. But at the moment it’s all sort of a bit haphazard”.

However for most of the active participants PA remains part of a settled routine.

Visions of ageing and retirement

Many participants had a clear vision of the sort of person they wanted to be, or the way they wanted their life to go during retirement;

P2(F): "I don't believe that going into retirement you should start vegetating. You know, you have been busy during your working life, or most people have. You need to keep busy".

P4(F): "I said right from the start when I was retiring 'I'm not gonna be one of these who just sits around you know watches telly and doesn't do anything'. I was determined I was gonna get out and do things".

P9(F) "I didn't figure on spending my retirement here turning into an old lady with a book or a cat".

While being active in retirement in accordance with these aspirations did not automatically require the activity to be physical (e.g., it could be achieved through voluntary work, or joining a choir), engaging in regular PA was a way in which many participants chose to meet this aim.

Comparisons with parents and how their parents aged appeared to be a common motivator for physically active participants, who used PA as a means of achieving or avoiding similar ageing processes. For example;

P1(F) "I wanted to obviously live longer than my parents did and I also realised that it was in my hands, my quality of life was in my hands too. So it was very important for me that I had a low fat diet, that I exercised and I used my brain as well, and that proved right".

P10(F) "When the last parent dies you suddenly think, well you know, well I'm the one on the edge of the precipice now it's gonna be me next'".

Participant three also talked about how PA was so important to him in retirement because he feared that he may one day be limited in activity;

P3(M): "I have taken up physical activity in retirement cause I wanna live as long a life as possible. And you know, while I can really... You never know my age, God forbid I might end up in a wheelchair one day, that could happen, and I don't wanna look back then and think I wish I'd gone out more when I could have done".

In contrast, inactive participants appeared to appreciate the benefits of PA but this alone was not strong enough to motivate them to take regular PA. Participant nine stated;

P9(F) "I know all the theory about keeping fit and healthy, and healthy heart and healthy eating and all the rest of it. Keeping as far you can this sort of the muscles in the body supple, so I know all the reasons to do that ... It's not through lack of awareness it's just lack of inclination".

Participant seven discussed how his friend walked because he felt his life depended on it, but he struggled to do so himself, as he did not have the same motivation;

P7(M) "I don't think my life depends upon walking, it'd be just a recreational thing".

Thus, in common with other inactive participants who intended to take more physical activity, walking was still something he intended to do, but he acknowledged he was doing little, and justified this as due to the ageing process. He stated;

P7(M) "I've not stopped walking; I do occasionally but it's a lot less than it used to be. I suppose because I'm getting old as well".

Active and inactive participants did not differ with respect to their appreciation of the benefits of PA but they differed in terms of putting concrete plans in to place. Even participant nine who stated;

P9(F) "I'd rather pull my finger nails out then go to the gym".

discussed how she would like to take up swimming if she could find the right venue. The difference appeared to be that inactive participants discussed taking part in PA, but were deterred by factors such as cost, children in the pool etc, whereas active individuals committed to activities regardless of these. This difference perhaps reflects participants' underlying motives for PA, with active participants enjoying PA whereas inactive participants attempt to take part because 'it is the right thing to do'.

Theme 3: Sense of purpose

Challenge Seeking.

Both physically active and inactive participants reported adopting new activities as a means of seeking ongoing personal challenges, seemingly to replace the challenges that were previously provided by work. For physically inactive participants, challenge was sought through activities such as part-time paid or voluntary work, additional family caring responsibilities (for grandchildren or elderly parents), or joining clubs and evening classes. However, PA appeared to provide a good source of challenge, lending itself well to setting and monitoring goals and progress. In most cases the challenge related to the gains in fitness achieved by moderate to high intensity PA, which were valued as they are noticeable and meaningful to individuals;

P6 (M): “During the time I’m at the gym the motivation is to try to challenge myself to do a little better, or as well as the time before. I try and do level 7, which means you’re going uphill, so there’s always a challenge. And of course once I’ve managed to do that fairly easily I can move it up”.

P4(F): “I did the Race for Life [5k fun run] at the University in June, and this year because I was fitter I knocked ten minutes off my time. So that was good, I could see an improvement, you know in the benefits that keep fit and the losing weight has had for me. So that’s what spurs me on”.

Apart from fitness benefits, three of the six physically active participants found the challenge that PA provided was in the form of learning new skills. For example;

P4(F): “We absolutely love it [tap dancing] ‘cause it’s a lovely activity and we get a lot of enjoyment out of it. You know, and just learning this is another thing, it’s working your brain, trying to remember the steps and the routines”.

Participant two talks about how she is planning to give up an activity that did not fulfil her learning objectives;

P2(F): “I mean the martial arts at the moment I am not sure I should carry on with that. I am glad I did it, but the whole purpose for going was to learn something about defence for

yourself and it hasn't really fulfilled that criteria. So it's much better to change that and perhaps go belly dancing or something".

Seeking challenges was not a necessary condition for taking regular PA, but appeared to be a valued function of PA for those who did.

Daily purpose

Having a regular PA routine also appeared to provide physically active participants with a sense of daily purpose. Despite most participants stating that they wanted to lead a less regimented life post-retirement, those who exercised regularly seemed to follow a fairly fixed routine:

P1(F): "On Mondays, ... we used to go walking, on Tuesdays, ... my friend and I either swim at the sports centre or play table tennis, and then we shop in the afternoon on Tuesday. On Wednesdays now from here I am going to pick up my granddaughter from school, and I will take her to the park ... and then on Friday go to aerobics".

P2(F): "Well Monday nights...I do martial arts, Tuesday mornings aerobics, Wednesday swimming, Thursday is either swimming or aerobics, and Friday is aerobics again".

Even those who did not feel they had a set routine in other areas of their lives acknowledged that a routine was necessary for them to keep active;

P4(F): "I'm not one of these who [says] on Monday I've got to do cleaning, [on] Tuesday I do so and so. No, I just take it take each day as it comes and when I feel like doing something then I'll do it but I don't have a fixed routine. You know, the only things that are fixed are like you know your hobbies, like you do 'keep fit', which is a fixed thing".

Thus, within this group it appeared that setting firm and specific plans for when and where to PA was a prerequisite to living a physically active lifestyle. Indeed, this need for firm planning was recognised by interviewees;

P3(M): “The night before...I say right I’m definitely gonna...at 9 o’clock tomorrow or whatever I’m gonna go for a walk. I’m pretty good at sticking by that”.

Participant six acknowledges that setting firm plans for PA may be more important in retirement, as having more time available can lead to procrastination. He states,

P6(M): “I think it [taking exercise] was easier then [when I was at work] because now I’ve got all the time in the world. When I was at work I had to think ‘well I’ll have to go Tuesday and Thursday...those are the only two evenings I have’. And now I’ve got from Monday morning till Friday night and you’ve got all the time...you tend to put it off”.

Although not all active participants used PA to create purpose in their lives, it appeared that planning a PA schedule was necessary to keep regularly physically active. It appeared that the failure to formally plan PA into daily life meant that it was a rare occurrence, resulting in the inactive group intending to exercise, but instead only taking PA of a light intensity, constituting transport or the activities of daily living (such as gardening);

P7(M): “I would think ‘What am I doing this afternoon? It’s a nice day, it’s not gonna rain, there’s nothing else to do...’. It wouldn’t be; ‘Oh I must go this on this Wednesday, I must go for my walk.’ I wouldn’t do that. I couldn’t be motivated by saying [I] must do it cause it’s Wednesday”.

P10(F): “We’ve been back now here since May we’re trying to sort of re-establish that routine, but so far ... we haven’t actually. And we will do, I’m sure we will finally establish a routine whereby I’ll probably go back to Rosemary Connelly and then I’ll start my sort of exercise programme and swimming and stuff like that but at the moment its all sort of a bit haphazard I think”.

Discussion

Interviews with 11 recently retired adults resulted in the extraction of three themes highlighting the reasons why they engaged in or avoided physical activity, and the function it had for

them post retirement. Across the three themes, it was found that individuals had a strong sense of what they wanted to achieve (or avoid) in their retirement. Their day to day plans and activities, of which physical activity was one, appeared to be determined by how they contributed to this overall aim. The interviews were designed to explore the role of habits and SDT on exercise participation, and therefore the themes are interpreted from these two theoretical perspectives.

The first theme, social factors, demonstrated how social relationships were important to this population in determining the types of physical activity that they attempted, and whether or not they persisted. For women, being a valued member of a social group, the feeling that one fitted in with the group and would be missed if one was absent was important, and was a commonly cited reason for joining and continuing with exercise classes. Such reasons are consistent with the concept within SDT of the need for people to perceive support for relatedness from their social environment (Deci & Ryan, 2000), as relatedness is reported to stem from feelings of belonging. Furthermore, participants who joined exercise groups but gave up, cited the absence of the feeling of belonging or being able to fit in (i.e., lack of support for relatedness), as the reason for leaving. For example, one male participant avoided an exercise class because it consisted only of women, and one female participant reported leaving a yoga group as the other participants “took it too seriously”. However, it was noted that while exercise classes could provide a source of relatedness, this could equally be provided by sedentary group activities.

Unlike women, most men interviewed did not appear to seek social affiliations or a sense of belonging from physical activity settings. From a SDT perspective, the lesser evidence of a role for relatedness may stem in part from its distal relationship to intrinsic motivation. That is, a sense of relatedness played a more distal role than autonomy and competence in terms of enhancing their intrinsic motivation (i.e., the need for relatedness was less necessary against a backdrop of secure relationships) (Deci & Moller, 2005). However, relatedness is held to be more central to the internalization of extrinsic motivation towards activities, i.e., those activities undertaken to obtain external contingencies such as health (cf. Deci & Moller, 2005); internalization describes the process of adopting activities previously undertaken in response to the direction of others to be one’s own, for example following doctors or spouse’s orders (Deci et al., 1994). Thus, the finding that relational

bonds with others appeared to be less of a concern for men who were undertaking PA for extrinsic reasons such as health or to provide challenge and purpose (as opposed to enjoyment), departs somewhat from the theoretical tenets of SDT. Further research may be useful in investigating this further.

As anticipated, lifelong habits and preferences also proved important in determining patterns of physical activity post-retirement, as illustrated by the second theme. No participants reported significant changes in physical activity levels post-retirement, although most participants reported a small increase in their involvement. However, the type and frequency of physical activity that active participants reported did change, mainly due to having more time available to devote either to existing forms of physical activity, or in taking up new hobbies. In doing so, even existing exercisers reported the need to make a conscious effort to establish new routines in order to maintain regular physical activity. This provides support for the habit discontinuity hypothesis (Verplanken, Walker, Davis & Jurasek, 2008), that suggests that old habits are disrupted when the environment changes, and that while this provides an opportunity for people to adopt new, healthy habits, they also need to expend effort in order to transfer their desired former habits to a new environment. Given that a number of inactive participants either intended to take up exercise but had not, or had tried and failed to establish an exercise routine, early experiences of physical activity environments may be important in determining the continuation of lifelong habits.

The final theme related to participants' desire to replace the sense of purpose and challenge that may previously have been previously provided by the work domain. From an SDT perspective, seeking ongoing optimal challenges at any stage of life is related to one's natural growth tendencies that are central to the theory (Deci & Ryan, 1985, 1991). In the context of the present work, the PA setting appeared to be particularly conducive to providing opportunities for seeking and meeting optimal challenges as it can so readily be tailored to individuals' competencies (Deci & Ryan, 1985). Participants could not only seek challenge through taking part in new or testing activities, but could also adjust the challenge to an optimal level from day to day via setting their own goals (i.e., autonomously endorsed goals).

According to SDT, the reason that seeking and meeting optimal challenges is rewarding, is via the satisfaction of the three basic needs for autonomy, competence, and relatedness (Deci & Vansteenkiste, 2004). There was clear reference to these three concepts in the manner in which physically active participants talked about their decisions to challenge themselves through PA. By setting, monitoring, and revising their own goals, the participants who maintained their activity within the participant group perceived a clear sense of autonomy in relation to their PA behaviour. Conversely, physically inactive participants commonly did not see any personal value in being physically active, and as such their motivation would be expected to remain prompted by external rather than internal prompts. The concept of competence as defined by SDT not only includes feeling effective at the tasks one undertakes, but also feeling one has opportunities to demonstrate one's full capabilities, i.e., opportunities to complete challenging tasks (Deci & Vansteenkiste, 2004). Although both physically active and inactive participants were able to seek out new challenges across a number of settings (e.g., evening classes), the scope within physical activities for individuals to set and/or master incrementally challenging goals that are self-referenced and on which they could obtain immediate feedback (e.g., walking slightly further up the hill without stopping) may be particularly beneficial to the development of autonomous motivation (Deci et al., 1994). Fulfilling the needs for autonomy and competence are essential for developing autonomous engagement (especially for supporting intrinsic motivation; cf. Deci & Ryan, 1985) and subsequently behavioural persistence (Ryan & Deci, 2000). The relationship to relatedness has been discussed previously.

The final theme also related to factors underpinning autonomous motivation by implying that instigating a regular exercise routine was a means for many participants to create structure in their daily lives. According to SDT, the provision of structure is an essential element of autonomous motivation, and in particular of the internalization of initially extrinsic forms of motivation (Ryan & Deci, 2000). Thus a structured PA routine that was undertaken autonomously appeared to contribute to the persistence of such activities, in line with predicted outcomes of internalization. Many of the participants who were classified as physically inactive expressed a wish to perform more exercise; however, their approach to implementing PA into their lifestyles was more ad-hoc. This supports the importance of structure in development of more autonomous motivation and behavioural persistence,

and also provides some support for the role of habits in post-retirement PA patterns. In particular physically active participants set specific plans for when and where they would exercise, akin to implementation intentions (Gollwitzer, 1996), consistent with research that reports frequency and specificity to be crucial to the development of habitual behaviours (Aarts, Paulussen, & Schaalma, 1997).

Limitations

A limitation of the present study was in the likely bias of the participant group. Firstly the group were all white British adults, and the majority from the same, relatively high socio-economic group (see Table 1). Different findings may have been found with other groups, particularly those retiring from manual (i.e., physically active) jobs. While effort was made to recruit both active adults, and a comparison group who were physically inactive, it is likely that those adults interested in taking part in a research study differ in the aspects discussed in this paper than those who are not (i.e., are more outward looking and generally active). Future research could investigate whether the same conceptual and theoretical components would apply within lower socio-economic groups. Another limitation of this study is that six of the participants were recruited from the same place (a local church). While individuals from the same religious community may share similar traits, only three out of the six participants were members of the church; the remaining three participants attended a keep fit class at the church. Furthermore, this investigation was designed to generate an insight into individual experiences rather than generalising to the general population and therefore, every participant provides a valid unique insight into their perception of the way retirement has impacted on their lifestyles and routines.

Conclusions

Overall, three factors appeared to be related to the maintenance of regular PA that were specific to a retired population. These were the need for social affiliation, the continuation of lifelong activity preferences (including having future oriented retirement plans or aspirations for retirement at a general level), and finding purpose and challenge in daily life. The three themes are not independent, as retired adults with future aspirations are more likely to be engaged in their

communities in the short term (i.e., planning and taking up new activities and social contacts), and to be more interested in personal development and challenge seeking. The place for PA within this context was twofold. First, it was undertaken as one of many possible new activities that older adults may choose to adopt for its own sake. As such, it provided a source of challenge and self-development, or a source of new social relationships; however this was in a way that could also be provided by other sedentary activities. Second, PA was undertaken as a means of protecting ones health for a fulfilling retirement. Physically inactive participants contrasted with those who remained active, as although they acknowledged the protective nature of PA they were prepared to make only small changes to their lifestyles in a bid to promote their health.. Consistent with SDT the performance of PA appeared to be related to autonomous motivation, demonstrated by active participants who structured PA into their lives and took part because it was an activity they valued and enjoyed. Physical activity for inactive participants was something that they felt they should do, but did not inherently value or enjoy. Thus, motivation emerged as a key determinant of PA. Future applied research could draw on the motivation literature to investigate how health promotion programmes could more effectively assist individuals without existing habits for physical activity.

Understanding that retirement is a period that is consciously planned and constructed has important implications for health promotion campaigns. All participants had a vision of how they wanted to age and wanted to retire, and as such illustrating how physical activity could help them to achieve these goals could be a fundamental part of helping individuals to be physically active throughout older age.

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Table 1

Participant Demographics

<i>Participant Number</i>	<i>Age</i>	<i>Sex</i>	<i>Former Occupation*</i>	<i>Length of Retirement</i>
1	65	Female	Community psychiatric nurse	62 months
2	61	Female	Health and safety trainer for local council	12 months
3	57	Male	Legal executive	27 months
4	63	Female	Office manager	6 months
5	64	Female	Head teacher	58 months
6	63	Male	Civil servant	21 months
7	65	Male	Dispatch manager	60 months
8	62	Female	Teacher	22 months
9	64	Female	Civil servant	16 months
10	64	Female	Self-employed (ran a guesthouse)	36 months
11	64	Male	Self-employed (ran a guesthouse)	36 months

Notes: all participants were of White British ethnicity; *all participants except No. 2, 10, 11 were from managerial professional occupations, participant 2 was from an intermediate occupation and participants 10 and 11 were self-employed.

Table 2

Participants' physical activity levels pre- and post retirement

<i>Participant number & classification</i>	<i>Physical Activity levels pre-retirement</i>	<i>Physical activity levels post-retirement</i>	<i>Impact of retirement</i>
1 Active	<ul style="list-style-type: none"> • Aerobics class- 1 x week (1hour) • Swimming/ Table Tennis – alternate weeks (30-45 mins) • Walking 5 miles (2.5 – 3 hours)- weekly • Gardening (seasonal) 1 -2 hours – weekly • Occasional swimming since childhood 	<ul style="list-style-type: none"> • Aerobics class- 1 x week (1hour) • Swimming/ Table Tennis – alternate weeks (30-45 mins) • Walking 5 miles ((2.5 – 3 hours) - weekly • Gardening (seasonal) 1 -2 hours – weekly 	<ul style="list-style-type: none"> • No change – caring duties replaced work commitments
2 Active	<ul style="list-style-type: none"> • Gym – 3 x week 	<ul style="list-style-type: none"> • Aerobics – 2–3 x week – (1 	<ul style="list-style-type: none"> • Increased slightly due to

		<ul style="list-style-type: none"> • Salsa Dancing - occasional • Swimming - regular • Occasional aerobics since adolescence 	<ul style="list-style-type: none"> hour) • Martial Arts – 1-2 x week –(30 minutes) • Swimming – 1 x – (45 minutes) • Cycling – 1-2 x week –(1 hour) • Walking – 1-2 x week – (1 hour) • Gardening - occasional 	<ul style="list-style-type: none"> more free time.
3	Active	<ul style="list-style-type: none"> • Ballroom dancing 1 x week • Gardening - occasional • Walking (rambling) throughout his life – regular 	<ul style="list-style-type: none"> • Walks 10 miles a week over three days • Gardening - occasional 	<ul style="list-style-type: none"> • Increased slightly due to more free time • Competes with increase in sedentary activities/pastimes
4	Active	<ul style="list-style-type: none"> • Lawn Bowling regularly • Tap dancing as a child 	<ul style="list-style-type: none"> • Keep fit – 3 x week – (1 hour) • Tap dancing – 1 x week – (45 minutes) • Lawn Bowling – 1-2 x week – (3 hours) • Gardening – 1 x week 	<ul style="list-style-type: none"> • Increased due to conscious plan of getting fit in retirement.

5	Active	<ul style="list-style-type: none"> • Keep fit – 1 x week • Tap dancing as a child • Occasional yoga 	<ul style="list-style-type: none"> • Walking for transport • Keep Fit – 2 x week – (1 hour) • Tap Dancing – 1 x week – (45 minutes) • Gardening 2-3 x week – (seasonal) 	<ul style="list-style-type: none"> • Increased in an attempt to keep active. • Competes with increase in sedentary activities/pastimes
6	Active	<ul style="list-style-type: none"> • Gym 1- 2 x week (1 hour) 	<ul style="list-style-type: none"> • Gym – 1-2 x week – (1 hour) • Walking – daily – varies • Gardening – 1 x week – (2 hours) 	<ul style="list-style-type: none"> • Increased walking as a means of transport
7	Inactive	<ul style="list-style-type: none"> • No PA since childhood 	<ul style="list-style-type: none"> • Gardening - regular • Initial attempted to increase walking - not maintained. 	<ul style="list-style-type: none"> • Initial intention and attempt to increase PA post retirement • No long-term change achieved
8	Inactive	<ul style="list-style-type: none"> • Short-term gym attendance in mid adulthood 	<ul style="list-style-type: none"> • Walking – transport. 	<ul style="list-style-type: none"> • No change, barrier cited as no appropriate group for

				exercise.
				<ul style="list-style-type: none"> • Competes with increase in sedentary activities/pastimes
9	Inactive	<ul style="list-style-type: none"> • Short-term regular swimming in mid/late adulthood 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • No change and no intention to change. • Competes with increase in sedentary activities/pastimes
10	Inactive	<ul style="list-style-type: none"> • No PA since childhood 	<ul style="list-style-type: none"> • Keep fit – 1 x week; not maintained beyond first 8 months of retirement 	<ul style="list-style-type: none"> • Intention to increase physical activity • Competes with increase in sedentary activities/pastimes • No behaviour change
11	Inactive	<ul style="list-style-type: none"> • Swam competitively as a child • Former GB athlete – young adulthood. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Intention to increase physical activity • No behaviour change

- Golf - occasionally as an adult
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