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Physical Activity Beliefs of New Professionals Employed as Academic Professors: An Application of the Theory of Planned Behavior

Perceptions de l'activité physique des nouveaux professionnels qui deviennent professeurs d'université: Application de la théorie des comportements planifiés

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Regular physical activity (PA) has been demonstrated to reduce the risk of several chronic diseases and improve physiological and psychological health. Despite these known benefits the majority of Canadian young adults (ages 25-44) remain inactive, and there is a need to promote PA among this at-risk population. One understudied life-transition that may be an important contributor to decreased PA is entering the professional workforce. Professional occupations typically require postgraduate education training (e.g., Ph.D., M.D.), and have been associated with the highest number of work hours and lowest work-related PA (e.g., sitting-time) compared to blue-collar occupations. Academia has been chosen for this study as a bourgeoning example of a professional occupation associated with long work hours, multiple work demands, and low work-related physical energy expenditure. To our knowledge, no study has integrated a well-validated theoretical model of behaviour change to identify the salient beliefs about engaging in regular PA among new professionals during their early career transition (within the last 5-years). Therefore, the purpose of this study was to elicit the most important beliefs about PA participation among a pilot sample of 18 new faculty members at a Western Canadian University using Ajzen's (2002) theory of planned behaviour beliefs elicitation recommendations. A total of 163 beliefs that collapsed into 45 significant belief-based themes were elicited.

On constate que la pratique régulière de l'activité physique réduit les risques inhérents à diverses maladies chroniques et qu'elle améliore la santé physiologique et psychologique. Mais malgré tous les bienfaits connus de l'activité physique, la plupart des jeunes adultes canadiens (de 25 à 44 ans) ont des modes de vie sédentaires. C'est pourquoi il importe d'encourager ce groupe à risque à s'adonner davantage à l'activité physique. Rares sont les études qui se

penchent sur l'arrivée des professionnels sur le marché du travail, même s'il s'agit d'une étape de vie clé menant à une plus grande sédentarité. Puisque la plupart des professionnels ont une formation universitaire de deuxième cycle ou plus (p. ex., Ph. D., M.D., les types d'emplois qu'ils occupent sont caractérisés par de longues heures de travail sédentaire (assis à un bureau, par exemple), ce qui laisse peu de temps pour l'activité physique comparativement aux emplois qu'occupent les cols bleus. Cette étude s'intéresse aux professeurs d'université, des professionnels qui passent beaucoup de temps à accomplir des tâches qui, quoique stressantes, exigent très peu d'énergie physique. Il ne semble exister aucune autre étude intégrant un modèle théorique des changements comportementaux capable de cerner les grandes croyances sur la pratique régulière de l'activité physique chez les nouveaux professionnels en début de carrière (au cours des 5 dernières années). Cette étude vise à répertorier les grandes croyances sur la participation à l'activité physique chez un groupe pilote de 18 nouveaux membres du corps professoral de l'Université Western Canadian, partant des recommandations de la théorie d'Ajzen (2002) qui recherche à éliciter des croyances sur les comportements planifiés. Les chercheurs ont a réussi à éliciter 163 croyances qui ont ensuite été regroupées sous 45 grands thèmes fondés sur les croyances.

Introduction

Regular physical activity (PA) has been shown to have a protective effect against the onset of over 25 chronic diseases including cardiovascular disease, type II diabetes mellitus, colon and breast cancers, stroke, and osteoporosis (Canadian Fitness and Lifestyle Research Institute [CFLRI], 2009; Warburton, Katzmarzyk, Rhodes, & Shephard, 2007; World Health Organization [WHO], 2009). In addition, the short and long-term benefits of PA on improved psychological and emotional well-being continues to be established in the literature at an unprecedented rate (Penedo & Dahn, 2005). Despite the known benefits of regular PA the majority of the Canadian populace fails to meet the minimum national PA standard to accrue these health benefits (CFLRI, 2007; Gilmour, 2007). Thus, research focused on promoting PA participation is a public health priority.

Prior PA promotion strategies have tended to focus on youth and older-adults given the obvious primary and tertiary aims. PA initiatives specifically targeting young- and middle-adults are scant. According to the 2005 Canadian Community Health Survey, Canadian youth aged 12-17 were the most active demographic with dramatic declines in PA status beginning at age 20 and extending into older adulthood (> 65 years) (CFLRI, 2007; Gilmour, 2007). Despite a negative trend in PA levels across the lifespan, however, the trend is not linear. National cross-sectional surveys have indicated that the sharpest declines in PA status among both males and females, occurs during young adulthood (ages of 25-44), and continues to decline into middle- and older-adulthood (Gilmour, 2007). Young adults are almost half as likely to be as active as when they were 12-17 years, and only 1 in 4 young adults (25.3% male vs. 22.6% female) report meeting the minimum PA recommendation for health (CFLRI, 2007; Gilmour, 2007). Research efforts aimed at explaining the reasons for this critical deflection point are limited. Thus, additional research is needed to

determine the critical beliefs about PA among this population to help inform targeted health promotion interventions.

There is some recent evidence indicating that complex life-transitions are the probable reasons for the dramatic decline in PA among young adults (Allender, Hutchinson, & Foster, 2008; Bellows-Riecken & Rhodes, 2008). In particular, studies have consistently shown notable declines in PA levels among young adults during the transition to university and the transition to parenthood (Bellows-Riecken & Rhodes, 2008; Bray, 2007; Bray & Born, 2004; Cramp & Bray, 2009; Pullman et al., 2009). One critical life-transition that may be an important contributor to decreased PA is the shift from postsecondary education to the workforce. In 2009, 67%, or 6.3 million Canadian young adults were postsecondary graduates, with 23% (1.5 million) obtaining a university degree (Human Resources and Skills Development Canada [HRSDC], 2010; Statistics Canada, 2009a, 2009b). Among postsecondary graduates, an additional 13% (0.8 million) chose to pursue further postgraduate education (Statistics Canada, 2009a, 2009b). There is a link between educational attainment and occupation status, indicating that those with higher education levels are more likely to be employed in higher status occupations (HRSDC, 2010). Thus, young adults choosing to complete postgraduate education (e.g., doctorate, M.D.) are likely to enter professional careers including academia, medicine, and law. Given the large demographic of young adults achieving postsecondary education, it seems logical that entering into a professional occupation requiring postgraduate university education may be a potential reason for the sharp downward trajectory in PA among young adults.

Research efforts aimed at identifying which occupations are most likely associated with declines in PA among young adults are scant. Prior research examining the health and well-being of those employed in the labour force has focused heavily on the socio-economic determinants (e.g., income, education level, social position in society) of health (Cragg, Wolfe, Griffiths, & Cameron, 2007; Trost, Owen, Bauman, Sallis, & Brown, 2002). Research among the general population has shown that low socio-economic status, including those employed in lower status occupations (e.g., manual labour), tend to be at higher risk of poor health outcomes and inactivity compared to those in higher socio-economic positions (e.g., higher education, higher income) (Cragg et al., 2007; Trost et al., 2002). Despite the general assumption that PA is directly associated with socio-economic status, however, emerging research has suggested that the positive association between socio-economic status and PA status plateaus at the postsecondary level and at the highest income levels (Cragg et al., 2007).

Emerging evidence has shown that professional occupations are associated with the highest number of work hours per week and the lowest levels of occupational energy expenditure (e.g., sitting-time) (Cragg et al., 2007; McCormack, Giles-Corti, & Milligan, 2006; Shields, 1999). According to data from the 1994-1997 National Population Health Survey, men reporting long work hours spent an average of 55 hours per week on the job and women reported working an average of 51 hours per week (Shields, 1999). An additional 32% of men and 19% of women reported working over 60 hours per week (Shields, 1999). Of those working long work hours, participants were more likely to be male, employed in professional occupations that require postsecondary education training, and between the ages 25-34 (Shields, 1999). In terms of occupational

energy expenditure, the impact of work-related PA on leisure-time PA is not widely understood across the literature. The strongest evidence showing a negative association between work-related PA and overall PA status comes from studies using direct measures of PA (e.g., accelerometers, pedometers). A study by McCormack et al. (2006) that used pedometers to measure total PA found the largest effect for achieving the recommended 10 000 steps/day was for men working in blue-collar occupations. Further, the authors found that 80.2% of blue-collar workers compared to only 38.2% of professionals achieved 10 000 steps/day (McCormack et al., 2006). Based on the existing evidence, further research examining the impact of entering a professional occupation on PA status of young adults may provide important clues of the potential factors causing the sharp downward trajectory in PA status.

A bourgeoning example of a professional occupation requiring long work hours, heavy work demands, and low occupational energy expenditure is that of academia (Canadian Association of University Teachers [CAUT], 2007; Jacobs & Winslow, 2004; Wilbur, Naftzger-Kang, Miller, Chandler, & Montgomery, 1999). Common characteristics of an academic professor include long work hours, multiple work responsibilities and demands (e.g., teaching, research, service), and low occupational energy expenditure (e.g., reading, computer). In particular, Assistant Professors (e.g., recently employed) aiming to be tenured have reported higher levels of stress, negative physical health symptoms, and work-life imbalance (CAUT, 2007). To our knowledge, no known studies have explicitly examined the salient beliefs towards participating in regular PA among a subsample of new professionals (e.g. within the last 5-years) employed as professors at a Canadian academic institution. According to the 2009-2010 Canadian Association of University Teachers Almanac, new professors (< 44 years) represent the majority (52.4%) of all Canadian faculty members (Canadian Association of University Teachers [CAUT], 2010). Therefore, new professors represent a large proportion of academic professionals and are especially in need of targeted interventions to prevent habitual inactivity.

Health interventions are thought to be best implemented from evidence using well-validated models of behaviour change (Baranowski, Anderson, & Carmack, 1998; Rhodes & Pfaeffli, 2009). One well-validated theory that has been used extensively in the PA domain is Ajzen's (1991) Theory of Planned Behaviour (TPB). The TPB postulates that the immediate antecedent of behavioural performance is an individual's *intention* (e.g., motivation, willingness, desire) to engage in the behaviour (Ajzen, 1991). Behavioural intentions are a function of 3-constructs: an individual's attitude (e.g. positive/negative evaluation of performing the behaviour), subjective norm (e.g., evaluation of the perceived approval from important others to perform the behaviour), and perceived behavioural control (PBC) (e.g., the ease or difficulty of performing the behaviour). These three-constructs are ultimately shaped by people's behavioural, normative, and control beliefs towards engaging in a behaviour (Ajzen, 1991).

Meta-analytic reviews of the TPB in the PA domain have found large associations between intention-behaviour, intention-attitude, and intention-PBC (Symons Downs & Hausenblas, 2005a). In addition, findings have indicated that the strongest determinant of exercise behaviour is one's intention to perform the behaviour, which is most strongly influenced by PBC and attitude constructs

(Symons Downs & Hausenblas, 2005a). Despite the extensive use of the TPB to help explain exercise behaviour, few studies have followed Ajzen's (2002) protocol for developing a TPB intervention. Ajzen's (2002) suggested that an *a priori* beliefs-elicitation study be conducted on a pilot sample of the target population to identify the common modal salient beliefs toward participating in PA. This ensures that the TPB belief constructs are representative of the target population. The underlying beliefs (behavioural, normative, control) a target population holds about engaging in PA are important factors for the development of tailored TPB interventions (Ajzen, 2002). It has been shown that detailed elicitation studies are important to 1) enhance the predictability of the TBP constructs in explaining PA behaviour, 2) ensure correspondence between the elicitation and the TPB study participants is adequate, and 3) help future researchers replicate the measures in future studies (Symons Downs & Hausenblas, 2005b).

The purpose of this study was to elicit the salient beliefs towards engaging in regular PA among a pilot sample of new academic professionals to help inform future TPB research and health interventions. To date, no known research has focused on eliciting the most common beliefs towards engaging in regular PA among a sample of professional young adults starting their full-time professional career. Since belief-based analysis is exploratory in nature, we hypothesized that the majority of the elicited beliefs would be control-based beliefs with a lack of time, heavy work demands, and conflicting role demands emerging as the most common beliefs influencing PA participation among new professionals.

Methodology

Study Design

A theory-based qualitative study using a focus group format was conducted using the belief elicitation procedures recommended by Ajzen's (2002) protocol for developing a TPB questionnaire.

Participants

Participants for this study were a pilot sample of new professionals, ages 25-44, who completed doctoral education within the past 3-years and were currently employed as full-time faculty members at a Western Canadian university affiliated with the Association of University and Colleges of Canada. The age range of the participants was based on 1) current research indicating that declines in PA extend into middle- and older-adulthood and 2) considerations of the length of time required to complete doctoral education. It is important to note that no standardized definition of or span of the early career transition period exists within the literature. Based on considerations that those completing doctoral education may choose to travel or take time off before entering their professional career, a 3-year transition period was chosen. Additionally, faculty members were chosen as the leading example of a professional occupation associated with high levels of stress, the highest number of work hours per week and lowest on-the-job activity based on prior research (CAUT, 2007; Shields, 1999; Wilbur et al., 1999).

Recruitment Procedure

This study has met the requirements for ethical approval from the academic institution in which the participants were recruited. Contact with eligible participants was made via an appointed proxy (e.g., departmental secretary) neutral to the study. A pre-notice phone call to the Human Resource department at the University was made to request that the contact information of eligible participants be sent directly to the appointed proxy to ensure the privacy and confidentiality of the participants was protected. Upon retrieval of the contact information of newly hired faculty members, the appointed proxy sent a notice of research, consent form, and study invitation via email to each newly hired faculty member at the University inviting them to participate in a focus group session. Participants unable to attend the focus group sessions were given the opportunity to complete an in-person or phone interview with the primary investigator. Since this study is exploratory in nature, in-person interviews were conducted in addition to the focus groups to ensure saturation of the beliefs responses (Vaughn, Schumm, & Sinagub, 1996). Two reminder emails were sent 3-days and 7-days after the initial email to obtain a maximum participation rate at the focus group sessions. As a final attempt to obtain a high response rate, the appointed proxy sent a hard-copy study invitation and consent form to new faculty members through on-campus mail. Interested participants were instructed to contact the primary investigator directly by email or phone to confirm their attendance at a focus group or interview session. The primary investigator sent a confirmation email to interested participants indicating the time and location of the focus group session or interview.

Measurement and Instrumentation

The focus group and interview questions used the belief elicitation procedures recommended by Ajzen (2002). In accordance with the recommendations from Ajzen (2002) and Symons Downs & Hausenblas (2005b), the questions were designed to elicit the principal behavioural, normative, and control beliefs of engaging in 30 minutes of moderate to vigorous PA at least four times per week over the next month. This is in accordance with the Public Health Agency of Canada's (2003) PA guidelines. All questions used an open-ended format to ask participants about the advantages and disadvantages of participating in PA, whether important referent groups would approve or disprove of them participating in PA, and what facilitating and impeding factors would influence participation in PA.

Analysis Plan

A content analysis procedure based on the recommendations of Morse, Barrett, Mayan, Olson, & Spiers (2002), and Patton (2002), was conducted by the primary investigator and a research assistant. Due to the number of participants who completed an in-person interview in lieu of attending a focus group session, the analysis plan followed two separate procedures. First, all available elicited beliefs from the focus group sessions were independently extracted and coded by the PI and a research assistant. Second, any additional beliefs not mentioned in the focus groups, but stated in the in-person interviews, were extracted and highlighted. Priority was given to the focus group responses based on the initial study design. Similar responses given in both focus groups achieved the highest

ranking. Third, elicited beliefs were then independently coded into themes and rank-ordered 1) based on the presence of mention in the 2 focus groups and 2) presence of mention by the in-person interviews (Ajzen, 2002). Fourth, 100% congruence on the elicited salient beliefs and themes was obtained by the PI and research assistant. Elicited beliefs and themes were then ranked based on achieving a maximum total of 12 (2 focus groups and 10 interviews). The 8-10 most common behavioural, normative, and control belief based items will be integrated into a future TPB questionnaire that will be administered to the target population based on recommendations by Ajzen (2002).

Results

A total of 88 new faculty members were identified by the Human Resource department. Of these, 14 email addresses were not provided, yielding 74 potential participants. After the study invitation emails were sent, 3 faculty members indicated they were not in the appropriate age category and 3 faculty members indicated they were on leave for the year. A total of 18 participants (12 female and 6 male) completed either the focus group sessions (n = 8) or an in-person interview (n = 10) making the response rate 26.5% of eligible participants. Descriptives for the sample are presented in Table 1.

Table 1
Participant Characteristics (N = 18)

	(%)
Demographics	
Age 25-39	83
Age 40-44	17
Female	67
Caucasian	61
Occupation Characteristics	
Full-time Faculty	89
On Sabbatical	11
Faculty/Field of Study	
Humanities	28
Social Sciences	22
Education	17
Engineering	11
Business	11
Medicine	5
Other	5

Behavioural Beliefs

A total of 163 elicited behavioural (n = 59), normative (n = 17), and control beliefs (n = 87) were mentioned in the study. A total of 59 behavioural beliefs were elicited with 40 advantageous and 19 disadvantageous beliefs being mentioned. The majority of the responses indicated that that new professionals believed that regular PA would help improve productivity and effectiveness at

work (83%), improve physical fitness (67%), and prevent burnout (58%). Additional meaningful responses from participants who did not attend a focus group session believed that regular PA improved their psychological/emotional outlook on life.

In terms of the disadvantages of regular PA, the majority of the responses indicated the new professionals believed that regular PA could cause injury to the body (50%) and that it takes a substantial amount of time (42%). Several additional behavioural beliefs of the disadvantages of regular PA indicated that new professionals believed that PA took time away from other work priorities including research, course preparation, and writing, and was an inconvenience to try to fit in to their dynamic schedule.

Normative Beliefs

A total of 17 normative beliefs were elicited with 13 approving referents and 4 disapproving referents being mentioned. Of the approving referents, responses from the participants indicated that their spouse/partner was the most important referent that approved of their participation in regular PA. Of interesting note, over half of the responses (58%) indicated that colleagues were an important approving referent for new professionals. Family and children were also common referents that new professionals believed were important approving referents. Despite only having one response, it is of particular interest that one participant mentioned that their dog was an important approving referent. While household pets cannot be included as true approving or disapproving referents, this highlights the notion that individuals owning pets may feel a certain social obligation to walk their pet, which helps assist the individual in achieving regular PA.

Of the disapproving referents, participants believed that their supervisor/superior would be a referent that disapproved of their participation in regular PA. Participants indicated that seeing their supervisor work through lunch instead of being active was an indirect disapproving message. Additionally, if meetings were mandatory, participants felt that their supervisor would disapprove of them being regularly active instead of attending mandatory meetings/workshops. Of particular interest, both children and spouse were mentioned as either approving or disapproving referents. This finding indicates that various obligatory social roles (e.g., being a parent, being a partner) can act as either a motivator or a deterrent towards being regularly active.

Control Beliefs

A total of 87 control beliefs (32 enabling and 55 limiting) were elicited in the pilot study. Of the 32 elicited enabling factors that participants believed made participation in PA easy, the majority of the responses indicated that having facilities within a close proximity helped participants' to be regularly active. Another enabling factor that emerged was having a supportive and encouraging work environment. Several participants' mentioned that because their fellow colleagues either rode their bicycle to work or organized a group run at lunch; they were more likely to engage in regular PA. Other important enabling factors were living in a city that supports PA (42%), being able to make it a habit/routine (42%), and having ideal weather conditions (42%). An enabling factor that was

mentioned in the interviews but not in the focus group sessions was having the flexibility in their job to fit in exercise (42%).

Of the 55 limiting factors that participants' said they believed made regular PA extremely difficult, the majority of responses (83%) indicated that a lack of available time was the most common factor that impeded regular PA participation. Additionally, 75% of the responses indicated that heavy work demands/expectations were barriers towards engaging in regular PA. Of particular interest, participants' indicated that adjusting to the pace of the new job was a limiting factor towards PA participation. Several participants mentioned that learning how to balance research, writing, marking, course preparation, and conference attendance had a major detrimental effect on fitting in regular PA. Another interesting finding was that several of the participants' stated that their participation in regular PA was limited by the lack of private shower and change facilities. Numerous participants, especially females, indicated that taking a class or changing in areas where students were also in attendance was a deterrent towards being regularly active.

Behavioural, Normative, and Control Themes

The 163 elicited beliefs were collapsed into a total of 45 behavioural (n = 16), normative (n = 9), and control (n = 20) themes based on recommended content analysis procedures (Ajzen, 2002; Morse et al., 2002; Patton, 2002) (See Table 2). A total of 16 behavioural themes emerged from the data with the most common theme being the belief that regular PA improves overall work productivity/effectiveness (11 out of 12 documents). Several elicited beliefs (e.g., improves my writing, improves my teaching performance) were included in this category. In addition, improvements in long-term health and stress management were important themes that emerged from the raw data. Long-term health benefits included beliefs pertaining to physical health benefits (e.g., cardiovascular health, weight management, disease prevention). Stress management included various beliefs about PA being an ideal way to prevent burnout, and reduce work-related stress. Other important behavioural themes that emerged included that PA made participants feel good (e.g., helps me have a more positive disposition, makes me happy, builds my self-confidence/esteem), takes too much time away from other obligations (e.g., work demands, parental roles, relationships), and is a hassle/inconvenience during the day (e.g., inconvenient when travelling to conferences, takes time to change out of professional clothes).

Table 2
Themes of Elicited Beliefs for Engaging in PA (N = 45)

	Ranking[a]
Behavioural Beliefs	
Makes me more effective/productive in my work (e.g. teaching, research)	11
Improves long-term health[b,c]	10
Stress management/Prevents Burnout[c]	10
Makes me feel good (e.g., happy, positive, confident)[c]	9
Takes time away from other obligations (e.g., work, family)[c]	9
It's a hassle/inconvenience[c]	8

Improves physical fitness	8
Helps me live a balanced life[c] (e.g. mental, emotional, environmental)	6
Might cause injury	6
Builds connections/relationships with others[c]	5
Makes me look good (e.g., fit, trim, healthy weight)[c]	4
Not my first priority	4
Makes me feel self-conscious (e.g. changing with students, awkward to do)	3
Increases fatigue	1
Not enjoyable/fun to do	1
Feel guilty taking time to exercise	1
Normative Beliefs	
Family - Extended[c]	9
Spouse[c]	8
Colleagues	7
Child(ren)	6
Supervisor/Boss[c]	4
Friends	3
Sports teams/groups[d]	3
Active people in the community	3
Doctor/Health care system[c]	2
Control Beliefs	
Lack of time[c]	10
Lack of consistent schedule[c] (e.g., no 9-5, work weekends, no lunch, disruptions)	9
Heavy work demands/responsibilities (e.g., marking, course planning, meetings)	9
Previous Injuries/health issues	9
Other Professional Aims[c] (e.g. tenure, publications, conferences, service)	8
Don't feel like it[c] (e.g., no energy, want to do something more relaxing)	8
Social support[c] (e.g., friends, exercise buddy, colleagues model PA)	8
Going through other life transitions/changes	8
Proximity of facilities	7
Access to facilities[c] (e.g., affordable, extended hours, appealing)	6
Awareness/Promotion of PA[c] (e.g., city, workplace, campaigns, speakers)	6
Maintaining professional dress/appearance[c]	5
Demanding family obligations (e.g., sick child/parent, events)	5
Ideal weather/climate conditions	5
Lack of affordable/available childcare[c]	4
Sedentary nature of the job (e.g., sitting, computer, reading)	3
Having faculty-only facilities and programs[c]	3
Flexibility of schedule (e.g., non-supervised, make own hours)	3
Committing to class/group	2
Owning equipment	2

[a] Ranking based on number of beliefs that collapsed into themes and times mentioned from most common to least common.
[b] Shaded area indicates focus groups' beliefs
[c] Both focus groups mentioned this theme
[d] Theme not mentioned in focus groups

A total of 9 normative themes emerged from the raw data and indicated that family members (e.g., parents, siblings, spouses) were the most common important referent. In addition, spouse/partner was a uniquely mentioned important referent that was closely followed by colleagues and children. Of interest, observing others within the community be active (e.g., run clubs, boot camps, people on walking trails) was an important normative belief for participants.

Of the 20 control themes that emerged, lack of available time was the most common theme mentioned by participants. This was followed by the control belief that a lack of a consistent schedule (e.g., no 9-5 job, work on weekends, no scheduled lunch, unexpected deadlines) strongly impeded PA participation. Heavy work demands/responsibilities emerged as an important control theme that impeded PA participation and included beliefs such as heavy amounts of marking, course planning, meetings, and examination preparation. Pre-existing injuries and health issues (e.g., back pain, stress fracture) also emerged as a common control based theme that prevented participants from engaging in regular PA. Of particular interest, other professional aims (e.g., aiming for tenure, publications, conference attendance, service) emerged as a unique control based theme that impeded PA participation. Participants emphasized that entering into their new career was associated with high levels of external and self-imposed pressure to achieve seniority or a higher status (e.g., tenure track) to establish job stability over time.

Other important themes that emerged included simply not feeling up to exercising, and currently going through other major life-transitions (e.g., marriage, parenthood, change of career). Several participants felt strongly that after a long day of work, the last thing they wanted to do was place additional physical stress on their body through exercise. Instead, several participants indicated that they would rather enjoy a glass of wine, spend time with their spouse, or read a book. Furthermore, a considerable number of participants stated that they were currently trying to cope with other major life transitions, which negatively impacted their availability and motivation to engage in PA. Two of the participants were in their 2nd trimester of pregnancy, three participants indicated that they had recently gotten married, and four participants mentioned they had relocated and changed jobs.

Discussion

The purpose of this study was to elicit the salient behavioural, normative, and control beliefs among a pilot sample of new professionals, ages 25-44. This study advances the existing literature by identifying the modal principal beliefs towards engaging in regular PA among a previously understudied population. Prior research examining the impact of occupation transitions on PA patterns of young adults has not focused on professional occupation transitions or integrated a leading theoretical model to help understand the significant beliefs and barriers toward engaging in regular PA among young adults entering professional careers (Bell & Lee, 2005; Brown & Trost, 2003; Horn, O'Neill, Pfeiffer, Dowda, & Pate, 2008).

The results suggested that 45 PA-related beliefs were important to the new professional population. Of the 45 salient beliefs, 16 behavioural beliefs, 9 normative beliefs, and 20 control beliefs were identified. Common positive

behavioural beliefs about PA participation among new professionals included increased productivity and effectiveness at work, improved long-term health, stress relief and feeling good. Behavioural disadvantages included taking time away from other important obligations (e.g., family, work), and being too much of a hassle to do (e.g., changing, organizing). These findings indicate that new professionals have several positive and negative behavioural beliefs towards engaging in regular PA that, in some ways, are in congruence with Symons Downs and Hausenblas' (2005b) systematic review of TPB belief elicitation studies. Symons Downs and Hausenblas (2005b) found that the most common behavioural advantage of PA participation was improved overall health, and the most common disadvantage was preexisting health concerns (e.g., pain, illness). The findings from this study suggest that new young professionals are more concerned about the impact of PA on work-life balance. Thus, future interventions focusing on reducing chronic disease may not be the most important targets for this unique population. Health promotion strategies targeting more proximal behavioural beliefs about stress relief, work-life balance, and feeling good may be more useful.

A total of 9 modal normative beliefs were identified in this study. According to the results, family members, especially one's spouse/partner, as well as one's colleagues emerged as the most important referents for new professionals. While valuing the opinions of one's spouse parallels Symons Downs and Hausenblas' (2005b) review, the emergence of colleagues as an important normative referent is somewhat unique. Since new professionals spend a considerable number of hours in the workplace adjusting and adapting to the work environment, it seems logical that the health patterns and behaviours of other colleagues would potentially influence the behaviours of new professionals. Thus, future health promotion efforts could potentially benefit from establishing workplace wellness initiatives that emphasize PA participation as a means to build a sense of community, social support and workplace morale.

The majority of salient beliefs identified were control-based factors, which support our initial hypothesis. Twenty modal control beliefs were identified in this study. The results suggested that lack of time, lack of a consistent schedule, heavy work demands and expectations, pre-existing injuries and other professional aims were common principal control themes. The value placed on certain control-beliefs in this study differ somewhat from Symons Downs and Hausenblas' (2005b) review that highlighted that health issues, proximity to facilities, lack of motivation, and no social support were the most common control beliefs that limited PA participation. Scheduling challenges, work demands and professional aims are unique control beliefs that emerged for this population, and emphasize the importance of identifying the control-based determinants of PA participation among the target population (Symons Downs & Hausenblas, 2005b).

New professionals entering demanding professional careers may spend over the standard 35-hour workweek at work to fulfill numerous work responsibilities including marking students' papers and exams, fulfilling research and publication expectations, and preparing for course teaching. Thus, a lack of time due to work appears to be a logical barrier towards engaging in regular PA among new professionals. Additionally, several of the participants indicated that the inconsistency of their work schedule made it challenging to develop and maintain

a regular exercise routine. A new professor who instructs courses will undoubtedly have heavy periods of marking throughout a typical semester that may disrupt any type of routine. Also, most university semesters change every four months making it even more challenging to establish a consistent exercise regimen. Finally, another unique barrier that emerged in this study was the pressure to meet other professional expectations. In particular, new professionals employed as faculty members are on probation during the first few years of employment. It is during this time that junior-ranked faculty members must meet certain expectations such as aiming for tenure, securing funding for research projects, producing a certain number of publications, and presenting a certain number of presentations to secure a stable position as an associate professor. Not surprisingly, the added pressures associated with the desire to aim for tenure was expressed by several of the participants. From these findings, we would suggest that future research investigating the relationship between control beliefs and PA be conducted to better understand the strongest determinants of PA participation among new professionals.

Although the current study expands the limited literature examining the reasons for changes in PA behaviour among new professionals, it is important that this study be interpreted within the context of its limitations. First, the sample obtained may not generalize entirely to the new professional population. Sixty-seven percent (n = 12) of the participants were female while only 33% (n = 6) of the participants were male. The underrepresentation of males in this study may limit the generalizability of the results. In addition, the low response rate (26.5%) may also limit the generalizability of the results, but was expected due to the heavy workload and demands associated with academic professions. Further, two of the participants were on sabbatical, and not currently working at the institution. While their elicited beliefs may potentially limit the generalizability of the results to full-time new professors, the two participants both indicated that they had only been on sabbatical for a period of one-month, and felt that they could accurately recall their full-time working experience. Second, the beliefs elicited in this study may not be representative of all salient beliefs about PA participation among new professionals. Because this study used a pilot sample of new professionals employed in only one type of professional occupation (e.g., academia), other beliefs not measured in this study (e.g., law, medicine, CEO) may also be important contributors to PA participation.

In summary, this beliefs elicitation study provides preliminary evidence of the potential factors that may influence PA behaviour among professional adults. Believed outcomes such as improved overall work performance and stress management combined with believed barriers such as a lack of available time and heavy work demands may be potential factors that explain PA patterns among young adults across a transition period. This elicitation study will help future Theory of Planned Behaviour investigations maintain the predictive utility of the TPB by ensuring that the questionnaire items are representative of the new professional population. Further, the integration of these elicited beliefs into future health promotion research can help inform future intervention strategies aimed at preventing habitual inactivity among new professionals across the lifespan.

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