

ORIGINAL ARTICLE

Motives for lifestyle and exercise activities: A comparison using the theory of planned behaviour

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Abstract

Regular exercise and lifestyle physical activity are often used interchangeably or combined in physical activity messaging based on evidence for their relatively equivalent health outcomes. However, differences between their motivational correlates are relatively unexplored. The purpose of this study was to compare the motives towards lifestyle physical activity and exercise and their relationship with behaviour using the Theory of Planned Behaviour (TPB). The participants were a sample of undergraduate students ($n = 150$) who completed measures of the TPB framed in terms of exercise and lifestyle physical activity and self-reported physical activity measures with similar framing. Results identified marked differences between the instrumental attitudes towards the two activities showing instrumental attitudes towards exercise to be higher ($P < 0.01$; $d = 0.68$). Most importantly, exercise had larger TPB-behaviour correlations ($P < 0.01$; $q = 0.15\text{--}0.20$) compared with lifestyle physical activity, but follow-up analyses by intensity (strenuous, moderate, mild) showed that these differences were only present at strenuous intensity. Our results suggest that the correlates for the two types of physical activity may differ. Although more research is necessary, this may affect the efficacy of promotion campaigns that do not tailor content exclusively for either exercise or lifestyle physical activity.

Keywords: *Physical activity, theory of planned behaviour, exercise, lifestyle*

Introduction

The benefits of regular physical activity have been well-established, but the majority of people in developed countries remain inactive (Canadian Fitness and Lifestyle Research Institute, 2002; US Department of Health and Human Services, 2004). Research has shown that physical activity is generally interpreted as structured exercise rather than circumstantial activities of daily living (Tudor-Locke *et al.*, 2003). Furthermore, people tend to be more aware of the benefits and guidelines associated with traditional exercise than with lifestyle physical activity (Morrow, Krzewinski-Malone, Jackson, Bungum, & Fitzgerald, 2004). Nevertheless, public health recommendations often centre upon the promotion of physical activity through lifestyle tasks (Health Canada, 2002; US Department of Health and Human Services, 1996) based on convincing empirical evidence that shows relatively equal benefits derived from exercise and lifestyle physical

activity (Andersen, Franckowiak, Bartlett, & Fontaine, 2002; Dunn, Andersen, & Jakicic, 1998a; Dunn *et al.*, 1998b, 1999), and the argument that physical fitness and health are dependent on total energy expenditure not merely hours of structured exercise (Blair, 1995). Indeed, the US Department of Health and Human Services (1996) position on recommended physical activity breaks these activities into: (1) transportation physical activity – an activity used to get to a specific place; (2) leisure time physical activity – an activity that is not associated with one's occupation; (3) occupational physical activity – an activity required as part of one's job; (4) household physical activity – household activities such as washing windows or raking the lawn; and (5) exercise – a structured or planned physical activity that involves repetitive or structured bodily movement done to improve physical fitness. These categories can be further grouped into two major types of physical activity: exercise and lifestyle physical activity (Reed, Velicer, Prochaska, Rossi,

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& Marcus, 1997), where exercise is classified as a rote activity performed with physical fitness or health as a primary goal and lifestyle physical activity is an activity performed with a primary goal other than physical fitness or health (where health is secondary or even incidental to the primary goal of the action).

This collection of physical activity definitions may present some difficulty during promotion efforts. Interventions are best facilitated when based upon theoretical evidence for the correlates of physical activity (Baranowski, Anderson, & Carmack, 1998). The behavioural target is an important consideration when applying psychological theories to any given behaviour (Ajzen, 2002; Ajzen & Driver, 1991; Fishbein *et al.*, 2001). Because physical activity is a collection of behaviours, the motivational foundation between lifestyle and exercise behaviour may differ. In general, the psychological correlates of physical activity are framed either specifically, as exercise, or as this general collection of daily physical activity behaviours (Trost, Owen, Bauman, Sallis, & Brown, 2002). Recent evidence, however, supports the possibility that psychological motives differ by specific activity mode (Bryan & Rocheleau, 2002; Eves, Hoppe, & McLauren, 2003; McNeill, Wyrwich, Brownson, Clark, & Kreuter, 2006; Miilunpalo, Nupponen, Laitakari, Marttila, & Paronen, 2000; Rhodes, Blanchard, & Matheson, 2007), yet no research has evaluated whether the motivational antecedents differ when the modes are conceptualized as lifestyle physical activity and structured exercise.

The evaluation of this possibility has implications for intervention programmes. For example, if the correlates of lifestyle physical activity differ from exercise, then tailored programmes, focusing on the salient correlates of each separate mode, would be needed for effective interventions. A comparison of lifestyle and exercise motives would also be useful in testing relevant theoretical frameworks. This would test the ability to generalize physical activity framing within a target population, an often cited but seldom researched theoretical tenet. Furthermore, the results would aid in the framing of future physical activity research using social cognition models. If no difference emerges between lifestyle physical activity and exercise, it supports the continued framing of physical activity as a collection of activities. In contrast, if significant differences emerge, it suggests that more mode-specific physical activity framing should be adhered to in future theoretical research to avoid unwanted measurement error.

Thus, the purpose of this study was to compare mean values of the motives towards lifestyle physical activity and exercise and their relationship with behaviour. Ajzen's (1991) TPB was selected for this evaluation. The TPB is a well-validated social

cognition theory in the physical activity domain (Hagger, Chatzisarantis, & Biddle, 2002; Symons Downs & Hausenblas, 2005) and is arguably the benchmark theory for arguments on the importance of target framing in psychological measurement (Ajzen, 2002). The TPB proposes that intention (i.e. summary motivation) and perceived behavioural control (i.e. one's control over performing the behaviour) are the proximal influences on behaviour. In turn, perceived behavioural control, subjective norm (i.e. perceived social pressure to engage in the behaviour), as well as affective (i.e. enjoyment of the behaviour) and instrumental (i.e. benefits/utility of the behaviour) attitudes are proposed to be the primary influences on behaviour through intention.

This is an exploratory study but two hypotheses were generated to highlight the central issues. First, we hypothesized that the TPB may be a more efficacious model for predicting exercise than lifestyle physical activity. This was predicated on the assumptions that the rote patterns of exercise – meaning those behaviours that are fixed, habitual or routine – would be better captured in the constructs of planned behaviour (e.g. intention) compared with the potentially spontaneous and incidental nature of lifestyle physical activity. Second, we hypothesized that perceived behavioural control would be correlated with exercise more than lifestyle physical activity. This was based on the facility access and time barriers often associated with exercise (Trost *et al.*, 2002) compared with the relative household-related and spontaneous nature of lifestyle physical activity.

Although the evidence for intensity differences between lifestyle physical activity and rote exercise is equivocal (Dunn *et al.*, 1998a), we also sought to explore whether there were differences in intensity between the motives for the two types of physical activity. Thus, we framed an exploratory hypothesis that, for both activities, higher intensities would be correlated with constructs of the theory of planned behaviour more than lighter activities.

Methods

Participants and procedure

One hundred and fifty undergraduates volunteered to participate in the study and were recruited from general education courses. Students were not required to complete the survey as part of their courses, and they were not compensated in any way. Informed consent was obtained from all participants and ethical approval was obtained from the University of Victoria Human Research Ethics Board. Participants were recruited via large

undergraduate classes in the Faculty of Education between February and March 2006. Participants who volunteered completed self-report measures based on the TPB for both lifestyle physical activity and exercise activities and a self-report of these respective behaviours. Questions pertaining to these activities were placed in a random order (first or second) to counterbalance fatigue-related response error and reduce any systematic response pattern. The mean age of the participants was 22.3 years ($s = 6.04$), 70% of whom were female, and the mean amount of time spent at university for the sample was 2.26 years ($s = 1.27$). Equal opportunity to participate was made to all students in these classes and the female bias is reflective of the demographic profile of students enrolled in this faculty, the majority of whom are female.

Instruments

The definition of physical activity reflected Health Canada's position stand for recommended weekly physical activity among adults (Health Canada, 2002). Specifically, physical activity was defined as activities performed *at least* at a moderate intensity, on 4 or more days per week, accumulating at least 30 min each day in bouts as short as 10 min. Commensurate with this position stand, participants were instructed that it was also acceptable to consider bouts of light-intensity activity that totalled 60 min a day on all days of the week. However, participants were instructed to consider lifestyle activities and exercise activities separately. Definitions for both types of physical activity were verbally presented to the participants before completion of the questionnaire and provided in written form on the survey itself. Definitions were based on the categorization of Reed *et al.* (1997) and the activity descriptions of Health Canada's *Physical Activity Guide* (Health Canada, 2002). Exercise was defined as an activity performed with physical fitness and health as a primary goal and included activity descriptors (e.g. structured activities such as going to the gym, running on a treadmill or outside, brisk walking, using the Stairmaster or participating in an aerobics class). In contrast, lifestyle activities were defined as any activity performed with a primary goal other than physical fitness and health and included relevant descriptors (e.g. riding your bike to work, brisk walks between classes, mowing the lawn, playing tag with children, activity for social purposes, washing the windows or vacuuming the house). It was made clear that the primary goal of the activity was the distinguishing factor between exercise and lifestyle physical activity. We asked participants to use these definitions and the distinctions between the two types of physical activities when answering

all questions. These distinctions between lifestyle physical activity (also referred to as "active living") and exercise are commonly used in physical activity literature (e.g. Reed *et al.*, 1997), texts (e.g. Carron, Hausenblas, & Estabrooks, 2003), and government position stands/guidelines (e.g. CDC, 2006; Health Canada, 2002). Similar definitions have also been elicited from participants in previous research (Burroughs *et al.*, 2006).

Attitude towards regular physical activity was measured using 7-point bipolar adjective items as suggested by Ajzen and Fishbein (1980). Two items were used to tap the instrumental (e.g. important–unimportant, beneficial–harmful) aspect and two items were used to tap the affective (enjoyable–unenjoyable, pleasant–unpleasant) aspect of attitude (Ajzen, 2002). The statement "For me, regular exercise/lifestyle physical activity over the next week would be" preceded the adjectives. Internal consistencies for instrumental (lifestyle $\alpha = 0.85$; exercise $\alpha = 0.91$) and affective attitude (lifestyle $\alpha = 0.91$; exercise $\alpha = 0.77$) were adequate.

Subjective norm was measured by three items on 7-point scales developed by Courneya and colleagues (Courneya, Conner, & Rhodes, 2006). Two items measured the injunctive component of subjective norm and one item measured the descriptive component of subjective norm based on the recommendation of Ajzen (2002). These components were aggregated to form a measure based on the findings of Rhodes and colleagues (Rhodes, Blanchard, & Matheson, 2006; Rhodes & Courneya, 2003). The first two items for each activity started with the phrase "I think that if I were to perform exercise/lifestyle physical activities regularly over the next week, most people who are important to me would be", with response options of (1) disapproving–approving and (2) discouraging–encouraging. The descriptive norm item included the phrase "I think that over the next week, most people who are important to me will perform exercise/lifestyle physical activity regularly", with a response scale from strongly disagree to strongly agree. Internal consistencies were borderline adequate (lifestyle $\alpha = 0.65$; exercise $\alpha = 0.67$).

Perceived behavioural control was assessed using three questions from Courneya *et al.* (2006) for each activity category. The three perceived behavioural control items were: (1) "If you were really motivated, how controllable would it be for you to perform exercise/lifestyle physical activity regularly over the next week?" – on a 7-point scale ranging from 1 (extremely uncontrollable) to 7 (extremely controllable); (2) "If you were really motivated, how easy or difficult would it be for you to perform exercise/lifestyle physical activity regularly over the next week?" – on a 7-point scale ranging from 1

(extremely difficult) to 7 (extremely easy); and (3) “If you were really motivated, do you feel you would have complete control over whether or not you performed exercise/lifestyle physical activity over the next week?” – on a 7-point scale ranging from 1 (extremely untrue) to 7 (extremely true). Internal consistencies were adequate (lifestyle $\alpha = 0.72$; exercise $\alpha = 0.80$).

Intention was assessed using two item measures for each activity validated by Rhodema and colleagues (Rhodes, Blanchard, Matheson, & Coble, 2006). These items were: (1) “How motivated are you to perform exercise/lifestyle physical activity regularly over the next week” – on a 7-point scale ranging from 1 (extremely motivated) to 7 (extremely motivated); (2) “I intend to do everything I can to perform exercise/lifestyle physical activity regularly over the next week” – on a 7-point scale ranging from 1 (extremely untrue) to 7 (extremely true). Internal consistencies were adequate (lifestyle $\alpha = 0.85$; exercise $\alpha = 0.90$).

Physical activity behaviour was measured using the Godin Leisure Time Exercise Questionnaire (GLTEQ) (Godin, Jobin, & Bouillon, 1986; Godin & Shephard, 1985). No instrument currently exists that breaks exercise and lifestyle physical activities into exclusive measurement domains as they are defined in this study. Faced with this information, we chose the GLTEQ, based on (1) its solid validation as a measure of physical activity (Jacobs, Ainsworth, Hartman, & Leon, 1993) and (2) its frequency of use in TPB research (Symons Downs & Hausenblas, 2005). When designing questionnaires, it is also recommended to use analogous templates where possible to ease response burden (Sudman & Bradburn, 1983). The GLTEQ is easily adaptable to different modes of physical activity (for examples, see Brown & Rhodes, 2006; Rhodes, Brown, & McIntyre, 2006). The instrument contains three open-ended questions covering the frequency of mild, moderate, and strenuous physical activities completed during free time for at least 30 min duration in a typical week. Our adaptation included the creation of two transparently parallel measures that differed by exercise or lifestyle physical activity categorizations and modified the mild intensity duration column to 60 min to match our definition of physical activity. Strenuous, moderate, and mild physical activity frequencies were aggregated to produce a total activity frequency.

Analysis

Assessment of mean values between exercise and lifestyle physical activity for TPB constructs and behaviour were conducted using dependent sample *t*-tests. Comparisons of exercise/lifestyle physical

activity in terms of TPB construct correlations with intention and behaviour were conducted using Hotelling's *t*-tests for dependent sample correlations. These analyses were also performed for TPB constructs-behaviour correlations by intensity (strenuous, moderate, mild). Because the TPB is a multivariate model, the multiple *R* from ordinary least squares regression was also compared in these analyses. Correlation with intention included affective attitude, instrumental attitude, subjective norm, and perceived behavioural control as predictors; correlation with behaviour included intention and perceived behavioural control as predictors. Effect sizes (*d*, *q*) were included to aid the interpretation and evaluation of the results based on Cohen's (1992) small (*d* = 0.20, *q* = 0.10), medium (*d* = 0.50, *q* = 0.30), and large (*d* = 0.80, *q* = 0.50) values. [Cohen's *d* and *q* were derived for independent sample correlations. Although a correction factor for dependent correlations is sometimes employed (Rosenthal, 1991), Dunlop and colleagues (Dunlop, Cortina, Vaslow, & Burke, 1996) have demonstrated that the correction systematically biases the effect size upwards and advocate that dependent sample effect sizes are most accurate when calculated in a similar fashion to independent samples. We followed these suggestions when calculating the effect sizes for this study.]

Results

Descriptives and mean comparisons between lifestyle physical activity and exercise among TPB constructs and behaviours are presented in Table I. Mean scores for these cognitive values for both types of activities were high (5.31–6.36). Instrumental attitude ($t_{149} = 6.53$, $P < 0.01$; *d* = 0.68) and intention ($t_{149} = 2.22$, $P < 0.01$; *d* = 0.20) were higher for exercise than lifestyle physical activity. No other mean differences in TPB constructs were found to be significant. The comparisons of behaviour by intensity showed that the frequency of strenuous exercise was higher among participants than that of strenuous lifestyle physical activity ($t_{149} = 7.01$, $P < 0.01$; *d* = 0.53), while the frequency of mild lifestyle physical activity was higher than that of mild exercise ($t_{149} = 6.44$, $P < 0.01$; *d* = 0.64). Neither frequency of moderate-intensity activity nor total frequency differed between the two activity types.

The main analyses comparing the TPB-behaviour correlations are presented in Table II. Only subjective norm differed significantly between behaviours when considering the TPB construct-intention correlations. Specifically, the subjective norm-intention correlations were larger for lifestyle physical activity than exercise ($t_{147} = 4.06$, $P < 0.01$; *q* = 0.25). No other differences were observed, including the multi-

Table I. Mean differences between lifestyle physical activity (LPA) and exercise ($n = 150$)

Construct	LPA		Exercise		t	d
	Mean	(s)	Mean	(s)		
Affective attitude	5.54	(1.00)	5.63	(1.03)	-0.80	0.09
Instrumental attitude	5.88	(0.86)	6.36	(0.56)	-6.53**	0.68
Subjective norm	5.75	(0.85)	5.79	(0.77)	-0.78	0.01
PBC	5.93	(0.86)	5.87	(0.96)	1.00	0.07
Intention	5.31	(1.13)	5.55	(1.26)	-2.22*	0.20
Total frequency	5.75	(3.08)	5.70	(3.12)	0.02	0.02
Strenuous frequency	1.62	(1.62)	2.64	(2.24)	-7.01**	0.53
Moderate frequency	2.23	(1.76)	2.22	(1.20)	0.02	0.00
Mild frequency	2.95	(2.44)	1.55	(1.99)	6.44**	0.64

* $P < 0.05$, ** $P < 0.01$; t = Student's t for dependent samples; d = Cohen's (1992) effect size d . PBC = perceived behavioural control.

variate TPB model ($P > 0.05$), although affective attitude (lifestyle physical activity < exercise) and perceived behavioural control (lifestyle physical activity > exercise) did amount to a small effect size q difference.

Two differences in TPB-behaviour correlations were observed. The PBC-behaviour correlation was larger for exercise than lifestyle physical activity ($t_{147} = 1.97$, $P < 0.05$; $q = 0.15$), as was the total multivariate TPB model ($t_{147} = 2.34$, $P < 0.05$; $q = 0.20$). Nevertheless, like the TPB-intention correlations, the affective attitude and intention (lifestyle physical activity < exercise) correlations also showed a small effect size difference. Frequency and duration of behaviour were not found to confound these findings when analysed separately in an exploratory follow-up ($P > 0.05$).

Finally, comparisons of correlations by intensity are presented in Table III. For frequency of strenuous activities, correlation differences were present for affective attitude ($t_{147} = 2.61$, $P < 0.01$; $q = 0.27$), intention ($t_{147} = 3.22$, $P < 0.01$; $q = 0.30$), and the multivariate TPB model ($t_{147} = 3.25$, $P < 0.01$; $q = 0.29$). All these differences favoured larger correlations for exercise than lifestyle physical activity, and the effect sizes can be considered to be within the

small-to-medium range. An additional small effect size was identified for perceived behavioural control, again favouring exercise over lifestyle physical activity.

In contrast to the correlation differences between strenuous intensity activities, moderate and mild intensities showed almost no differences between exercise and lifestyle physical activity. Indeed, only the subjective norm-mild intensity frequency correlation differed ($t_{147} = 2.15$, $P < 0.05$; $q = 0.13$) across the two types of behaviour, with a small effect size favouring exercise compared with lifestyle physical activity.

Discussion

Regular exercise and lifestyle physical activity are often used interchangeably or combined in physical activity messaging based on evidence for their relatively equivalent health outcomes (Dunn *et al.*, 1998a). However, differences between their motivational correlates are relatively unexplored. The purpose of this study was to compare the means of motives towards lifestyle physical activity and exercise and their relationship with behaviour using the TPB. Although this study was exploratory, we hypothesized that the TPB may be a more efficacious model for

Table II. Correlation differences between total frequency of lifestyle physical activity (LPA) and exercise behaviour

	Intention				Behaviour			
	LPA (r)	Exercise (r)	t	q	Total LPA (r)	Total Exercise (r)	t	q
Affective attitude	0.52**	0.62**	1.43	0.15	0.15	0.30**	1.53	0.16
Instrumental attitude	0.31**	0.32**	0.11	0.01	0.12	0.16*	0.40	0.04
Subjective norm	0.46**	0.24**	4.06**	0.25	0.12	0.13	0.16	0.01
PBC	0.50**	0.40**	1.58	0.13	0.12	0.26**	1.97*	0.15
Intention					0.27**	0.42**	1.86	0.17
Multivariate TBP measure	0.66**	0.68**	0.38	0.04	0.26**	0.44**	2.34*	0.20

* $P < 0.05$, ** $P < 0.01$; t = Hotelling's t for dependent correlations; q = Cohen's (1992) effect size q . PBC = perceived behavioural control. TPB = theory of planned behaviour.

Table III. Correlation differences between frequency of lifestyle physical activity and exercise behaviour by intensity

	Strenuous				Moderate				Mild			
	LPA (<i>r</i>)	Exercise (<i>r</i>)	<i>t</i>	<i>q</i>	LPA (<i>r</i>)	Exercise (<i>r</i>)	<i>t</i>	<i>q</i>	LPA (<i>r</i>)	Exercise (<i>r</i>)	<i>t</i>	<i>q</i>
Affective attitude	0.13	0.38**	2.61**	0.27	0.13	0.12	0.10	0.01	0.09	0.11	0.19	0.02
Instrumental attitude	0.11	0.15	0.40	0.04	0.18*	0.12	0.61	0.06	0.03	0.04	0.10	0.01
Subjective norm	0.15	0.09	0.98	0.06	0.10	0.07	0.49	0.03	0.02	0.15	2.15*	0.13
PBC	0.24**	0.33**	1.29	0.10	0.08	0.14	0.82	0.06	-0.05	0.00	0.68	0.05
Intention	0.31**	0.55**	3.22**	0.30	0.22**	0.18*	0.46	0.04	0.09	0.09	0.00	0.00
Multivariate TPB	0.33**	0.56**	3.25**	0.29	0.23**	0.20**	0.36	0.03	0.14	0.10	0.47	0.04

* $P < 0.05$, ** $P < 0.01$; t = Hotelling's t for dependent correlations; q = Cohen's (1992) effect size q . PBC = perceived behavioural control. TPB = theory of planned behaviour.

predicting exercise than lifestyle physical activity. This was predicated on the assumption that the rote patterns of exercise might be better captured in the constructs of planned behaviour compared with the possible impromptu nature of lifestyle physical activity, given the planned, structured or fixed nature of exercise for the purposes of health benefits compared with the incidental physical activity that results from daily activities. It was further hypothesized that perceived behavioural control would be more strongly correlated with exercise than lifestyle physical activity due to differences in accessibility, spontaneity, and related difficulties involving exercise compared with lifestyle physical activity. Finally, we explored whether the two types of physical activity differ by intensity. It was hypothesized that, for both activities, higher intensities would be correlated with TPB constructs more than lighter activities based on measurement recall.

Our hypotheses were generally supported, suggesting that some distinctions between these behaviours may be advisable in terms of tailored promotion and measurement. First, a medium effect size difference was identified between the instrumental attitudes of exercise and lifestyle physical activity. Specifically, exercise instrumental attitude was higher than its lifestyle physical activity counterpart. This supports prior work suggesting that most people think of the attributes of strenuous exercise when physical activity is brought to mind (Morrow *et al.*, 2004; Tudor-Locke *et al.*, 2003). This is disturbing, given the current focus on lifestyle physical activity in evidence-based promotional efforts (Dunn *et al.*, 1998a). Although instrumental attitude is not the most important correlate of physical activity in the TPB (Hagger *et al.*, 2002; Lowe, Eves, & Carroll, 2002; Rhodes & Courneya, 2003), it nevertheless may be an important antecedent to action decision making. It appears that continued advocacy of lifestyle physical activity may be beneficial. In addition, instrumental attitude was the only TPB construct with a marked mean

difference between exercise and lifestyle physical activity. Intention was significantly different, but the actual effect size difference was borderline trivial. Thus, cognitions about the two types of behaviours are relatively similar in terms of mean values.

Students participated in a higher frequency of strenuous exercise than lifestyle physical activity, but a higher frequency of mild-intensity lifestyle physical activity than exercise of the same intensity. This may explain why differences did not appear to extend to total frequency when combined. These results are not surprising when considering the types of activities in each domain. Still, these mean differences by intensity demonstrate the importance of including specific intensity assessments in conjunction with the total volume of physical activity when making comparisons. In addition, the finding that there was a higher frequency of mild-intensity lifestyle physical activity is congruent with the current recommendations for active living (Health Canada, 2002).

The main findings of the study, comparing correlations of TPB-behaviour between exercise and lifestyle physical activity, supported our hypotheses. That is, the TPB model predicted exercise behaviour better than lifestyle physical activity. Observation of the univariate correlation comparisons suggested that affective attitude, perceived behavioural control, and intention all had small differences favouring exercise behaviour. Interestingly, a similar finding was not replicated in the correlations with intention. Indeed, the only difference among TPB correlations with intention was for subjective norm, and it favoured lifestyle physical activity. This may be due to the nature of lifestyle activities compared with exercise. Lifestyle physical activity represents activities such as household chores, child care, and social activities that incidentally include physical activity. It is conceivable that these types of activities carry more social responsibility or obligation than exercise. However, this was not observed in the means of subjective norm, as the two constructs did not differ.

Furthermore, the effect did not translate into behaviour, and thus is spurious to behaviour change or promotion initiatives. In fact, the differences between the TPB correlations with intention and behaviour highlight the importance of focusing on behaviour and not intention in TPB research (Sutton, 2002; Weinstein, 2007).

Regarding perceived behavioural control, only exercise behaviour was significantly correlated with perceived behavioural control. Literature in this area asserts that the influence of perceived behavioural control on exercise may be due to the planned nature, general difficulty, and lack of complete volition in achieving the behaviour (Godin, 1993), compared with lifestyle activities that are less strenuous and may require less access barriers to equipment. The finding that the TPB was not as predictive for lifestyle physical activity is logical; however, this is of concern if total energy expenditure (Blair, 1995) and lifestyle physical activity continue to be a focal point in health promotion. This also suggests that the current behavioural theories may have limited utility if lifestyle physical activity continues to be promoted as an integral part of total physical activity.

The differences in correlates between the two types of physical activity were only in the small effect size range. More noteworthy was the inability of the TPB to explain lifestyle physical activity. Only intention correlated with lifestyle physical activity, which is not particularly helpful because none of its purported antecedents showed similar relations. Thus, the TPB may not be a particularly useful theory for understanding lifestyle physical activity. Still, the finding highlights that different correlates, and thus different promotion strategies, may be a prudent course of action (Miilunpalo *et al.*, 2000). Perhaps environmental aspects that force or trigger incidental physical activity are more important to lifestyle physical activity (Blair *et al.*, 1996; Owen, Humpel, Leslie, Bauman, & Sallis, 2004). Environmental components may be important to spontaneous behaviours such as lifestyle physical activity based on their proximity at the time a decision is made. *A priori* planning is not involved in all behaviours, thus for the more impromptu activities of daily living, the proximity of environmental factors may be affecting behaviour. Interventions that might address this issue of environment include point of decision prompts in workplaces or public centres to encourage active options, such signage at the elevators reminding patrons of the benefits of taking the stairs. Similarly, addressing the environmental aesthetic appeal of active lifestyle choices could also be an option; health promotion could focus on improving stairways appeal in terms of décor and safety, or encourage active transport by

introducing covered bike racks and free showers. Future research is needed to investigate this matter.

Analyses by intensity of exercise and lifestyle physical activity showed that the major discrepancies from the total physical activity results only extended to strenuous intensity. It is important to note that the variances for strenuous lifestyle physical activity and exercise did not differ significantly ($F=1.38$, $P>0.05$), suggesting that differences in these correlations cannot be explained by a statistical artifact of differences in variance. Commensurate with our initial hypothesis, strenuous activities tended to accentuate the results, suggesting that most people construe physical activity in terms of strenuous activities. This may be recall bias, since light-intensity activities are more difficult to recall (Dishman, Washburn, & Schoeller, 2001). However, this finding highlights the need to better understand the correlates of physical activity by intensity. Work on this aspect has been preliminary because it often separates intensity of physical activity *post hoc* and uses an aggregate framing (i.e. inclusive of all intensities) (e.g. McNeill *et al.*, 2006). Future research may benefit from the separation of intensity framing similar to the separation of exercise and lifestyle physical activity in this study.

Although the study provides interesting preliminary findings, several limitations warrant a mention and demonstrate the need for more research. First, physical activity was assessed via self-report and through adapted instrumentation. Although this may not alter the comparative findings between the two types of activities, objective measures will undoubtedly improve the veracity of the findings. Second, the design employed was cross-sectional, which negates having a time-frame between the social cognitive variables and behaviour. However, similar to the self-report issue, the design should not affect the comparison of results between the two types of activities because it was held constant. Passive longitudinal designs have also not shown significantly different findings from studies that employ cross-sectional designs (Rhodes & Plotnikoff, 2005; Symons Downs & Hausenblas, 2005); thus this is likely not a limitation to the findings. Third, our convenience sample of undergraduate students may not generalize to the population at large, thus our results may be sample-specific and potentially exaggerated when comparing exercise and lifestyle activities. However, the TPB and physical activity results do not differ by age, at least among young and middle-aged adults, and are relatively robust to different samples (Hagger *et al.*, 2002; Symons Downs & Hausenblas, 2005). Fourth, our measurement of subjective norm was not optimal, as evidenced by relatively weak internal consistencies. This may have attenuated the results of this variable due to

measurement error. Our behaviour and TPB measures also do not conserve scale correspondence (Courneya, 1994; Courneya & McAuley, 1994). Scale correspondence often increases the magnitude of correlations, although the violation due to the use of a continuous open behaviour measure such as the ones used in this study actually improves prediction because of the additional variability afforded in the measure (Rhodes, Matheson, & Blanchard, 2006). Finally, the current definition of lifestyle physical activity may confound too many forms of physical activity, resulting in low TPB correlations. The evaluation of lifestyle physical activity behaviours with specific definitions (e.g. housework, travel, play) appears to be a useful focus for future research.

In summary, regular exercise and lifestyle physical activity are often used interchangeably or combined in physical activity messaging. Our results suggest that the correlates for these activities may differ. Although more research is necessary, this may affect the efficacy of promotion campaigns that do not tailor content for these types of activities.

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