

Analytical Comparison of Three Motivational Components of Exercise Adherence in Physically Active Hong Kong and United Kingdom University Students

比較香港及英國大專學生慣性參與體育之動機的跨文化研究

Eric C. K. TSANG

*Department of Physical Education and Sports Science,
The Hong Kong Institute of Education, HONG KONG*

Attila SZABO Annemarie ROBINSON

*School of Science,
The Nottingham Trent University, UNITED KINGDOM*

曾卓權

香港教育學院體育及運動科學系

沙雅提 羅安妮

英國諾定威河大學科學院



Abstract

Physical activity has numerous positive physical and psychological benefits. Therefore, a physically active lifestyle benefits both the individual and the society. Nevertheless, many people drop out from their sport or exercise regimen. In this inquiry three motivational factors in exercise adherence, including predisposing, enabling, and reinforcing factors, were studied from a cross-cultural perspective. A total of 235 male (n=151) and female (n=84) volunteers (mean age=21.4 ± 2.6 years) from Hong Kong (n=112) and United Kingdom (n=123) completed an exercise habits inventory and the Physical Activity Adherence Questionnaire (PAAQ). All participants were physically active, of whom 132 have once quit a sport/exercise in the past whereas 103 never quit. Results revealed that differences exist in predisposing and enabling motivational components of exercise adherence in both cross-cultural and gender comparison studies. Participants who quit a sport or exercise report lesser reinforcing experiences than those who never abandoned an adopted sport or exercise. It is concluded that reinforcing factors play a crucial role in the long term maintenance of a sport or exercise and that both cultural and gender differences need to be taken into serious consideration in the course of facilitation of various exercise/sport behaviours.

Key words: Adherence, Exercise, Culture, Gender, Sport

摘要

本研究將慣性參與運動的動機，分為「個人傾向因素」、「推動參與因素」及「強化因素」(Corbin et al., 2003)，以跨文化方式作出探索，分別在香港(N=112人)及英國(N=123人)以收集問卷形式進行。結果指出，「強化因素」對持續參與體育活動非常重要，而不同文化及性別，對促進參與體育活動的影響亦非常重要。

Introduction

It is textbook knowledge that physical activity has many positive physical and mental benefits. Therefore, engagement in a physically active lifestyle benefits both the individual (from health perspective) and the society (from health care cost perspective). Nevertheless, many individuals who start to be physically active drop out from their sport or exercise regimen. The drop out rate among novel exercisers is around 50% within the first six month of the adoption phase (Sallis & Hovell, 1990). The current empirical research into the understanding of exercise behaviour is theoretically driven. Amongst the most common theories used to explain exercise behaviour were the theory of reasoned action (Ajzen, 1985), the theory of planned behaviour (Godin, 1994), the transtheoretical model (Prochaska & Markus, 1994), the social cognitive theory (Bandura, 1986), and the health belief model (Becker & Maiman, 1975). Although all these theories account for exercise behaviour per se, they do not incorporate key underlying factors that facilitate or hinder the predicted pathways or behavioural unfolding within their model.

Indeed, the key determinants of exercise adherence are often only listed as personal and situational factors. Such lists are based on surveys, questionnaires, or occasionally on interviews and albeit useful, they are not structured enough to add to the theoretical understanding of exercise adherence.

Hence, the field of exercise adherence relies on theories explaining exercise behaviour, but lacks the theoretical framework in identifying the determinants that could affect that behaviour.

A valuable expansion to the transtheoretical model (Prochaska & Markus, 1994), by theoretically structuring key factors acting upon the various stages in the model, is presented by Corbin et al. (2003). Accordingly, after the exercise adoption phase (precontemplation and contemplation) three sets of determinants could influence behaviour. The first set is comprised of predisposing factors that include the knowledge, beliefs, and attitudes towards exercise participation which increase the motivation for the behaviour and act at contemplation, preparation, and action stages of the transtheoretical model. The second set includes skills and/or abilities enabling the individual to take action and exerts influence at preparation, action, and maintenance stage of the model. The third set, referred to as reinforcing factors, includes support from family, peers and health professionals in conjunction with the experience of success. These factors are crucial determinants in both the action and maintenance stages of the transtheoretical model and, therefore, could exert strong influence on exercise adherence per se (Figure 1). In this study, we tested whether the motivational factors in exercise adherence, including predisposing, enabling and reinforcing factors could account for differences between lifetime adherers and past non-adherers from a cross-cultural perspective to examine the theoretical adequacy and generalizability of the model.

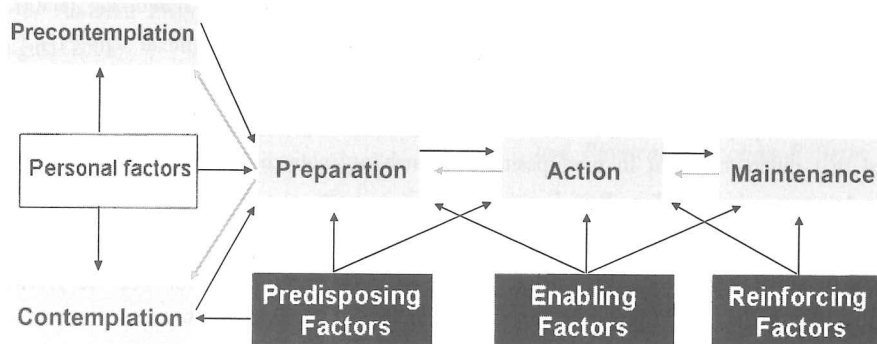


Figure 1 - Expanded Transtheoretical Model (Based on Corbin et al., 2003)

Methods

A total of 235 male (n = 151) and female (n = 84) physically active student volunteers (mean age = 21.4, SD ± 2.6 years) from the Hong Kong Institute of education (n = 112) and The Nottingham Trent University in United Kingdom (n = 123) were tested. Participants were selected into two groups: previous drop outs from sport (132) and adherers (103). The former group has at least once quit a

sport or exercise in the past whereas the latter group was still maintaining their original (first adopted) form of exercise. All volunteers completed the Physical Activity Adherence Questionnaire (PAAQ - Corbin & Lindsey, 1991), which is a 15 item Likert scale with three subscales gauging predisposing, enabling, and reinforcing factors of exercise adherence. A total exercise adherence score could be derived by adding up the scores of the subscales. The scores could be interpreted in light of a classification table (see Table 1).

Table 1. Exercise Adherence Rating Scale (Based on Corbin & Lindsey, 1991).

Classification	Predisposing factor score	Enabling factor score	Reinforcing factor score	Total score
Excellent	12 - 14	7 - 8	7 - 8	26 - 30
Very good	10 - 11	6	6	22 - 25
Good	7 - 9	4 - 5	4 - 5	15 - 21
Fair	5 - 6	3	3	11 - 14
Poor	<5	<3	<3	< 11

Results

At first, examining gender and cultural differences, the data were analysed with a 2 (gender) by 2 (country) multivariate analysis of variance (MANOVA). This test yielded statistically significant main effects for 'gender' (Wilk's Lambda=.963, F (3, 229) = 2.93, p < .03) and 'country' (Wilk's Lambda = .836, F (3, 229) = 14.96, p < .001), but no gender by country interaction. Follow up univariate tests revealed that in both countries males scored higher than females on predisposing factors (F (1, 231) = 8.75, p < .003), on enabling factors

(F (1, 231) = 4.04, p < .05), that was translated into a higher total adherence score for males (F (1, 231) = 6.43, p < .01). No statistically significant differences on reinforcing factors were seen. A similar pattern emerged for the 'country' main effect. Students from the United Kingdom scored higher than students in Hong Kong on predisposing factors (F (1, 231) = 35.32, p < .001), on enabling factors (F (1, 231) = 32.45, p < .001), and these again yielded a higher total adherence score for the students in the United Kingdom (F (1, 231) = 30.07, p < .001). No statistically significant differences were observed for reinforcing factors (see Table 2).

Table 2. Means (± SD) Related to the Gender and Country Main Effects.

Factors	Men		Women		United Kingdom		Hong Kong	
	Means	SD	Means	SD	Means	SD	Means	SD
Predisposing	11.6	1.9	10.7	2.0	12.0	1.8	10.5	2.0
Enabling	5.9	1.6	5.4	1.7	6.3	1.5	5.0	1.5
Reinforcing	5.3	1.6	5.1	1.6	5.4	1.5	5.0	1.7
Total adherence	22.8	4.2	21.1	4.5	23.7	3.9	20.6	4.2

In a second set of data analyses a MANOVA was used to test the differences between university students who dropped out (at least once) in the past, but are now physically active, and those who never dropped out from their original /first sport or physical activity. This analysis yielded a statistically significant multivariate effect (Wilk's Lambda = .963, $F(3, 229) = 2.93$, $p < .03$) that was again followed up with univariate tests. The latter showed that the two groups differed in reinforcing factors ($F(1, 233) = 9.17$, $p < .003$), and the slightly higher overall ratings of those students who never dropped out from

their original sport or exercise also contributed to a statistically significant difference in the total adherence score ($F(1, 233) = 6.62$, $p < .01$ - Table 3). Given the interest in the conceptual importance of the here observed differences between two groups of current exercisers, the effect sizes (d), based on Cohen (1988), were calculated for this set of results to gauge the meaningfulness of the statistical differences. Using the robust pooled standard deviation method, they were found to be "moderate" ($d = .39$ for reinforcing factors and $d = .33$ for the total adherence score) in light of Cohen's interpretation.

Table 3. Means (\pm SD) Related to the Exercise Adherence History.

Factors	Past drop-out		Never dropped out	
	Means	SD	Means	SD
Predisposing	11.1	2.1	11.6	1.9
Enabling	5.6	1.7	5.9	1.5
Reinforcing *	5.0	1.6	5.6	1.5
Total adherence #	21.6	4.5	23.0	4.0

* $p < .003$, # $p < .01$.

Discussion and Conclusion

The most important finding in this research is that physically active students with exercise drop out history score lower on total adherence than adherers. Even more important is that former drop outs also score lower on the reinforcing factors that are critical in both the action and maintenance phases of the exercise behaviour in light of transtheoretical model (see Figure 1).

The between group differences observed here could be modest since all students had affinity for sport or exercise. However, the effects sizes show that the differences are moderate rather than small. This is crucially important because all participants in the current study, even those with past history of drop-out from sport or exercise, were currently physically active and they scored, in fact, at the "very good" classification (Table 1) that was comparable to the score of the continuous or lifetime adherers who maintained their first adopted sport or physical activity. Thus, the moderate effect sizes disclosed in this investigation suggest that the expected differences between permanent drop outs from sports and/or exercise and lifelong adherers could be notably more prominent, but such contention needs future testing.

Other important results that emerged from this study pertain to gender and cultural differences. The former especially emerging on predisposing and enabling factors could be explained in light of women's perception of their roles and abilities that differs from that of men. The results agree with at least a previous report that examined exercise adherence in a similar perspective (Akindutire, 1996). Personal and social values and opportunities could explain cultural differences in the three motivational components. The significant conception of academic achievements in Hong Kong may have affected personal values towards participation in sport or physical exercise that could account for a lower score especially in the predisposing factors. However, the key point is not the explanation of the differences, but their consideration in the facilitation of exercise behaviour by taking into consideration cultural differences. Regrettably, to date such differences were overlooked in the extant literature.

The current results show that it may be useful to look to the determinants of exercise behaviour as another dimension (facilitative or debilitative) of the theories on sport and exercise behaviour, such as the transtheoretical model considered here. This view is more useful than simply listing a set of personal and situational factors, because they are grouped into logical motivational components / determinants such as predisposing,

enabling and reinforcing factors. Clearly, as it emerges from this research, the latter is extremely sensitive to differentiating adherers from past drop outs even if the past drop outs are currently active. The possible predictive value of this approach should not be underestimated.

To further validate the predictive value of the factors studied here, a sample of permanent drop outs (currently inactive) should also be studied. Based on current results, it may be expected that substantial differences will emerge in predisposing, enabling, and reinforcing factors - that will also translate into significant difference in total adherence score - between adherers and drop outs. Such finding will further justify the need for considering an additional dimension that was largely ignored in research - but already addressed in theory (Corbin et al., 2003) - in the studying of exercise adherence.

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Correspondence:

Eric C.K. Tsang
Department of Physical Education and Sports Science,
The Hong Kong Institute of Education,
Tai Po, New Territories,
Hong Kong.

Tel: 2948 7861
E-mail: cksang@ied.edu.hk