

Provided for non-commercial research and education use.
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/copyright>



Short report

Team building and perceived effort in an exercise setting: Gender effects

Mark W. Bruner*, Kevin S. Spink

University of Saskatchewan, Saskatoon, SK, Canada

Received 23 April 2010; received in revised form 8 September 2010; accepted 17 September 2010

Abstract

This study examined the moderating role of gender on the team building (TB)/perceived effort relationship in an exercise setting. Youths ($n = 100$) who participated in either a TB or control group exercise setting completed a measure of perceived effort prior to and following a TB intervention. A 2 (group) \times 2 (gender) ANCOVA controlling for baseline perceived effort revealed a significant interaction, $F(1, 95) = 4.50$, $p < .05$. The interaction revealed that females in the TB condition reported significantly more perceived effort at the post-assessment than did those in the control condition whereas the perceived effort reported by males did not differ between conditions. These results provide preliminary evidence that gender may need to be considered in future TB investigations that include perceived effort as a dependent measure. © 2010 Sports Medicine Australia. Published by Elsevier Ltd. All rights reserved.

Keywords: Group dynamics; Physical activity; Intervention; Energy

1. Introduction

Keeping individuals active has been identified as an important health goal.¹ While a number of approaches have been examined to achieve this goal, one that has been receiving increased attention is the use of a group focus to improve activity adherence. In terms of activity outcomes, it has been found that team building (TB) interventions targeting group dynamics principles can be effective in improving adherence measures.² For the most part, the measures of adherence examined have reflected some type of frequency behaviour such as number of sessions attended.² Given the suggestion that energy expenditure may be a more important indicator of potential health benefits than a frequency measure,³ examining the relationship between a TB intervention and individual member effort becomes important.

Although perceived effort has not been examined in a TB exercise setting, previous work using a group-based exercise intervention has examined vitality, which captures perceptions of energy.⁴ Interestingly, gender differences emerged in that study. No differences in perceptions of energy were found between males in a standard versus enhanced exercise group at the end of the intervention, whereas females in the enhanced group setting reported greater perceptions of

energy than those in the standard group. When the finding that the group intervention only produced enhanced perceptions of energy in females is coupled with the suggestion that those who report more energy are likely to work harder, a similar gender effect might be expected when examining the effects of TB on perceived effort in an exercise setting.

The purpose of the current study was to examine the moderating role of gender on the TB-perceived effort relationship in an exercise setting. Based on previous findings,⁴ it was hypothesized that the female exercise participants exposed to the TB intervention would report higher levels of perceived effort than those exposed to the standard group condition. This hypothesis also is consistent with the suggestion that females tend to score higher on group variables such as belongingness needs than do males.⁵ Accordingly, it might be expected that females would work harder in this setting as they are likely to make greater emotional investment in a group context.⁶ No differences in perceived effort were expected for males exposed to the two conditions (i.e. TB versus standard group).

2. Methods

Participants included 122 youths (mean age = 15.5 years) who took part in a leader-directed exercise club within 10

* Corresponding author.

E-mail address: markb@nipissingu.ca (M.W. Bruner).

rural high schools. The intervention was a quasi-experimental field experiment, as schools (site) rather than individuals were randomized to the two treatment conditions. Results in this study are part of a larger intervention that has been reported elsewhere.⁷ While the previous study⁷ described the successful implementation and evaluation of the TB intervention used in this study, the focus of the present study was on perceived effort, which was one of the outcomes that emanated from that intervention.

The complete details of the intervention are presented elsewhere.⁷ However, a brief overview will be provided here. Ethical approval was obtained through the university ethics board and three school boards. Participants were recruited by posters and school announcements to attend an extra-curricular teacher-directed exercise club. Pupils interested in participating in the study signed up for the exercise club at their respective schools. Those under the age of 18 required parental consent.

The exercise clubs met three times per week (60 min/session) outside of school hours for a total of 24 exercise sessions over eight weeks. Each leader was trained to follow a standardized exercise protocol. After a two-week baseline period, the schools were randomized into TB ($n = 5$) and control ($n = 5$) groups. Leaders in the control groups were instructed to continue with the standardized exercise program for the remainder of the intervention. The five TB leaders were contacted and invited to attend a TB workshop lead by a TB interventionist. The purpose of the intervention was to use group dynamics principles⁸ to enhance group cohesion. The workshop was modelled on one previously developed for and used in an exercise setting.⁹ The primary objective of the workshop was to have the leaders develop a TB protocol that they would implement in their groups for the remaining sessions.

Age and preference for being active with others in a group setting were obtained at baseline (i.e. 6th session). Activity setting preference was assessed using a single item question: “Do you enjoy being active with others in a group setting? [] yes [] no [] no preference”.

A 6-item scale (1 – strongly disagree to 7 – strongly agree) used previously in a sport setting¹⁰ was employed to assess perceived effort at baseline and following the intervention. Items were adapted to reflect the exercise rather than sport context. As one example, the item “When I *played*, I really exerted myself to the fullest” was modified to, “When *exercising*, I really exerted myself to the fullest”. The six items were summed with higher scores representing greater perceived effort. Cronbach alphas revealed that the perceived effort scale was internally consistent at both time points ($\alpha = .86$ and $.91$).

Prior to conducting the analysis, appropriate parametric assumptions (i.e. normality, linearity, homogeneity of variance, homogeneity of regression) were examined. A 2 (group – TB/control) \times 2 (gender – male/female) ANCOVA controlling for baseline perceived effort was conducted to evaluate the moderating role of gender on the TB/perceived effort

relationship. An ANCOVA was selected to control for any possible differences in pretest scores for perceived effort¹¹ as well as address the issue of possible regression towards the mean that may be associated with quasi-experimental designs.¹²

A comparison of the baseline characteristics of the two groups revealed that the TB and control groups did not differ on age, gender, or preference for being active in a group activity setting (all $p > .05$). Further, no significant difference was found in the means for perceived effort between the TB (36.06 ± 4.67) and control groups (36.00 ± 3.81) at baseline, $t(98) = -.07, p > .05$.

Data analysis was conducted on 100 of the 122 participants. The 22 participants excluded from the analysis were those who had dropped out of the intervention. As we were only interested in the reported effort of those who were exposed to the complete intervention, individuals who dropped out before the intervention was complete were excluded. All assumptions of parametric data were satisfied. Results from a 2 (group) \times 2 (gender) ANCOVA revealed a significant interaction, $F(1, 95) = 4.50, p < .05, \eta_p^2 = 0.05$, indicating a small effect. Post hoc analyses revealed that the perceived effort reported by males did not differ between the TB (35.21 ± 6.32) and control (36.67 ± 3.68) conditions at the conclusion of the intervention ($p > .05$). However, for females, those in the TB condition (35.39 ± 5.10) reported significantly more perceived effort at post-testing than did those in the control condition (32.40 ± 5.65) ($p < .05$).

3. Discussion

The purpose of this study was to examine the moderating effect of gender on the relationship between TB and perceived effort. The hypothesis was supported as it was found that female participants exposed to the TB intervention reported higher levels of perceived effort at the end of the intervention than those in the standard group condition. No differences were found for males.

Although this study is among the first to examine the role of gender in a TB intervention, the results were similar to those reported in another group-based exercise intervention.⁴ In that study, females in an enhanced group setting reported greater vitality than those in the standard group following exposure to the intervention. However, no difference in vitality was reported for males in either condition. In this study, females in the TB condition reported significantly more perceived effort at post-testing than did those in the control condition. This suggests that females may have been more influenced by the group enhancements, which is consistent with the finding that females tend to value social variables such as belongingness more⁵ as well as tend to be more emotionally invested in group settings.⁶ Consequently, this may have prompted them to become more engaged with the group, which was reflected in their work ethic.

In hindsight, another possible explanation for the gender differences might involve the fact that many of the activities used in the standardized exercise protocol could be viewed as male-oriented (e.g. push-ups, chin-ups, squats, arm curls). As reflected in the pre-post mean scores for perceived effort, it is plausible that females lost interest in these gender-role inappropriate exercises over time without the enhanced group effects. If this were the case, these findings indicate that the enhanced groups effects achieved through team building were powerful enough to offset the negative effort decrements associated with partaking in a gender-role inappropriate task. Two findings appear to support this suggestion. First, females in the enhanced group reported similar effort scores to the males at the end of the intervention. Second, females in the control group reported effort-scores that were significantly lower than the other groups (i.e. female enhanced, male enhanced, male control) at the end of the intervention.

If the current results can be replicated, the implications of these findings appear to be that the effects of a TB intervention on perceived effort are gender specific. For males, it may be that participating in a group setting may be powerful enough to elicit motivational responses. However, without a non-group control, this remains speculative in nature. Females, on the other hand, may require the additional group enhancement to increase their effort level.

4. Conclusion

While the current findings provide preliminary support for the idea that gender may play a role in the TB-perceived effort relationship, limitations of the study should be noted. First, the results are generalisable to adolescents in school-based settings where the leaders are teachers. Generalisability to non-school settings in which the leaders are not in a position of authority is needed. Another limitation was the self-reported measure of effort. Given that this is the first TB-perceived effort study in an exercise setting, replication with an objective measure of perceived effort (e.g. % relative to $\dot{V}O_2$ max) is encouraged.

Practical implications

- For those interested in using exercise to positively influence individual health behaviour, the present findings indicate that females may expend more energy participating in a team building versus standard group setting.

Acknowledgements

The lead author was supported by PHARE, a CIHR graduate training program. The authors would like to thank the schools, teachers and pupils involved in the project.

References

1. World Health Organization. *Health and development through physical activity and sport*; 2003. Retrieved from http://whqlibdoc.who.int/hq/2003/WHO_NMH_NPH_PAH_03.2.pdf.
2. Burke S, Carron A, Eys M, et al. Group versus individual approach? A meta-analysis of the effectiveness of interventions to promote physical activity. *Sport Exerc Psychol Rev* 2006;**2**:19–35.
3. Health Canada. *Canada's physical activity guide for youth (No. H39-611/2002-1E)*. Ottawa, ON: Health Canada; 2002.
4. Focht BC, Brawley LR, Rejeski WJ, et al. Group-mediated activity counseling and traditional exercise therapy programs: effects on health-related quality of life among older adults in cardiac rehabilitation. *Ann Behav Med* 2004;**28**:52–61.
5. Deaux KA. A perspective on the attribution process. In: Harvey J, Ickes W, Kidd R, editors. *New direction in attribution research*. Hillsdale, NJ: Erlbaum; 1976. p. 335–52.
6. Eagly HA. *Sex differences in social behavior: a social-role interpretation*. Hillsdale, NJ: Erlbaum; 1987.
7. Bruner MW, Spink KS. Evaluating a team building intervention in a youth exercise setting. *Group Dyn*; in press.
8. Cartwright D. Achieving change in people: some applications of group dynamics theory. *Hum Relat* 1951;**4**:381–93.
9. Carron AV, Spink KS. Team building in an exercise setting. *Sport Psychol* 1993;**7**:8–18.
10. Spink KS, Odnokon P. Examining the effect of psychological climate on perceived effort in a sport setting. *J Sport Exerc Psychol* 2000;**22**:103.
11. Tabachnick BG, Fidell LS. *Using multivariate statistics*. 5th ed. Boston, MA: Pearson; 2007.
12. Campbell DT, Kenny DA. *A primer of regression artifacts*. New York: Guilford Press; 1999.