The Effect of a Health Videogame with Story Immersion for Childhood Obesity Prevention among Hong Kong Chinese Children

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DECLARATION

I hereby declare that this thesis represents my own work which has been conducted after registration for the degree of PhD at Hong Kong Baptist University, and has not been previously included in a thesis or a dissertation submitted to this or any other institution for a degree, diploma or other qualifications.

Signature: __________________________

Date: September 2015
ABSTRACT

Introduction: Video game is an emerging technology with potential to overcome many of the current barriers to behavior change. Video game playing is now woven into the fabric of children’s life and has been developed to educate individuals in health-related areas. Story immersion refers to the experience of being fully absorbed within a story in the game and is a key factor that contributes to the mechanism of behavior change. “Escape from Diab (Diab)” is a health videogame designed to lower the risk of obesity and type 2 diabetes through behavior change components that were integrated into activities within the game storyline. This thesis was designed to investigate the effect of Diab for childhood obesity prevention among Hong Kong Chinese children.

Methods: A literature review was conducted. Subsequently, study one conducted the validation of the Physical Activity Questionnaire for Older Children (PAQ-C) with 469 Hong Kong Chinese children. Study two was a cross-sectional study to explore the associations of self-efficacy, motivation, preference with both self-reported and objective physical activity (PA) in 301 children. Study three consisted of two phases. Phase one conducted individual interviews with 34 Hong Kong Chinese children to gather their perceptions of Diab and to assess Diab’s acceptability and applicability. Phase two examined the effect of playing nine episodes of Diab on children’s health outcomes (i.e., motivation, self-efficacy, preference for diet and PA, and PA behavior) through a non-randomized intervention.

Results: The review demonstrated the effects of interventions by using health videogames on the psychological correlates. However, limited evidence is available to draw conclusions on the games’ behavioral modification efficacy. In study one, good internal consistency and test-retest reliability suggest that the PAQ-C is an adequately reliable instrument for use among Chinese children. The significant moderate correlation between the PAQ-C score and accelerometer measured moderate-to-vigorous PA supports the PAQ-C’s acceptable validity. Study two revealed the important effects of self-efficacy and autonomous motivation in predicting PA. Differences were found between the prediction of self-reported PA and objective PA, which is likely due to self-reported error variance common to the PAQ-C and psychological correlates but not common to accelerometry. Study three indicated that Diab was perceived to be an immersive game by most of participating Hong Kong Chinese children. Four themes emerged from the interviews indicated that story immersion was a perceptible component and that Diab, developed for American children, was acceptable to the Hong Kong Chinese children. The pilot intervention study found short-term benefits after completing the game. However, the effects were not sustained at follow-up testing 8-10 weeks later.

Conclusion: The current thesis demonstrated the validity of PAQ-C and the important effects of self-efficacy and autonomous motivation in predicting PA, which could inform the development of efficacious interventions. Diab, a Health videogames with appealing characters and immersive stories, partially motivated children to improve their motivation, self-efficacy, and preference for diet and PA behaviors immediately after completing nine episodes of the game, however, the lasting effectiveness and mechanisms of change require more thorough investigation.
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# TABLE OF CONTENT

ABSTRACT ........................................................................................................................................ II
ACKNOWLEDGEMENTS .................................................................................................................. III
LIST OF TABLES ............................................................................................................................... VIII
LIST OF FIGURES ............................................................................................................................. X
LIST OF SYMBOLS .......................................................................................................................... XI
LIST OF ABBREVIATIONS ................................................................................................................ XII

## CHAPTER 1 INTRODUCTION .......................................................................................................... 1

**BACKGROUND OF THE STUDY** .................................................................................................. 1

*Childhood obesity prevalence and correlates* ................................................................................ 1
*Interventions for childhood obesity* ................................................................................................ 4
*Health videogames-based intervention for the childhood obesity* .................................................. 6
*Health videogame with story immersion for childhood obesity intervention*................................. 9

**THEORETICAL FRAMEWORK OF THE STUDY** ......................................................................... 13

*Self-determination theory* ............................................................................................................. 13
*Self-efficacy theory* ...................................................................................................................... 17
*Application of SDT and self-efficacy in health videogames* .......................................................... 19

**STATEMENT OF PROBLEM** ....................................................................................................... 22

**STUDY PURPOSE** ...................................................................................................................... 23

**SIGNIFICANCE OF THE STUDY** .................................................................................................. 24

**RESEARCH QUESTIONS** ............................................................................................................ 25

**DELIMITATIONS** ....................................................................................................................... 26

**LIMITATIONS** ............................................................................................................................. 27

**DEFINITION OF TERMS** ............................................................................................................. 27

## CHAPTER 2 LITERATURE REVIEW: THE EFFECTS OF VIDEO GAMES-BASED INTERVENTION ON CHILDREN’S OBESITY-RELATED BEHAVIORS ........................................... 29

**ABSTRACT** .................................................................................................................................. 29

**INTRODUCTION** ......................................................................................................................... 31

**METHODS** .................................................................................................................................. 32
CHAPTER 3  STUDY 1: VALIDATION OF THE PHYSICAL ACTIVITY QUESTIONNAIRE FOR OLDER CHILDREN (PAQ-C) AMONG CHINESE CHILDREN........................................55

ABSTRACT ........................................................................................................55
INTRODUCTION ................................................................................................57
METHODS ........................................................................................................60
Participants .......................................................................................................60
Measures ........................................................................................................60
 Procedures .......................................................................................................62
Statistical analyses ........................................................................................63
RESULTS ..........................................................................................................64
Descriptive statistics of the PAQ-C score ........................................................64
Scale internal reliability and corrected item total correlations ......................66
Factorial validity in all participants and across gender samples ....................66
Test-retest reliability .......................................................................................66
Convergent validity .......................................................................................67
DISCUSSION ..................................................................................................68
CONCLUSION .................................................................................................73

CHAPTER 4  STUDY 2: ASSOCIATION BETWEEN PSYCHOLOGICAL CORRELATES WITH PHYSICAL ACTIVITY AMONG CHINESE CHILDREN: A CROSS-SECTIONAL STUDY ....75

ABSTRACT ........................................................................................................75
INTRODUCTION ................................................................................................77
METHODS ........................................................................................................80
Participants .......................................................................................................80
Procedures .......................................................................................................81
Measures .........................................................................................................81
CHAPTER 5  STUDY 3: PHASE 1 –INDIVIDUAL INTERVIEW ON ACCEPTABILITY AND APPLICABILITY OF AN AMERICAN HEALTH VIDEOGAME WITH STORY FOR CHILDHOOD OBESITY PREVENTION AMONG HONG KONG CHINESE CHILDREN ..........96

ABSTRACT ..................................................................................................................96
INTRODUCTION ..........................................................................................................98
METHODS ....................................................................................................................100
Game for Health “Diab” ..............................................................................................100
Research design ..........................................................................................................103
Participants ...................................................................................................................104
Data analyses ..............................................................................................................105
RESULTS ......................................................................................................................106
Intuitive feelings about the interface ............................................................................107
Diab playing experiences ..............................................................................................108
Participants’ perception about the effect of Diab on behavior change .........................110
Applicability of Diab for Hong Kong children ..............................................................111
DISCUSSION .............................................................................................................112
CONCLUSION .........................................................................................................114

CHAPTER 6  STUDY 3: PHASE 2 - THE INTERVENTION EFFECT OF A HEALTH VIDEOGAME WITH STORY IMMERSION FOR CHILDHOOD OBESITY PREVENTION AMONG HONG KONG CHINESE CHILDREN .............................................116

ABSTRACT ..................................................................................................................116
INTRODUCTION ..........................................................................................................118
METHODS ....................................................................................................................121
Design .........................................................................................................................121
Participants ...................................................................................................................121
Intervention ..................................................................................................................122
Procedure ....................................................................................................................122

Statistical analysis ........................................................................................................85
RESULTS .......................................................................................................................86
Participants’ demographic characteristics .....................................................................86
Preliminary analyses on psychological correlates and PA behaviors .........................86
Predicting PA behaviors from age, sex, BMI, social desirability and psychological correlates ....90
DISCUSSION .............................................................................................................90
CONCLUSION .........................................................................................................94