VIETNAM NATIONAL UNIVERSITY UNIVERSITY OF EDUCATION

HO THU HA

A LONGITUDINAL STUDY OF HEALTH RISK BEHAVIORS AND MENTAL HEALTH PROBLEMS IN HIGH SCHOOL AGED ADOLESCENTS

Major : CHILD AND ADOLESCENT CLINICAL PSYCHOLOGY

Code : 9310401.01

PHD THESIS SUMMARY

HANOI – 2020

THE PHD PROJECT WAS CARRIED OUT
AT UNIVERSITY OF EDUCATION,
VIETNAM NATIONAL UNIVERSITY

Supervisor : Professor Bahr Weiss Reviewer 1 : Reviewer 2 :

The PhD thesis defense will be held at

.....

...../2020

The dissertation is available at :

- the National Library of Vietnam
- VNU Library and Information Center

INTRODUCTION

The purpose of this study is: (1) to extend the literature about the predictive association between mental health problems and health risk behaviors in adolescents; and (2) to explore the influence of delay discounting and parental monitoring to this association. Therefore, our main research questions are:

Q1: Does emotional mental health predict changes in health risk behaviors?

Q2: Does health risk behaviors predict changes in mental health problems?

Q3: Does delay discounting moderate the effect between health risk behaviors and mental health problems?

Q4: Does parental monitoring moderate the effect between health risk behaviors and mental health problems?

We then conducted a longitudinal study of over a 6month period at 2 time points in 431 high school aged adolescents from 5 provinces in Vietnam for the purpose of study. We expect that findings from this study may contribute to the existing literature by exploring the link between mental health and health behavior in a different cultural context and incorporating other social and individual factors into this link. This study will provide health professionals better knowledge

about the interaction between these two important constructs of mental and behavioral health, then may help in design of prevention and intervention programs in this area.

CHAPTER 1: THEORETICAL FRAMEWORK

1.1. Literature review

1.1.1. Overview

Health risk behaviors often begin during adolescence and extend into adulthood and have been assumed to have negative implications on both short-term and long-term health. For instance, bad dietary habits and sedentary behaviors are associated with increased risk of being over-weight or obese in later life (Cecchini et al., 2010; Rebecca M Leech, McNaughton, Timperio, & Activity, 2014). Individuals who start smoking and drinking at earlier age are more likely to become substance abuser in the future (Odgers et al., 2008). Reports varied across studies worldwide, but they all demonstrated an alarming high prevalence of health risk behaviors (Brannon, Feist, & Updegraff, 2013). Many studies interested in clusters of health risk behaviors rather than single one, as simultaneous engagement in such behaviors during adolescence is associated with increased morbidity and premature mortality (Busch, Van

Stel, Schrijvers, & de Leeuw, 2013; Khaw et al., 2008; Spring, Moller, & Coons, 2012). A number of studies have been conducted to determine the individual and environmental factors that influence health risk behaviors in adolescents. Gender, age, family structure, parents' highest education level, parents' employment were indicated having significant relationship with multiple health risk behaviors (Cubbin, Vesely, Braveman, & Oman, 2011). Other psychosocial factors such as personality traits, self-esteem or family and peers' influence are also associated with clusters of health risk behaviors (Alamian & Paradis, 2012; Tiainen et al., 2013).

1.1.2. Relation between health risk behaviors and mental health

The relation between multiple health risk behaviors are wellrecognized in the adult population who suffer from mental illness. Average physical activity level was reported lower than recommendation in obese patient with mental illness but no significant correlation between depressive symptoms, psychological distress and physical activity (Jerome et al., 2009). Negative affective factors, fatigue and lack of social support may act as barriers to exercise for these adults (Ussher, Stanbury, Cheeseman, & Faulkner, 2007). Poor dietary habits and

approximately five time higher of smoking were found in people with schizophrenia (De Leon & Diaz, 2005; Dipasquale et al., 2013). In non-clinical population, depressive symptoms were positively associated with health-compromising attitudes such as perceived barriers to healthy eating and weight concerns, and health-compromising behaviors such as unhealthy weight-control behaviors and substance use, including caffeine. Depressive symptoms were negatively associated with health-promoting behaviors such as moderate-to-vigorous physical activity and eating breakfast, lunch, and dinner (J. A. Fulkerson, N. E. Sherwood, C. L. Perry, D. Neumark-Sztainer, & M. J. P. m. Story, 2004).

In adolescent population, previous studies have found that the one with depressive symptoms are more likely to smoke, use alcohol and drugs, exhibit unhealthy diets, engage in sedentary behavior, risky sexual behaviors and deviant behaviors (Arbour-Nicitopoulos et al., 2012; Traci L Brooks et al., 2002; Katon et al., 2010). Arbour-Nicitopoulos et al. (2012) used the multiple affective behavior change model of Taylor (2010) as conceptual framework to understand the relationship between mental health and health risk behaviors: according to this, health risk behaviors are viewed as mood-regulating behaviors. During periods of

negative mood and stress, individuals tend to engage in these behaviors that may enhance mood and effect. In brief, the topic of relationship between mental health and health risk behaviors were given a considerate attention in recent decades and resulted in an enormous literature.

1.1.3. The association between parental monitoring and health risk behaviors and mental health problems

Parental monitoring is essential to adolescent development (Bruce E Compas, Hinden, & Gerhardt, 1995). It is assumed to improve adolescent resiliency (Zimmerman, Bingenheimer, & Notaro, 2002) and may protect against risky behaviors (Ryan, Jorm, Lubman, & Psychiatry, 2010). Greater parental supervision was associated with lower odds of being in unhealthful clusters of risk behaviors, including physically inactive. low fruit/vegetable consumers, smokers and alcohol users (Mistry, McCarthy, Yancey, Lu, & Patel, 2009). Unsupervised time were associated with a higher number of sexual behaviors among female adolescents, the effect is moderated by their emotional regulation ability (Hadley, Houck, Barker, & Senocak, 2015). Several studies have revealed the role of parents in adolescent's eating patterns, including unhealthy weight control behaviors and healthy diet (Bourdeaudhuij & Oost, 2000; Kalavana et al., 2010;

Shepherd et al., 2006). Studies showed that a perceived negative family environment significantly predicted problematic dieting behavior in adolescent girls (Byely, Archibald, Graber, & Brooks-Gunn, 2000). Family conflict was found to predict unhealthy eating behaviors among adolescents (Kalavana et al., 2010). Regarding physical inactivity, findings also showed that parents working more hours and children who are home alone face issues with inactivity (CDC, 2011). Parents who work longer hours are absent from children's physical-activity behaviors; therefore, children who stay at home without parental monitoring are more likely to get in sedentary behaviors and less engage in physical activity. Parental monitoring was also found to be a major inhibitor of problematic Internet use (Ding, Li, Zhou, Dong, & Luo, 2017; Lin et al., 2009; Vaala & Bleakley, 2015). Moreover, evidences suggest that the parent-child relationship influence behaviors throughout can teens' adolescence. Parental modeling, parenting style and parental monitoring were believed to have a strong link with health risk behaviors in adolescents (DiClemente, Hansen, & Ponton, 2013).

1.1.4. The association between delay discounting and health risk behaviors and mental health problems

Delay discounting is receiving growing attention as a potentially predictor of multiple risky behaviors: Health risk behaviors could be a function of a general tendency to value smaller present rewards over greater future rewards (Sweeney & Culcea, 2017). Early research focused heavily on addictive health behaviors, where systematic reviews report positive associations between delay discounting and both smoking and drug use (Barlow, McKee, Reeves, Galea, & Stuckler, 2017; Reynolds, 2006). Recent studies also observes high delay discounting rate in young drinkers and smokers (Audrain-McGovern et al., 2004; Reynolds & Fields, 2012). In Wulfert, Block, Santa Ana, Rodriguez, and Colsman (2002)'s study, high school students who opted for immediate but smaller reward admitted to a greater involvement with cigarettes, alcohol, and marijuana. A growing number of studies have found a positive correlation between temporal discounting and unhealthy diets (Dassen, Houben, & Jansen, 2015). Lower discounting rates were reported among individuals with higher dietary quality, while people with negative eating attitude, higher preference for high-sugar and high-fast foods often reported higher discounting rates (Barlow, Reeves, McKee, Galea, & Stuckler, 2016; Dassen et al., 2015; Garza, Harris, & Bolding, 2013). Individuals showing higher

preference for future value over immediate one reported healthy level of physical activity (Adams & Nettle, 2009; Garza et al., 2013). In a college student population, maladaptive Internet users also discounted delayed rewards faster than the normal Internet users (Saville, Gisbert, Kopp, & Telesco, 2010).

1.2. Conceptual framework

1.2.1. Health risk behaviors

The concept *health risk behaviors* is generally considered as *behaviors that directly or indirectly influence physical health and well-being and also compromise the psychosocial development of individual* (DiClemente et al., 2013; Hurrelmann & Richter, 2006). These behaviors are volitional and are resulted from a decision-making process in which individuals balance between potential gain and potential loss. Health risk behaviors are a part of adolescent's normative development; therefore, the ultimate question should be how to help adolescents to control their behaviors in a "safe" limitation rather than just simply try to eliminate them.

Unhealthy dietary behavior is viewed as a behavioral category which is inferred from specific behaviors. Despite various compositions based on the culture, healthy dietary behaviors are characterized by a higher intake of nutrient-dense

foods, including vegetables, salads, fruits, fish, and other foods groups known to be healthful. Conversely, unhealthy patterns are characterized by a higher intake of foods with increased saturated fat, refined carbohydrates, and processed food products (Brannon et al., 2013; Eaton et al., 2012). Dietary behavior was examined as food patterns: single ones as the frequency of snacking, consumption of low-fat food, consumption of fat-sweet food, skipping breakfast, or multiple ones as a Western dietary pattern, which consisted of high intakes of take-away foods, soft drinks, confectionary, refined grains and full fat dairy products vs a healthy/Mediterranean dietary pattern, which consisted of high intakes of whole grains, fruit, vegetables, legumes and fish (Ambrosini et al., 2009).

Originally, research has been interested in physical activity as certain types of exercise in recreational time, defined by Caspersen and Stephens (1994) as "planned, structured and repetitive bodily movement done to improve or maintain one or more components of physical fitness" (Blair, Cheng, & Holder, 2001). Beyond the traditional view of physical activity as sport and exercise, the emerging Health Enhancing Physical Activity programmes directed researchers' attention to "any form of physical activity that benefits health and functional capacity

without undue harm or risk" (Foster, 2000), expanding physical activity to include a number of broader domains such as leisuretime, transportation, occupational work and household. Similarly, WHO (2010) defined physical activity as "any bodily movement produced by skeletal muscles that requires energy expenditure above resting metabolic rate". Physical inactivity should then be understood as not meeting the applicable physical activity recommendations. Physical inactivity should not be confused with sedentary behavior. Sedentary behavior refers to any waking behavior characterized by energy expenditure ≤ 1.5 METs, while in in a sitting, reclining or lying position (Tremblay et al., 2017).

Smoking is commonly understood as the inhalation of the smoke of burning tobacco or cigarettes, pipes or cigars. It may present as an occasional habit or as a physical addiction to tobacco products (Leone, Landini, & Leone, 2010). Patkar, Vergare, Batra, Weinstein, and Leone (2003) addressed smoking as a "chronic behavioral disorder", with both environmental and genetic factors contributing to the risk. The authors cited several pathways to an addiction to nicotine, the basis substance in tobacco, namely how repeated tobacco smoking leads to alterations in the neurotransmitter systems, or how nicotine

produces numerous positive effects such as temporary improved mood and concentration, weight control, etc. (Patkar et al., 2003).

Chih Hung Ko et al. (2005) used the diagnostic criteria for substance use disorder and impulse control disorder (DSM-IV-TR) to propose specific characteristics of Internet Addiction in adolescents. Nevertheless, neither the most recent version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) nor the International Statistical Classification of Diseases and Related Health Problems (ICD-10) include these. The other approaches were more conceptually focused. Griffiths (2000) proposed that internet use could be operationally defined as a behavioral addiction if accomplishing the six core components of addictions: salience, mood modification, tolerance, withdrawal symptoms, conflict and relapse. Davis (2001), on the other hand, focused on the cognitive processing under the behavioral manifestation: how individual thinks is the key factor influencing on the development of problematic internet use. The third model by Shapira et al. (2003) emphasized in the inability of impulse control in individual with problematic internet behaviors, which caused their feelings of distress and functional impairments. According to this model, problematic internet use was operationally defined as "internet use that was (1) uncontrollable;

(2) markedly distressing, time consuming or resulting in social, occupational or financial difficulties; and (3) non-solely present during hypomanic or manic symptoms" (Shapira et al., 2003).

1.2.2. Mental health problems

Defining mental health problems is complex, with different terminologies such as mental disorder, mental disease, mental illness, mental distress. While mental disorder/disease/illness is "a clinically significant behavioral or psychological syndrome or pattern that occurs in an individual and that is typically associated with either a painful symptom (distress) or impairment in one or more important areas of functioning" (DSM-IV) and is used as an official clinical diagnosis, mental health problems refer to a wide range of mental conditions, ranging from psychological symptoms of distress, stress-related problems, subthreshold depression and anxiety, and specified diagnoses of depression and anxiety.

Mental health problems among adolescents are categorized into internalizing and externalizing problems. This study just focus on internalizing problems, or emotional problems, which refer to the subgroup of psychopathology that involves disturbances in emotion or mood (Graber, 2004). Internalizing

problems typically consists of depression and anxiety (Zahn-Waxler et al., 2000).

1.2.3. Parental monitoring

Dishion and McMahon (1998) reviewed the use of *parental monitoring* concept in the literature and provided a definition of parental monitoring as a set of parenting behaviors, referring to parental awareness of the child's whereabouts, their various activities and adaptations in various settings, and communication to the child that the parent is concerned about and aware of the child's activities. Parental monitoring is a complex dynamic process, which reflects various aspects of the parent – adolescent relationship. Therefore. adolescent's perceived parental monitoring will not just provide information on their parents' knowledge of their activities, but also how they are open to disclose to their parents about their life and how they evaluate their parental monitoring behaviors.

1.2.4. Delay discounting

Definitions of delay discounting have different forms, depending on the focus of authors. Regarding *the magnitude* of the outcome, it can be defined as the depreciation of the subjective value of a delayed consequence (Bickel & Marsch, 2001). Focusing on *the individual*, some described delay

discounting as individual's tendency to prefer smaller but immediate rewards over greater but later ones (Mazur & Biondi, 2009). Considering it as a determinant in the *self-control process and impulsivity in decision-making*, researchers named it "the cognitive process that allows the individual to compare values between the immediate and delayed consumption of a determined commodity" (Loewenstein, 1988, cited in (Tesch & Sanfey, 2008).

Despite different forms, all definitions state the existence of a variable called *delay discounting rate*, which tends to be higher in subjects who show a preference for small, immediate rewards over delayed greater ones (Tesch & Sanfey, 2008). There's a process under this phenomenon: individual automatically attributes her subjective values for both the immediate and future outcomes and compares these to make the final choice. The literature shows that these values depended to the nature of the option (i.e., what is chosen, the magnitude of what is chosen, the probability, whether the situation is one of gain or loss, etc.) (Tesch & Sanfey, 2008). This highlights a crucial characteristic of delay discounting: even though commonly related to impulsivity, it must not be viewed as a fixed personality trait, but

a *behavioral tendency* that can change under different conditions (Bickel et al., 2012).

CHAPTER 2: METHODOLOGY

2.1. Overview of research design

The main purpose of this study is to explore if mental health problems in high school aged adolescents predict their health risk behaviors and inversely. If there is a predictive association, the second aim is to examine the moderate effect of delay discounting and parental monitoring on the relationship between these constructs.

For these purposes, this study used a longitudinal design and data were collected using self-report questionnaire over a 6month period at 2 time points: October 2018 and April 2019. 5 provinces from North to South of Vietnam were chosen to represent the population: Lao Cai, Ha Noi, Ninh Binh, Khanh Hoa and to Dong Nai. In Hanoi, 4 urban schools and 2 rural schools were invited participate; for each other province, 2 schools in the urban area and 1 in rural area were invited.

2.2. Research procedure

Once student and parent consent were obtained, the students were asked to do a 7-day monitoring form of their physical

activity and eating behavior. After 7 days, when the students have completed the monitoring form, researchers would administer the main survey (including a paper questionnaire and an online delay discounting questionnaire, each student represented by an identification code) during available times arranged by the school board.

2.3. Participants

Participants include randomly chosen students in 10th and 11th grades (4 students per class, 6 class per school, making it 24 students per school). In the first wave of data collection, 432 students and parents agreed to participate in the study, but one refused at the end of the process, make it 431 participants in total. 424 remained till the second data collection, the other 7 moved out of the city, moved schools or refused to continue to participate.

2.4. Instruments

The questionnaire includes: (1) social demographic factors, (2) International Physical Activity Questionnaire (IPAQ), the long version for youth and adult, (3) Adolescent Food Habits Checklist (AFHC), (4) Questions on tobacco and alcohol consumption, (5) Young's Internet Addiction Test, (6) Depression Anxiety Stress Scale (DASS-21), (7) Delay

Discounting online test, (8) Parental monitoring (Stormshak et al., 2006).

CHAPTER 3: RESULTS AND DISCUSSION

3.1. Descriptive analysis

3.1.1. Health risk behaviors in adolescents

Findings show an alarming prevalence of nearly 80% Vietnamese high school adolescents who did not meet the global recommended physical activity level. Around one third did not even accumulate the minimum physical activity level of 30 minutes per day.

While adolescents reported an overall intention for healthy eating, fewer reported actual healthy eating behaviors (e.g. vegetable and fruit consumption; limiting sweets consumption).

Regarding tobacco smoking, the rate is notably low comparing to reports from other Western and Asian countries: one in ten youth report having tried smoking, but only $\sim 1\%$ reported smoking in the past 30 days.

The prevalence of alcohol consumption by high school adolescents was concerning, with nearly half of the respondents reported having tried drinking alcohol, and around 15% have drunk in the past 30 days.

Regarding problematic Internet use, the study suggested that nearly 10% of adolescents had maladaptive Internet use patterns, and about two thirds had frequent problems with their Internet usage.

The only demographic factor having a significant association with health risk behaviors was gender, with higher proportions of males reporting alcohol and tobacco experimentation than females and conversely, more females being physically inactive than males.

3.1.2. Mental health problems

In this study, about one in ten students reported severe symptoms of depression (such as dysphoria, anhedonia, devaluation of life), one in ten had severe symptoms of anxiety (subjective feeling of anxious affect, autonomic arousal) and two in ten had severe symptoms of stress (difficulty relaxing, impatience).

3.2. Main findings

3.2.1. Research Question 1 & 2: Does Emotional Mental Health predict changes in Health Risk Behaviors and reverse?

No significant association was found between any of the four major health risk behaviors as predictors and mental health problems as outcomes, and conversely.

Problematic Internet use significantly predicted increases in depression, anxiety and stress in the adolescent sample: The more youth used Internet in a potentially harmful way (e.g., excessive time online), the larger the increase from Time 1 to Time 2 in regards to depression, anxiety, and stress symptoms. However, mental health problems did not significantly predict problematic Internet use.

3.2.2. Research Question 3&4: Does Delay Discounting and Parental Monitoring moderate the effect between Health Risk Behaviors and Emotional Mental Health?

Delay discounting and parental monitoring do not have any significant effect on the prediction relation between health risk behaviors and mental health problems.

3.3. Discussion

Based on the findings on physical activity prevalence, there should be prevention and intervention strategies against physical inactivity in high school aged adolescents. While adolescents' intention toward healthy eating is high, it is not certainly applied to their behavioral practice, therefore more research on their

eating patterns and knowledge about healthy eating is recommended to understand which should be targeted in promoting dietary habits in this population. The rate of experimentation to drink is high, with male reported higher consumption than female, supporting for previous discussion of the *drinking culture* in Vietnam, hence it is considered to raise awareness about the harm of this cultural practice.

A marked prevalence of problematic Internet users also calls for more attention into this increasing issue. Regarding the predictive association between problematic Internet use and mental health problems, intervention program targeting this behavior is recommended to prevent the development of emotional problems.

Recommendations

Further studies on this topic are needed. They are recommended to:

- explore the cultural value and specific patterns of health risk behaviors are recommended. Findings would provide more understanding on the potential loss and gain and the social prototype of these behaviors. Moreover, it would explain for the practice of health risk behaviors and how they might link to mental health in Vietnamese culture;

- follow the participants through a longer period through adolescence into adulthood to investigate the trajectory of pathological development and health risk behaviors and how they might reciprocally interact;

- explore other adolescents' population such as street children, children in non-public educational settings, etc., who might be more at risk to mental health problems and risky behaviors engagement;

- examine the mechanism under the potential influence of family factors and factors related to decision making and selfregulation process on the interaction between mental health and health behaviors.

Limitations

This study is subjected to potential limitations. First, this sample only covers adolescents in public schools but not other settings, so it may not represent the overall population. In our sampling process, while we strictly follow the randomization rule in picking school, class and student, the fact that a number of schools and students refuse to participate should be taken in consideration.

In addition, the questionnaire is administered in school settings. While we tried to minimize social desirability bias

and youth's concern of confidentiality by having youth complete surveys in a private classroom and stressing the confidentiality of the findings, but it might still influence on their self-report results.

Besides, for reason of limited funding, we could not possibly use objective assessment tools for physical activity (e.g. accelerometers, pedometers), given their higher reliability and validity comparing to self-report tools. A food frequency questionnaire (asking for all types of food and the exact amount and frequency of consumption) is also considered to assess adolescents' food intake, however it is beyond our abilities to adapt one for Vietnamese children. Lastly, the study is over a 6month period, and so has considerate limitations in exploring the pathway of interaction between health risk behaviors and mental health problems.

CONCLUSION

In the present analysis, we only found a significant association between problematic Internet use and mental health problems: the more youth use Internet in an uncontrolled way, the higher probability they can develop symptoms of emotional problems. No association is found between other health

behaviors and internalizing problems. There was no convincing evidence for the moderation effect of parental monitoring and delay discounting.

The contradiction between this present study and previous findings in the literature might be explained by the moderate period which doesn't allow us to see how health risk behaviors might develop and interact with mental health problems. The time might also be not enough for health behaviors to make an observable impact on mental health. Furthermore, the cultural value and practice might influence on how health behaviors are practiced and perceived in adolescents, and so the previous model of interaction between health behaviors and mental health problems might be not be applied in this context. Nevertheless, we could not conclude that there is no association between these constructs. Instead, it's recommended that further studies should address the issues of this study and considerately explore how cultural value and practice might reflect in health behaviors to shed new light on this topic.

Lastly, based on findings on the prevalence of health risk behaviors and problematic Internet use predicting emotional problems, it's recommended for researchers and health professionals to have more attention to these risky behaviors in

youth and to be aware of targeting emotional problems in the intervention of problematic Internet use.

DANH MỤC CÁC CÔNG TRÌNH KHOA HỌC CỦA TÁC GIẢ LIÊN QUAN ĐẾN LUẬN ÁN

- [1] Hồ Thu Hà, Đặng Hoàng Minh (2017). Tổng quan về các hành vi nguy cơ đến sức khỏe ở trẻ vị thành niên: Thực trạng, các mô hình lý thuyết và các yếu tố có liên quan. Kỷ yếu Hội thảo khoa học quốc tế: Phát triển hòa nhập xã hội dựa vào cộng đồng: Cơ hội và thách thức, 349-358. NXB Đại học Quốc gia TP Hồ Chí Minh.
- [2] Hồ Thu Hà, Vũ Thị Hương Xuân (2017). Tổng quan về các hành vi nguy cơ đến sức khỏe ở trẻ vị thành niên: Thực trạng, các mô hình lý thuyết và các yếu tố có liên quan. Kỷ yếu Hội thảo khoa học quốc tế Tâm lý học khu vực Đông Nam Á lần thứ nhất: Hạnh phúc con người và phát triển bền vững, 3, 374-385. NXB Đại học Quốc gia Hà Nội.
- [3] Hồ Thu Hà, Nguyễn Minh Hằng, Nguyễn Thị Thúy Hồng (2019). Hành vi nghiện điện thoại thông minh ở trẻ vị thành niên – Mối liên hệ với các vấn đề cảm xúc và sự thể hiện bản thân mang tính hoàn hảo. *Tạp chí Tâm lý học, 9 (246) – 2019, 52-65.*
- [4] Hồ Thu Hà, Đặng Hoàng Minh, Bahr Weiss (2019). Chiết khấu trì hoãn và mối liên hệ với các hành vi nguy cơ đến sức khỏe: Tổng quan nghiên cứu và đề xuất ứng dụng trong trường học ở Việt Nam. *Tạp chí Khoa học Nghiên cứu Giáo dục, 35, 4 (2019), 75-86.*