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# The Structural Modeling of the Health-Oriented Behavior based on Psychological Capital among Students of Tehran: Time Horizon as a Mediator

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***Abstract***

***Background:*** Time horizon, when considered as the basis for future planning and goals, can play a crucial role in determining people's behavior. Such an understanding and vision of time guides our goals and motivations toward behavior and action. The aim of the present study was to evaluate the structural pattern of health-oriented behaviors based on psychological capital among students with a consideration of the mediating role of time horizon.

***Methods:*** This study was a cross-sectional and correlational study. For this purpose, 275 students (male and female) were selected using random sampling in the academic year of 2019-2020 in Tehran, Iran. Data analysis was performed using the structural equation modeling method. SPSS software version 25 and Lisrel 8.85 were used to analyze the research data.

***Results:*** Results showed that the direct paths of the psychological capital to healthy behavior variable were significant ($\beta = 0.343$, $t = 3.953$) and also, direct paths of the psychological capital to time horizon variable were significant ($\beta = 0.576$, $t = 6.533$). It was also manifested that direct paths of the time horizon to healthy behavior variable were significant ($\beta = 0.399$, $t= 4.458$). Moreover, the Bootstrap method determined the significant indirect effect of the latent variable of psychological capital on the healthy behavior through time horizon ($\beta = 0.230$, $P <0.05$).

***Conclusion:*** Based on the results of this analysis, the relationship between psychological capital and the variable of healthy behavior as well as that of the variable of psychological capital and the time horizon were significant. In addition, the findings showed that the healthy behavior measure was significantly affected by the time horizon.

***Keywords*****:** Health, Psychological Capital, Students, Time

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## 1- INTRODUCTION

Health represents a significant contribution to sustainable development. There is no sustainable development without health; healthier individuals are better able to study, work, and contribute to their economies and communities in a meaningful way (1). And lifestyles could be passed down across generations.

An analysis of mother-child couples showed that if a mother of a child between 0 and 3 years of age has a healthy lifestyle, the child is 27 percent more likely to be healthy and follow the same lifestyle (7, 8). It has also been mentioned that lifestyle is associated with psychological capital in addition to physical health. Compared to those with healthier lifestyles, people with unhealthy lifestyles typically have poorer mental wellbeing. Risk behaviors such as smoking, for example, have been reported to be associated with poor mental health (9); health-promoting behaviors such as physical activity, on the other hand, have been suggested as an effective depression relief intervention (10). The medical model of mental health care is based on the defects and deficits rather than resources and strengths. Re-focusing on well-being rather than disease is feasible with advances in the area of positive psychology (11). Selvaraj and Bhat (2018) suggested that the development of positive psychological strengths within students such as hope, effectiveness, persistence, and optimism (acronym HERO) substantially improved their positive mental well-being (11).

Results from a study showed that academic classification moderated the effect of academic PsyCap (Psychological Capital) on interaction. In addition, the student-athletes academic PsyCap positively affected school satisfaction and psychological well-being, but the relationship between academic PsyCap; and psychological well-being was completely mediated by student-athlete participation (11, 12). In the context of highly competitive college sports, this empirical research offers new insight into the relationships between the motivational cognitive structures of student-athletes, educational participation, school satisfaction, and psychological well-being. Theoretical and practical consequences are explored, including the integration of outcomes with resources offered to student-athletes (12). A positive linear association between PsyCap and mental health was suggested by the findings. In addition, within each of the categorical mental health groupings, PsyCap differed substantially and also predicted about 43 percent of the mental health variance. The results indicate that the production of positive psychological attributes in students, such as hope, effectiveness, resilience, and optimism could improve their positive mental health (13). The analysis found that children with higher levels of psychological resources were less likely to be diagnosed with alcohol and substance abuse issues (14).

The findings of another study revealed a significant negative association between the assessment mode and risk-taking through individual differences in time horizon (15). Time Horizon (TH) is characterized as an "often non-conscious process by which temporal categories or time frames are assigned to the continuous flow of psychological and community experiences that help to give order, coherence, and meaning to events (16). Time horizon contains social, emotional and cognitive elements and is mostly viewed as a cognitive scheme (17) or as a cognitive mechanism (16, 18), suggesting that the other cognitive functions may be correlated with it (18). There is research that a BTP is correlated with many beneficial effects, including healthy mood (19), happiness with life, happiness,

satisfaction with psychological need, self-determination (20), emotional intelligence (21) and mindfulness (22). Therefore, it seems safe to conclude that people with a balanced time horizon profile are more successful and better adapted to change when dealing with everyday life requirements. The aim of this study was then to evaluate the structural pattern of health-oriented behaviors based on psychological capital in students of Tehran with a consideration of the mediating role of time perspective, along with providing a theoretical model for these components, based on analyzing the fitness of the actual data to the following proposed model (Figure.1).

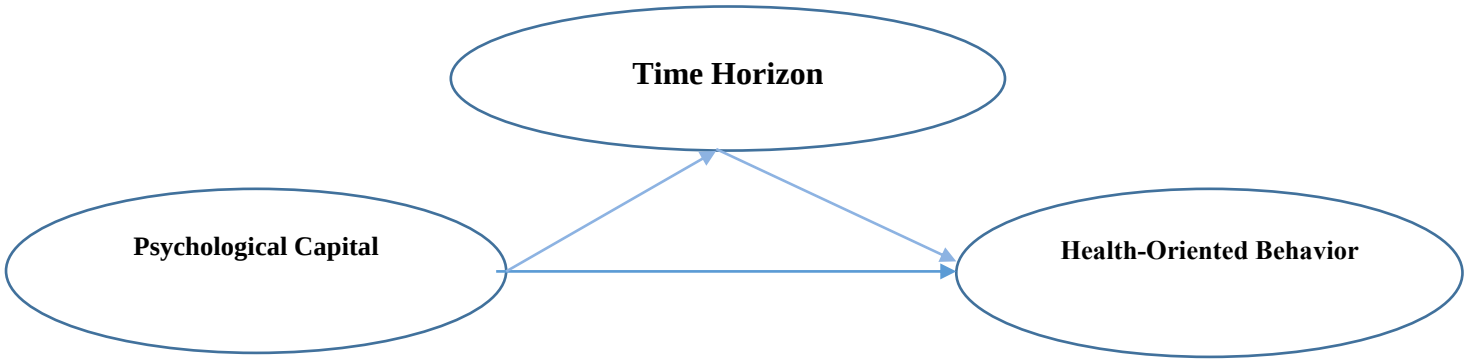


**Fig-1:** Research Hypothetical Model.

## Method

### 2-1. Study design and population

This is a cross-sectional and correlational study and the data are collected using the Structural Equation Modeling Method. The statistical population of this study comprised all the male and female students of the second period of high-school in Tehran city, Iran. The minimum sample size for the present study based on the structural equation modeling criteria was 250 people (23). Therefore, we selected 350 people taking into account a drop of 15%. Accordingly, the data of 275 people could be analyzed and it was done.

### 2-2. Methods

In this study the data were collected using three questionnaires from Social profile form, including Health-oriented Behavior Questionnaire (24), Psychological Capital Questionnaire (PCQ) (25), and Time Horizon Inventory (THI) (16).

### 2-3. Measuring tools: validity and reliability

**Demographic profile form:** Demographic information including gender, age, grade, and field of study were obtained from the subjects.

**Health-oriented Behavior Questionnaire**

This questionnaire was developed by Walker and Hill-Polerecky (24) using the approach of Jones et al.; and the tests for checking its validity, reliability and standardization were performed (24). This 52-item questionnaire has 6 subscales (self-actualization and spiritual growth, responsible for health, interpersonal relationships, stress management, exercise, and physical activity and nutrition). To answer each question, a continuum from "(1) never to (4) always" was considered. The score of each subscale is obtained from the average score of the answers given to the questions of the subscale and the total score from the average answer to all 52 items. The Cronbach's alpha coefficient for the whole instrument and its subdivisions were 0.82 and 0.64 to 0.91, respectively. In the study of Walker and Hill-Polerecky (24) all items had acceptable case-total correlation (>0.34). Test-retest results showed the stability of the questionnaire and its subdivisions. Walker and Hill-Polerecky (24) also in their research were reported a Cronbach alpha of 0.91. Mohamadi Zaidi et al. (26) also determined the Cronbach alpha coefficient for total tool as 0.82 and for subscales from 0.64 to 0.91.

**Psychological Capital Questionnaire (PCQ):** This questionnaire was developed by Luthans et al. (25), to measure psychological capital and it included four factors: including self-efficacy, hope, flexibility and optimism through a 5-point Likert type (5 = strongly agree, 1 = strongly disagree). Each subscale contains 6 factors and the overall scale consists of a total of 24 items. The reliability of this questionnaire based on Cronbach's alpha coefficient was higher than 0.7 (27). Luthans and Avolive (28) have used confirmatory factor analysis and have confirmed the validity of four factors desired by the developers. The Cronbach's alpha coefficient of psychological capital questionnaire was calculated as 0.90 in the present research.

**Time Horizon Inventory (THI):** Time horizon inventory (16) has 40 questions and four subscales of the present time value, future time value, planning for future and the time pressure that are graded based on the Likret scale. The answers comprised of strongly agree, agree, uncertain, disagree, and strongly disagree which scored 5, 4, 3, 2, and 1 respectively. Items 40 and 36, 34, 33, 30, 27, 26, 19 and 8 were scored adversely (16). A high average score on the value of future time subscale is a sign of optimism and aspiration, and a low average is a sign of disregard for future. A high score on the present value sub-scale is a sign of lack of foresight, and a low score is a sign of disregard for the present. A high score on the Plan for the Future scale is considered a sign of valuing and proper planning for the future, and a low score is a sign of unplanned and worthless future. Also, a high score on the time pressure scale is a sign of feeling pressure and haste, and a low one is a sign of not feeling hurry. The time for responding inventory questions is about 20 minutes; the test is paper- pencil and can be run and scored manually. Cranach's alpha was obtained as 0.75 for the time value of future, 0.83 for the time value of present, and 0.78 for planning for future. In validation studies, inner appropriate correlation was obtained between 0.48 and 0.86 (28). Cronbach’s alphas of past positive and past negative were 0.78 and 0.83, respectively, in the present study.

**2-4. Intervention**

Subjects were chosen using a multistage cluster random sampling method. In this case, Tehran was divided into four geographical districts (north, south, east, and west); then four districts of 1, 5, 8, and 12 of Tehran were randomly selected. In the next step, 3-5 high schools (girls and

boys) were chosen from each district, and the principals were asked to participate in this research. In the last step, 3-5 students (girls and boys) were randomly selected from each tenth and eleventh and twelfth-grade classes in experimental sciences, mathematics, and humanities. In total, 30 high schools were studied. To avoid bias, the subjects' results were matched.

The required data were collected from three questionnaires. The researchers went to selected high schools after obtaining permission from the Education Organization of Tehran and districts 1, 5, 8, and 12. Under the supervision of principals, students were asked to fill out the questionnaires. It should be noted that students completed the questionnaires at home as it was a time-consuming action. Due to the large number of questionnaires and students as well as different schools, it took three months to collect demographic data including age, education level, gender, school grade, and school area.

## Ethic

Ethical considerations were followed during the research process and implementation of questionnaires. Subjects were free to participate in the study, and questionnaires remained anonymous. The extant paper was extracted from a Ph.D dissertation in educational sciences presented by the first author with an approval number of 98/10340702981000 issued by Psychology and Educational Sciences University, Saveh branch, Islamic Azad University, Saveh, Iran.

## 2-5 Data Analyses

SPSS software version 25 and lisrel-8.85 statistical software were used to classify, process and analyze the data and test the research hypotheses. The hypothetical model fit was tested using structural equation modeling (SEM). In the first step, confirmatory factor analysis (CFA) was used to evaluate the fit of the measurement model and in the second step, the hypothetical structural model was tested using the structural equation modeling method. To evaluate the model fit from Chi-square index, Chi-square ratio to degree of freedom, root mean square of estimation error (RMSEA), root mean square standard (SRMR), goodness-fit index (GFI), comparative fit index (CFI), standardized fit index (NFI), and incremental fit index (IFI) were used.

## Results

In the present study, which sought to determine the mediating role of time perspective in the relationship between psychological capital and healthy behavior, 275 individuals were studied. **Table 1** presents the descriptive statistics of research variables.

**Table-1:** Descriptive Statistics of research variables

| Variables | Mean | SD | Skewness | Kurtosis |
|---|---|---|---|---|
| **Psychological capital** | 104.35 | 18.10 | -1.453 | 3.011 |
| **Time perspective** | 139.96 | 18.00 | -2.372 | 8.864 |
| **Healthy behavior** | 138.93 | 19.43 | -0.606 | 0.52 |

SD: Standard Deviation

As **Table.1** shows, the mean of the research variables for psychological capital, time perspective and healthy behavior was equal to 104.35, 139.96 and 138.93, respectively. The correlation matrix of the research variables is presented in **Table 2.**

**Table-2:** The correlation matrix of the research variables

| Variables | 1 | 2 | 3 |
|---|---|---|---|
| **1. Psychological capital** | 1 | | |
| **2. Time perspective** | 0.480** P<0.01 | 1 | |
| **3. Healthy behavior** | 0.385** P<0.01 | 0.459** P<0.01 | 1 |

**P<0.01, *P<0.05

Before analyzing the data, the assumptions of normality and collinearity were examined, the results of which are presented in **Table 2.** Skewness (Sk), and Kurtosis (Ku) statistics were used to test assumption of normality in the three variables of psychological capital (Sk = -1.453, Ku = 3.011), time perspective (Sk = -2.372, Ku = 8.864) and healthy behavior (Sk = -0.606, Ku= 0. 520). Chou and Bentler (1995) find the ±3 cut-off points appropriate for skewness. For the Kurtosis index, in general, values above ±10 are problematic in structural equations modeling (Klein, 2011). The values obtained for the skewness and Kurtosis of the variables indicate whether the distributions are normal. Variance Inflation Factor (VIF) and Tolerance Indexes were used to test the collinearity assumption, since none of the values of the tolerance index were less than 0.01 and none of the values of the variance inflation factor were greater than 10, therefore, the assumption of collinearity can also be assured. **Table 2** presents the correlation matrix of the research variables. Results revealed that there is a significant correlation between psychological capital and healthy behavior, correlation coefficient of which was equal to 0.38 and its p- value was less than of 0.01. Furthermore, the results demonstrated that there is a significant correlation between time perspective and healthy behavior enjoying a correlation coefficient of 0.45; and its p- value was less than of 0.01. Eventually, there was a significant correlation between psychological capital and time perspective with a correlation coefficient of 0.48 and a p-value less than of 0.01.

Then, structural equation modeling was used to investigate the direct and meditational effects. Its results are presented in the form of **Figure 1**.

In **Figure 1**, significant paths are shown as continuous and non-significant paths as non-continuous lines. The structural model fitting indices for the whole sample are shown in **Table 3**. As the table3 shows, all structural model fit indices show good fits to the model, so the hypothetical model structure of the research is confirmed.

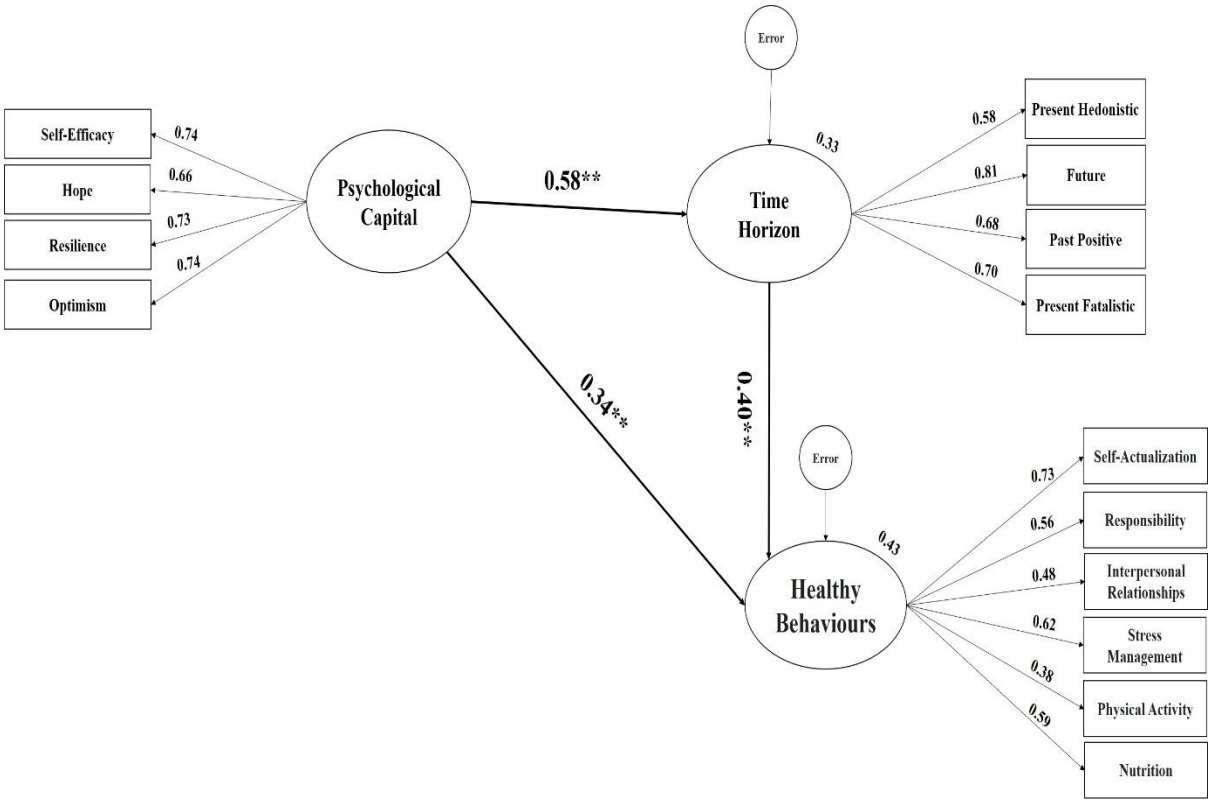


**Fig-1:** Standard path coefficients of the research variables in the original model

**Table-3:**Structural Model Fit indices

| Fit indices | Acceptable domain | Model Value |
|---|---|---|
| $\chi^2$ | | 149.456 |
| $\chi^2$/df | Less than 5 | 2.372 |
| CFI | Greater than 0.90 | 0.936 |
| IFI | Greater than 0.90 | 0.938 |
| GFI | Greater than 0.90 | 0.931 |
| RMSEA | Less than 0.08 | 0.071 |
| SRMR | Less than 0.08 | 0.059 |

($\chi^2$/df): chi-square divided by the degrees of freedom
RMSEA: Root Mean Square Error Approximation
CFI: Comparative Fit Index
NFI: Normed Fit Index
GFI: Goodness of Fit Index
AGFI: Adjusted Goodness of Fit Index

The results of **Tables 4 and 5** show the direct and mediating effects of research variables and on the basis of which it is possible to confirm or reject the direct and indirect effects of research variables on Healthy behavior.

**Table-4:** Investigation of direct effects of variables in the research model

| Independent variable | Dependent variable | Non-standardized coefficients | Standard coefficients | t | P |
|---|---|---|---|---|---|
| Psychological capital | Healthy behavior | 0.305 | 0.343 | 3.953 | 0.001 |
| Time perspective | Healthy behavior | 0.384 | 0.399 | 4.458 | 0.001 |
| Psychological capital | Time perspective | 0.533 | 0.576 | 6.533 | 0.001 |

T: t statistic; P: Significant level

According to **Table 4**, in cases where T-statistic is out of range (+ 1.96 and -1.96) or significance level is less than 0.05, two variables have significant relationship with each other. As can be seen, the direct paths of the psychological capital to healthy behavior variable were significant (β = 0.343, t = 3.953). Direct paths of the psychological capital to time horizon variable were also significant (β = 0.576, t

= 6.533); so, direct paths of the time perspective to healthy behavior variable were significant (β = 0.399, t= 4.458).

**Table-5:** Investigation of indirect effects of variables in the research model

| Mediator | Independent variable | Dependent variable | Non-Standardized coefficients | Standard coefficients | P |
|---|---|---|---|---|---|
| Time perspective | Psychological capital | Healthy behavior | 0.205 | 0.230 | 0.010 |

The Bootstrap method using 5000 times sampling process was used to determine the indirect effect. According to **Table 5**, it can be observed that indirect effect of the latent variable of psychological capital on the healthy behavior through time horizon was significant (β = 0.230, P <0.05).

## 4. Discussion

The aim of the present study was to evaluate the structural pattern of health-oriented behaviors based on psychological capital in students of Tehran due to the mediating role of time horizon. Evaluation of the conceptual model of the research using fit indices showed that the direct paths of the psychological capital to healthy behavior variable were significant. The results of several studies were consistent with those of ours confirming the positive health impacts of the studied variables on psychological capital and its different aspects. At least in part, low-stress levels are originated from elevated levels of psychological capital (a combination of self-efficacy, optimism, hope, and resilience). Stress was negatively related to psychological capital, and stress, in turn, was negatively related to the subjective well-being of students (29, 30).

The structural equation modeling (SEM) showed a statistically significant indirect effect of study-related positive emotions and school performance on psychological capital, as hypothesized. The investigated positive feelings of students were connected to better academic performance through positive interactions with their psychological capital levels (i.e., efficacy, hope, optimism, and resilience) (29), learning empowerment, and engagement (31), Coping Styles (32), and Psychological capital as moderator of stress and achievement (33) have crucial roles. To clarify this finding, it should be

taken into account that the construction of psychological capital (PC) applies to individuals who value everyday life events positively and increase their chances of success by relying on perseverance and effort. It is an optimistic state of the psychological growth of individuals marked by self-efficacy confidence, hope, and resilience (33). The fact that these constructive psychological skills have properties that can be strengthened is emphasized by psychological capital (PC).

Psychological capital is an accessible concept with potential for growth, which means that it plays an important role in the improvement of individuals (25). Psychological capital helps to activate cognitive, affective, conative, and social mechanisms that contribute to psychological well-being (PWB) (34); it can promote the processes of focus, perception, and memory retention required for domain-specific experiences and satisfaction to have a lasting effect on PWB (35). Accordingly, Psychological capital is a personal resource, according to Sweet man and Luthans et al. (2014), which improves the capacity of an individual to manage challenging circumstances and personal pro-activity, which encourages PWB and appropriate work results (36). Hansen et al. (2015) discovered a beneficial relationship between psychological capital and PWB (37). Luthans et al. (2007) found that when the dimensions of psychological capital are viewed as a whole (i.e., a multidimensional construct) rather than regarding individual resources separately, PWB can be better predicted (25).

Evaluation of the current research's conceptual model using fit indices showed that the psychological capital's direct paths to the time perspective variable were important. The obtained evidence indicates that when attempting to understand the relationship between executive control and BTP, it might be worth adding an additional variable, i.e. fluid intelligence. The low human capital of young people, particularly the absence of experience and psychological capital is the ability to reason abstractly and solve novel problems (21, 27). Psychological capital is also considered one of the most important factors in learning; it may facilitate the drawing of conclusions from one's experiences and the development of time horizon related adaptations, or skills, thus indirectly promoting the development of BTP (21, 31). Further research combining assessment of the temperamental and cognitive underpinnings of BTP in order to illustrate their joint or interactive effects on temporal balance would be particularly interesting (21).

The Bootstrap method determined that the indirect effect of the latent variable of psychological capital on the healthy behavior through time horizon was significant. Some individuals see time as extended, while others see it as minimal. A lack of social connections for people with an extended time horizon and a lack of emotional attachments for people with a restricted time horizon are characterized as important relationship deficits. In comparison, important relationship deficits cause a lack of emotional bonds for individuals with an extended time horizon and a lack of social links for individuals with a short time horizon (29, 38).

To explain this result, the time horizon (expectation) of the attitude towards the future is also defined. Time horizon can be imagined as the amount of value one expects for his future in relevance to the present. It means fulfilling expectations, actions, and behaviors for the future, with the aim of achieving one's specific goals. The time horizon is laid by increasing the perceived value of individuals from the

future so that the greater the perceived importance of the individual from the future, the individual is expected to be more cautious and committed to future health-related programs. According to the existing evidence, useful health habits are more common among people who perceive a high value for the future (16). In fact, the time horizon is a preventive strategy to prevent the damage of high-risk behavioral habits, which is based on the theory of critical risk-taking behavior. This theory is based on the notion that the level of risk-taking behavior remains constant over time unless there is a change in the level of target risk. Target risk is the degree of risk that a person chooses to maximize the expected overall benefit of their behaviors (16).

## Study Limitations

The findings of the present study should be interpreted in the context of research limitations. Due to the fact that structural equation modeling is a method based on solidarity, then the casual relationships can't be inferred from the results of the present study. Also, the statistical population of the present study is limited to the students of Tehran and this limitation reduces the generalizability of the research results. Use of self-report measures in current study was a noticeable limitation; self-report measure can cause problems in a sense that most often people hide their true opinion and present themselves as fake good or fake bad. This study presented some research on psychological capital and emotions with adolescent's sample but it is merely a starting point. There is the need for additional research to build a solid body of knowledge and create clear expectations regarding how these constructs work in other settings because till now psychological capital has been mostly investigated in industrial settings.

## Conclusion

In conclusion, the study results showed a significant relationship between psychological capital and healthy behavior. Moreover, The Bootstrap method determined that the effect of the latent variable of psychological capital on the healthy behavior through time horizon was significant. The findings of the current study indicate that in order to improve people's health indicators, it is important to shift the perceptions and expectations of people about the future and to promote hope and optimistic attitudes about the future. The inspiration of people about health-oriented activities can be the foundation of many recovery services focused on lifestyle change for shaping appropriate attitudes towards the future. Mental health professionals may participate further in developing programs integrating psychological capital creation intervention for students based on the predictive nature of psychological capital. Along with recommendations for future research, the findings have implications for therapy and programmatic programs for students.

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