

Hardiness and Problem-Solving Skills as Preventive Factors against Smoking among Adolescents

Abbas Abdollahi¹ & Mansor Abu Talib¹

¹ Department of Human Development & Family Studies, Faculty of Human Ecology, Universiti Putra Malaysia, Serdang, Selangor, Malaysia

Correspondence: Abbas Abdollahi, Department of Human Development & Family Studies, Faculty of Human Ecology, Universiti Putra Malaysia, 43400, Serdang, Selangor, Malaysia. Tel: 60-010-514-4205. E-mail: abdollahi.abbas58@yahoo.com

Received: January 16, 2014 Accepted: February 11, 2014 Online Published: March 26, 2014

doi:10.5539/ass.v10n8p165

URL: <http://dx.doi.org/10.5539/ass.v10n8p165>

Abstract

Smoking is the biggest threat to public health, and it remains a serious cause of death in the world; therefore, it is essential to develop our knowledge concerning the attitudes among adolescents toward cigarette smoking. This study was conducted to examine the associations among hardiness, problem-solving skills appraisal and attitude towards cigarette smoking in adolescents. The participants comprised of 550 high school students from Tehran, completed the self-report questionnaires. The structural equation modelling (SEM) estimated that adolescents with a high ability for hardiness, effective problem-solving confidence, internal personal control and approaching coping styles were more likely to report negative attitude towards cigarette smoking. The findings promote the value of problem-solving skills and hardiness as protective factors against smoking.

Keywords: hardiness, problem-solving skills appraisal, attitudes toward cigarette smoking, adolescents

1. Introduction

Cigarette smoking has become one of the biggest threats to public health the world has ever faced (Moxham, Dwyer, & Reid-Searl, 2012), and cigarette smoking, obesity and diabetes are responsible for 59% of the preventable death in the world (Haenle et al., 2006; Jung & Chung, 2013). There are more than one billion smokers in the world, and six million people died due to cigarette smoking annually, and one million second hand smokers died due to smoke inhalation (WHO, 2013). Cigarette smoking is proven causal of cancer, cardiovascular, respiratory, and other diseases (Filion & Luepker, 2013). The coronary heart disease risk in smokers is two to three times higher than for non-smokers (Moxham et al., 2012). It is predicted that the fatality rate might reach to more than eight million by 2030 if urgent action is not taken (WHO, 2013). While smoking is a serious health issue in itself, it is also associated with serious psychological and physical problems relative to that for never smokers (Berg et al., 2012; Toghianifar et al., 2012). Remarkably, several studies have revealed that the age for the onset of cigarette smoking is decreasing in the world (Babanov, 2006; Damianaki et al., 2008; Ramlau, Didkowska, Wojciechowska, & Tarkowski, 2005). In Iran, more than 12 million people are cigarette smokers; the age for the onset of cigarette smoking is under 18 years and the prevalence for cigarette smoking is higher among the boys (Riahi, Aliverdina, & Soleymani, 2009). Therefore, the study about attitude towards cigarette smoking is essential for prevention of smoking among male adolescents who are the main consumer of cigarette (Mendel, Berg, Windle, & Windle, 2012). In this study attitude towards cigarette smoking was assessed in male adolescents, because attitude towards cigarette smoking reflect evaluative associations to cigarette smoking and are helpful in predicting cigarette smoking behaviors.

Data from several studies have shown that individuals who have used drugs choose smoking as a solution to their problem (Vidrine et al., 2011). Especially during adolescence, individuals may choose cigarette smoking as a solution for problems under stressful life events (Vidrine et al., 2011), and may even connect to smoking as a solution for daily stressors (Triplett & Payne, 2004). Novacek, Raskin, & Hogan (1991) found that adolescents use drugs for five main reasons: (a) as a viable solution to manage stressful life events, (b) as a sense of belonging with peers and friends or pressures from peers to smoke, (c) as a rebellious act against parents, (d) for more enjoyment, and (e) to increase creativity and innovation. Such reasons noted by smokers imply that they often choose irrational solutions to their problems. It is evident that we face diverse problems every day, and that

we have to find effective solutions for them, otherwise we will experience psychological and social problems, such as depression and anxiety (Murawski et al., 2009). Previous studies have shown that a positive association exists between emotional problem-solving styles with cigarette smoking (Jaffee & D’Zurilla, 2009; Triplett & Payne, 2004; Vidrine et al., 2011). In addition, research findings have revealed that problem-solving skills could be useful in teaching coping skills to improve adaptive coping in various contexts, including the treatment of mood disorders, and smoking cessation (D’Zurilla, Chang, Nottingham, & Faccini, 1998). Furthermore, research findings showed that impairment in problem-solving skills are associated with cigarette smoking (Vidrine et al., 2011). However, one of the problems in these studies is related to the instrument, because researchers measured and classified problem-solving skills as rational and emotional problem-solving skills which was unclear; however, in our study, problem-solving skills are clearly divided into three sub-scales: problem-solving confidence, avoidance-approach style, and personal control (Heppner et al., 2004). The term “Problem-solving skills appraisal” is defined as one’s perception about one’s personal problem-solving style and the identification of the abilities and skills to solve problems (Heppner et al., 2004). The appraisal of problem-solving skills comprises three styles: problem-solving confidence has been defined as having self-assurance while facing a wide range of problems and trusting in one’s own ability in facing the problems (Heppner et al., 2004). The approach-avoidance style has been defined as a tendency to approach or avoid facing problems. Personal control has been defined as one’s ability to control his/her emotions and behaviour while facing problems. The problem-solving skills theory developed by Heppner (2004) is rooted in the cognitive-behavioural theory. According to the literature and theory, it seems plausible that poor problem-solving skills appraisal would be positively associated with a positive attitude towards cigarette smoking.

The influence of hardiness in cigarette smoking behaviour is an attractive subject. Hardiness has been developed into a theoretical framework known as the hardiness construct (Kobasa, Maddi, & Kahn, 1982), which examines the reasons why some individuals, even under stressful conditions, are able to deal with problems, and why some individuals in non-stressful conditions are not able to deal with problems. The term “hardiness” is defined as an ability composed of three components (commitment, control, challenge) that prepares a person to deal with stressful life events (Kobasa et al., 1982). Commitment is defined as a person being committed to their own life activities, such as work, sport, academic, religious, and hobby activities. Each activity is meaningful and interesting for him/her. Control is defined as a person believing that she/he can control or influence their life experiences. She/he can make decisions in his/her life and can control their own life and influence his/her environment and events. Challenge is defined as a person’s perception about stressful events as stimulating rather than threatening (Kobasa et al., 1982). The majority of the earlier studies have shown that perceived stress among adolescents is an important factor in the use of drugs and cigarettes (Lubans et al., 2011; Vidrine et al., 2011). An interesting finding from previous studies has demonstrated that high-hardy individuals cope better with stressful life events and reported better physical and mental health (Garrosa, Rainho, Moreno-Jiménez, & Monteiro, 2010; Phillips, 2011). There has been growing interest in the subject of hardiness in the field of psychology. For example, several studies have revealed that high-hardy individuals appraise stressful conditions as being more challenging and controllable and as being less threatening, and that a hardy personality is more likely to gain experience from stressful conditions (Delahajj, Gaillard, & van Dam, 2010; Kobasa et al., 1982). According to the hardiness theory, high-hardy individuals are more optimistic than low-hardy individuals, are more flexible in facing difficulties (Erbes et al., 2011), and prefer to use adaptive coping styles, such as personal control and approaching coping styles, rather than maladaptive coping styles, such as the avoiding coping style in facing stressful conditions (Delahajj et al., 2010). Furthermore, previous studies have shown that high-hardy individuals are more likely to report happiness, life satisfaction, adaptive coping styles, and mental and physical health (Cunningham & De La Rosa, 2008; Kobasa et al., 1982; Schreurs, van Emmerik, Notelaers, & De Witte, 2010), while other studies have reported that low-hardy individuals are more likely to report mental disorders, such as depression, anxiety, maladaptive coping styles and stress (Eschleman, Bowling, & Alarcon, 2010). There is no academic literature on the relationship between hardiness and cigarette smoking, because much of the studies on hardiness thus far has focused on coping with stress (Phillips, 2011; Vidrine et al., 2011). Hardiness represents a general orientation towards self and the world conceptualized as consisting of a sense of commitment, control, and challenge. Specifically, hardy individuals are committed to what they do in different areas of their lives; believe in having some control over the causes and solutions of problems, and view life changes and adjustment demands as challenges and opportunities. Along these lines, this study aimed at expanding the hardiness theory on attitude towards cigarette smoking in adolescents. Our literature review highlights the importance of hardiness as a protective factor for health behaviours, although not specifically towards cigarette smoking. In addition, our literature review highlights the lack of research about attitude towards cigarette smoking and hardiness, which is regarded as vital for the improvement of public health.

According to the literature and theory, it is conceivable that hardiness would be negatively associated with a positive attitude towards cigarette smoking.

1.1 Hypotheses

The current study sought to examine two hypotheses.

H1: hardiness will be negatively associated with positive attitude towards cigarette smoking among adolescents.

H2: Poor problem-solving skills appraisal will be negatively associated with positive attitude towards cigarette smoking among adolescents.

2. Method

2.1 Participants

The total number of students in the target population was 3500 high school male students in 2012, and, after calculating using the Cochran formula, approximately 550 high school students (ages were from 16 to 19 years old, $M = 17.1$, $SD = .93$) were chosen. For SEM studies, Kline (2005) suggested equal or more than 200 participants would be adequate. Of the 550 students, 30% ($n = 165$) were in the freshmen year, 23% ($n = 126$) were in the sophomore year, 25% ($n = 137$) were in the junior year, and 22% ($n = 121$) were in the senior year. Seventy-two percent of the students reported that they lived with both their parents. The rest of students reported they lived with their mother (14%), father (8%), and others (6%).

2.2 Procedure

The Iranian Ministry of Education, Tehran, region 11, obtained permission for gathering data from six high schools. The school principal from each school agreed to collect the data. Then, the school principal obtained permission for the authors to collect data from students. Data were collected from June to September 2012. Data were collected during one of the regularly scheduled classes. The packages of questionnaires were distributed among students. Each package contained an introductory letter and four questionnaires (one of them was a demographic questionnaire). A total of 600 questionnaires were distributed among the students, of which 550 (91%) usable questionnaires were returned, and 6.35% (38) refused to complete the questionnaires. As a thank you for participating in the study, each participant was given a book featuring the disadvantages of smoking.

2.3 Translation of the Questionnaire

The questionnaires were translated from the English version to Persian version. In order to ensure that Persian translation properly reflected the meaning of the English version, back-translation was used with the help of three experts in English language, and necessary modifications were made by them.

2.4 Pilot Study

A pilot study was conducted on Fifty-five students. A pilot study was conducted to determine the reliability of the tools. Necessary modifications were made based on analysis of the pilot results. Those students who participated in the pilot study were excluded from the main study sample.

2.5 Instruments

2.5.1 Personal Views Survey, PVS III-R (Maddi, 2006)

This survey contains 18 items that measure three elements of hardiness: commitment, control and challenge. The sum of these three components constitutes the hardiness construct. The range of scores is from 0 to 54. All the questions are based on a 4-point Likert scale from 0 (not at all true), 1 (somewhat true), 2 (true), and 3 (very true). The studies revealed that PVS III-R had an acceptable internal consistency (0.70-0.75 for commitment, 0.61-0.84 for control, 0.60-0.71 for challenge, and 0.80-0.88 for total hardiness) (Maddi et al., 2006). In addition, the validity of PVS III-R reported α : 0.70 to 0.84 (Okun, Zautra, & Robinson, 1988). The validity of the challenge was α : 0.62, commitment α : 0.59, and control was α : 0.46 (Judkins, Arris, & Keener, 2005; Patton & Goldenberg, 1999). In the present study, the convergent validity (Average Variance Extracted) was 0.60, and the construct reliability (CR) was 0.75. In this study, the total scores of three sub-scales were used (Funk, 1992).

2.5.2 Problem-Solving Inventory, Psi (Heppner, 1988)

This inventory comprises 35 items that measure the perceptions of one's problem solving beliefs and style in facing problems and difficulties in one's daily life (Heppner, 1988). All questions are based on a 6-point Likert scale from 1 (strongly agree) to 6 (strongly disagree). This questionnaire contains three factors: (a) Problem-solving confidence, PSC (for example, I encounter new circumstances, I have enough confidence to manage problems that might arise) with eleven items (5, 10, 11, 12, 19, 23, 24, 27, 33, 34, and 35). Total scores

can be calculated by reverse coding items 11 and 34, and then summing all items. A lower score in PSC indicates a higher problem-solving confidence, and vice versa; (b) Approach-Avoidance, AAS (for example, when making a decision, I compare the outcome of every option and weigh them against others) with sixteen items (1, 2, 4, 6, 7, 8, 13, 15, 16, 17, 18, 20, 21, 28, 30, and 31). Total scores can be calculated by reverse coding items 1, 2, 4, 13, 15, 17, 21, and 30, and then summing all items. A higher score in AAS is associated with an avoiding coping style rather than an approaching coping style, and a lower score is associated with an approaching coping style rather than an avoiding coping style; (c) Personal control, PC (for example, when my first efforts to solve a problem fail, I become uneasy about my ability to handle the situation) with five items (3, 14, 25, 26, and 32). Total scores can be calculated by reverse coding all items, and then summing all items. A lower score in PC indicates more internal personal control in facing difficulties in one's daily life, and vice versa. Heppner (1988) suggesting that the factors are interrelated and independent; therefore, in this study, three factors were evaluated separately. The PSI had a good internal consistency with an average α : .80 for PSC, and AAS, and .75 for PC (Heppner & Wang, 2003; Heppner, 1988). A wide range of studies have shown that this questionnaire has good validity (Heppner & Wang, 2003). In the present study, the reliability of PSC, AAS, PCS were α : .87, .73, .71, respectively, and the convergent validity (Average Variance Extracted) were 0.58, 0.53, and 0.51, respectively. The construct reliability (CR) was 0.77, 0.74, and 0.71, respectively.

2.5.3 Attitude towards Smoking Scale, ATSS (Riahi, 2009)

This is a 32 items that measures attitude towards cigarette smoking. All questions are based on a 3-point Likert scale from 1 (negative attitude) to 3 (positive attitude). This questionnaire contains three aspects: the cognitive aspect with 9 items (for example, smoking is the first step to addiction), the affective aspect with 11 items (for example, smoking is an interesting and exciting experience), and the behavioural aspect with 12 items (for example, I prefer to smoke at a feast with friends to feel a sense of belonging to them). Riahi et al. (2009) suggested using the total scores of ATSS rather than the scores of sub scales. A lower score in ATSS indicates negative attitudes towards smoking, and vice versa. The ATSS had a good reliability with α : 0.87 (Riahi et al., 2009). In the present study, the reliability of ATSS was α : 0.74, the convergent validity (Average Variance Extracted) was α : 0.53, and the construct reliability (CR) was α : 0.74.

2.6 Analysis

We employed Structural Equation Modeling analysis. According to Kline (2005) the advantages of employing SEM are (a) improves statistical estimation by taking into account measurement error in the estimation process, (b) enables the testing of multiple relationships simultaneously, (c) tests much more complex models such as testing mediation and provides goodness of fit indices for model testing, and (d) provides better identification for validity and reliability for the instruments. Therefore, Average Variance Extracted (AVE), and Construct Reliability (CR) was performed for measuring validity and reliability of instruments. Convergent Validity refers to set of indicators (items) that presume to measure a construct.

2.7 Data Preparation

The missing data for parcels and items (range from .88% to 2.86%) was addressed with the series mean method in SPSS software. A 2% ($n = 12$) outliers were excluded from analyses (those scoring 3 standard deviations from the mean). The data were considered to be normal because the skewness values were from -1.32 to 1.29 and the kurtosis values were from -1.73 to 2.88 for all variables. Byrne (2010) stated that if the skewness value is between -2 to +2 and the kurtosis value is between -7 to +7, data are considered to be normal. For a model fit, the goodness of fit indices, including the chi square/degree of freedom ratio (CMIN/DF), the comparative-fit index (CFI), the goodness-of-fit index (GFI), and The Tucker-Lewis Index (TLI)-were used. It is acceptable, if the indices are equal or greater than .90 (Kline, 2005). Furthermore, when the root mean squared error of approximation (RMSEA) is between .03 and .08 (Kline, 2005), the model has an acceptable goodness of fit. The AMOS 20 software was utilized for analysing the data.

3. Results

3.1 Descriptive Statistics

The descriptive results showed that 20% of parents were identified as smokers, and 28% of the students reported friends who smoke. The descriptive results indicated that 12% of students reported a positive attitude towards smoking, 20% of the students reported a neutral attitude towards smoking, and 68% of the students reported a negative attitude towards smoking. Among the sample, 72% were identified as non-smokers, 20% as occasional smokers and 8% as daily smokers. As can be seen from Table 1, the standard deviations, actual range and the means are reported.

Table 1. The means, standard deviation, and the actual range of study variables

	PSC ¹	AAS ²	PC ³	H ⁴	ATCS ⁵	Age
Mean	33.22	48.89	18.18	30.00	50.13	17.1
SD	9.72	17.53	4.33	12.61	15.37	.93
Actual range	16-53	20-72	14-27	14-52	15-71	16-19

(1) Problem-Solving Confidence, (2) Approach-avoidance style, (3) Personal Control, (4) Hardiness, (5) Attitudes toward cigarette smoking

As can be seen in Table 2, the positive relationships existed between positive attitudes toward cigarette smoking with ineffective problem-solving confidence (.358), avoidable style (.288), and sense of external personal control (.339), while a negative relationship existed between hardiness and positive attitudes toward cigarette smoking (-.208).

Table 2. Inter correlation among study variables

	1	2	3	4	5	6
(1) Problem-Solving Confidence	1	.153*	.221*	-.181*	.358**	.111
(2) Approach-avoidance style		1	.112*	-.276*	.288**	.08
(3) Personal Control			1	-.314*	.339**	.119
(4) Hardiness				1	-.208**	.114
(5) Attitudes toward cigarette smoking					1	.153
(6) Age						1

Note: **p< .001, *p< .05, without* = Not significant

3.2 Goodness of Fit

This model included attitudes toward cigarette smoking, hardiness, problem-solving confidence style, approach-avoidance style, and personal control style as latent variables, and age as an observed variable. The model showed good fit indices: CMIN/DF = 3.86, p<.01, CFI = .935, GFI = .943, TLI = .922, RMSEA = .078. According to Kline (2005) the model provided an acceptable fit for the sample.

3.3 Structural Equation Model

The model included hardiness, problem-solving confidence style, approach-avoidance style, personal control style, and age as exogenous variables, and attitudes towards cigarette smoking as an endogenous variable. As can be seen from Figure 1, age had no significant effect on attitudes towards cigarette smoking, while hardiness, approach-avoidance style, personal control style, and problem-solving confidence style had a significant effect on attitudes toward cigarette smoking. It can be seen from the data in Figure 1 that the approaching style was associated with negative attitudes towards cigarette smoking; whereas internal personal control, hardiness, and effective problem-solving confidence style were associated with negative attitudes toward cigarette smoking. These variables explained 39.0% of the variance in attitudes towards cigarette smoking.

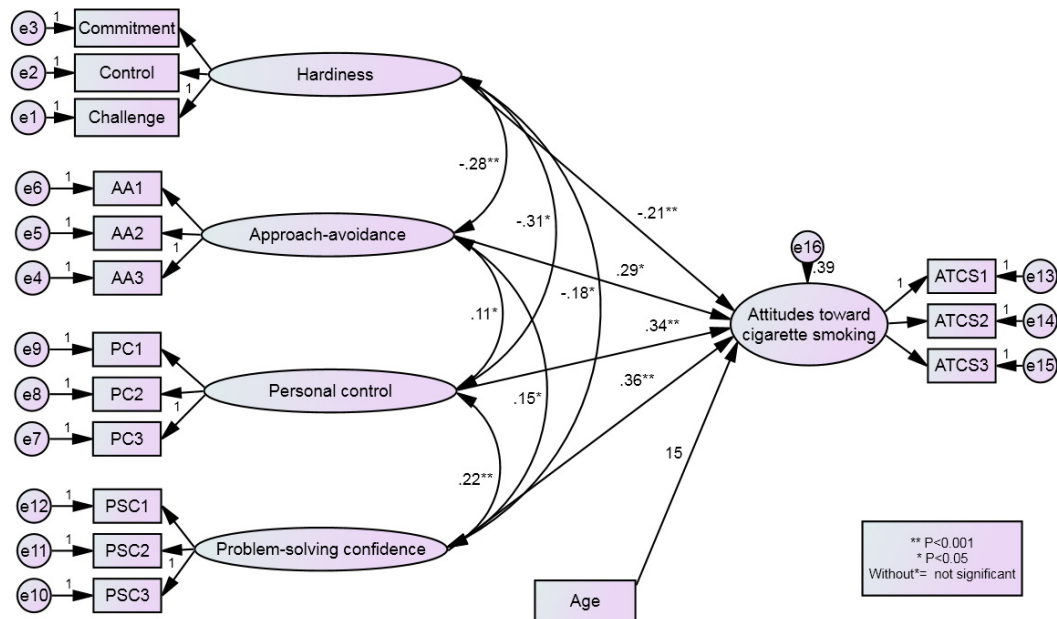


Figure 1. Path analysis of all the study variables

4. Discussion

The findings of this study propose that the hardiness and problem-solving skills are valuable predictors of negative attitudes toward cigarette smoking among male adolescents. Hardiness, problem-solving confidence, approach-avoidance style, personal control style, and age explained 39.0% of the variance in attitudes toward cigarette smoking among male adolescents. The present findings seem to be consistent with other research, which suggests that effective problem-solving has a positive influence on negative attitudes towards cigarette smoking (Jaffee & D'Zurilla, 2009; Vidrine et al., 2011). By finding a relationship between problem-solving skills and hardiness with attitude towards cigarette smoking in a sample of students, the present findings confirmed the previous results and improved them in two main ways.

Firstly, the current study examined an interaction between hardiness and attitude towards cigarette smoking in male students. Formerly, hardiness was studied in relation to stressful life events (McVicar, 2003). This study shows that hardiness is a protective factor for a positive attitude towards cigarette smoking, and present research expands hardiness theory by finding hardiness as a protective factor for cigarette smoking in male students. According to the hardiness theory, individuals with personal control are more likely to believe they have the ability to influence their own health. In addition, committed individuals are more likely to actively participate in their health maintenance. Generally, hardy individuals are more likely to believe that they have some ability to influence their health, are more likely to actively participate in health maintenance, and believe that improving and maintaining their health is an opportunity (Kobasa et al., 1982). Therefore, adolescents with well-developed hardiness trait may have healthier and more efficient strategies for handling their problems than those without, and thus may perceive engagement in risky behaviours to be a less effective social strategy. The findings of this study suggest that hardiness theory introduces a beneficial framework for better understanding on attitude towards cigarette smoking in male students.

Secondly, the present findings showed that effective problem-solving skills are a protective factor against cigarette smoking. Problem-solving skills is one of the psychological protective factors for positive attitude towards cigarette smoking (Vidrine et al., 2011). Especially during adolescence, individuals may choose cigarette smoking as a solution for problems under stressful life events (Vidrine et al., 2011), and may even connect to smoking as a solution for daily stressors (Triplett & Payne, 2004). Therefore, problem solving skills play important roles in the prevention of smoking in adolescents.

4.1 Implications of Practice

There are two significant implications for treatment in the present study. Firstly, when assessing the attitude towards cigarette smoking in individuals. It is important to account for the presence of problem-solving skills and hardiness in addition to other psychological risk factors. Secondly, problem-solving skills training and hardiness training can alter the effect of positive attitude towards cigarette smoking; these may be significant factors to incorporate into cigarette smoking treatment programmes. The present findings suggest that school-smoking prevention programmes with developing problem-solving skills and hardiness may reduce the likelihood cigarette smoking in adolescents.

4.2 Limitations and Recommendations

The most important limitation lies in the fact those participants may overstate their answers in the self-report questionnaires for reasons of social desirability; therefore, future research could attempt to include performance-based measures of hardiness and problem-solving skills. This study is a cross-sectional design and does not allow for causal interpretation about relationships between variables. Another limitation concerns the sample; because this study was only conducted on male students, therefore the findings cannot be generalized to female students. An interesting suggestion for future studies is a comparative study between adolescents with positive attitudes toward cigarette smoking and adolescents with negative attitudes toward cigarette smoking about their problem-solving skills and hardiness ability. In addition, future research would study on hardiness training and problem-solving training as protective factors among smokers.

4.3 Conclusion

In conclusion, the findings seem to promote the value of problem-solving skills and hardiness as preventing of smoking. Also, the findings of this study provide some preliminary indication, which suggest that the inclusion of hardiness training and problem-solving skills training as a tool to help students and even smokers to address obstacles to treatment, and can increase the efficiency of behavioral interventions for the prevention and treatment of smoking.

Acknowledgements

The authors declare no potential conflicts of interest with respect to the authorship and/or publication of this article. The authors received no financial support for the research.

References

- Babanov, S. A. (2006). The epidemiological characteristics of tobacco smoking. *Vestnik Rossijskoj Akademii Meditsinskikh nauk/Rossijskaia Akademiia Meditsinskikh Nauk*, 10(8), 27.
- Berg, C. J., Painter, J. E., Sales, J. M., Mays, D., Rose, E., Wingood, G. M., & DiClemente, R. J. (2012). Smoking as a risk factor for STI diagnosis among African American females. *American Journal of Health Behavior*, 36(4), 505-512. <http://dx.doi.org/10.5993/AJHB.36.4.7>
- Byrne, B. M. (2010). Structural Equation Modeling With AMOS: Basic Concepts, Applications, and Programming (2nd ed.). In L. E. A. Publishers (Ed.), *Structural equation modeling with AMOS Basic concepts applications and programming* (2nd ed.). Routledge Academic. Retrieved from <http://www.amazon.com/dp/0805863737>
- Cunningham, C. J., & De La Rosa, G. M. (2008). The interactive effects of proactive personality and work-family interference on well-being. *Journal of Occupational Health Psychology*, 13(3), 271-282. <http://dx.doi.org/10.1037/1076-8998.13.3.271>
- D’Zurilla, T. J., Chang, E. C., Nottingham, E. J., & Faccini, L. (1998). Social problem-solving deficits and hopelessness, depression, and suicidal risk in college students and psychiatric inpatients. *Journal of Clinical Psychology*, 54(8), 1091-1107. [http://dx.doi.org/10.1002/\(SICI\)1097-4679\(199812\)54:8<1091::AID-JCLP9>3.0.CO;2-J](http://dx.doi.org/10.1002/(SICI)1097-4679(199812)54:8<1091::AID-JCLP9>3.0.CO;2-J)
- Damianaki, A., Kaklamani, S., Tsirakis, S., Clarke, R., Tzanakis, N., & Makris, D. (2008). Risk factors for smoking among school adolescents in Greece. *Child: Care, Health and Development*, 34(3), 310-315. <http://dx.doi.org/10.1111/j.1365-2214.2008.00839.x>
- Delahij, R., Gaillard, A. W. K., & van Dam, K. (2010). Hardiness and the response to stressful situations: Investigating mediating processes. *Personality and Individual Differences*, 49(5), 386-390. <http://dx.doi.org/10.1016/j.paid.2010.04.002>
- Erbes, C. R., Arbisi, P. A., Kehle, S. M., Ferrier-Auerbach, A. G., Barry, R. A., & Polusny, M. A. (2011). The

- distinctiveness of hardiness, positive emotionality, and negative emotionality in National Guard soldiers. *Journal of Research in Personality*, 45(5), 508-512. <http://dx.doi.org/10.1016/j.jrp.2011.07.001>
- Eschleman, K. J., Bowling, N. A., & Alarcon, G. M. (2010). A meta-analytic examination of hardiness. *International Journal of Stress Management*, 17(4), 277. <http://dx.doi.org/10.1037/a0020476>
- Filion, K. B., & Luepker, R. V. (2013). Cigarette Smoking and Cardiovascular Disease: Lessons from Framingham. *Global Heart*, 8(1), 35-41. <http://dx.doi.org/10.1016/j.gheart.2012.12.005>
- Funk, S. C. (1992). Hardiness: A review of theory and research. *Health Psychology*, 11(5), 335. <http://dx.doi.org/10.1037/0278-6133.11.5.335>
- Garrosa, E., Rainho, C., Moreno-Jiménez, B., & Monteiro, M. J. (2010). The relationship between job stressors, hardy personality, coping resources and burnout in a sample of nurses: A correlational study at two time points. *International Journal of Nursing Studies*, 47(2), 205-215. <http://dx.doi.org/10.1016/j.ijnurstu.2009.05.014>
- Haenle, M. M., Brockmann, S. O., Kron, M., Bertling, U., Mason, R. A., Steinbach, G., ... Piechotowski, I. (2006). Overweight, physical activity, tobacco and alcohol consumption in a cross-sectional random sample of German adults. *BMC Public Health*, 6(1), 233. <http://dx.doi.org/10.1186/1471-2458-6-233>
- Heppner, M. J., Lee, D., Paul Heppner, P., McKinnon, L. C., Multon, K. D., & Gysbers, N. C. (2004). The role of problem-solving appraisal in the process and outcome of career counseling. *Journal of Vocational Behavior*, 65(2), 217-238. [http://dx.doi.org/10.1016/S0001-8791\(03\)00100-3](http://dx.doi.org/10.1016/S0001-8791(03)00100-3)
- Heppner, P. P. (1988). *The problem solving inventory: Manual*. Palo Alto, CA: Consulting Psychologists Press.
- Heppner, P. P., & Wang, Y. W. (2003). Problem-solving appraisal. *Positive Psychological Assessment: A Handbook of Models and Measures*, 60(6), 127-138.
- Jaffee, W. B., & D'Zurilla, T. J. (2009). Personality, problem solving, and adolescent substance use. *Behavior Therapy*, 40(1), 93-101. <http://dx.doi.org/10.1016/j.beth.2008.03.001>
- Judkins, S., Arris, L., & Keener, E. (2005). Program evaluation in graduate nursing education: Hardiness as a predictor of success among nursing administration students. *Journal of Professional Nursing*, 21(5), 314-321. <http://dx.doi.org/10.1016/j.profnurs.2005.07.003>
- Jung, M., & Chung, D. (2013). Evidence of Social Contextual Effects on Adolescent Smoking in South Korea. *Asia-Pacific Journal of Public Health*, 25(3), 260-270. <http://dx.doi.org/10.1177/1010539512461667>
- Kline, R. B. (2005). *Principles and Practice of Structural Equation Modeling* (3rd ed.). New York (p. 366). Guilford Press. Retrieved from <http://books.google.com.my/>
- Kobasa, S. C., Maddi, S. R., & Kahn, S. (1982). Hardiness and health: A prospective study. *Journal of Personality and Social Psychology*, 42(1), 168. <http://dx.doi.org/10.1037/0022-3514.42.1.168>
- Lubans, D. R., Hesketh, K., Cliff, D. P., Barnett, L. M., Salmon, J., Dollman, J., ... Hardy, L. L. (2011). A systematic review of the validity and reliability of sedentary behavior measures used with children and adolescents. *Obesity Reviews*, 12(10), 781-799. <http://dx.doi.org/10.1111/j.1467-789X.2011.00896.x>
- Maddi, S. R., Harvey, R. H., Khoshaba, D. M., Lu, J. L., Persico, M., & Brow, M. (2006). The personality construct of hardiness, III: Relationships with repression, innovativeness, authoritarianism, and performance. *Journal of Personality*, 74(2), 575-598. <http://dx.doi.org/10.1111/j.1467-6494.2006.00385.x>
- McVicar, A. (2003). Workplace stress in nursing: A literature review. *Journal of Advanced Nursing*, 44(6), 633-642. <http://dx.doi.org/10.1046/j.0309-2402.2003.02853.x>
- Mendel, J. R., Berg, C. J., Windle, R. C., & Windle, M. (2012). Predicting Young Adulthood Smoking Among Adolescent Smokers and Nonsmokers. *American Journal of Health Behavior*, 36(4), 542-554. <http://dx.doi.org/10.5993/AJHB.36.4.11>
- Moxham, L., Dwyer, T., & Reid-Searl, K. (2012). Graduate nurses and nursing student's behavior: Knowledge and attitudes toward smoking cessation. *Nurse Education Today*.
- Murawski, M. E., Milsom, V. A., Ross, K. M., Rickel, K. A., DeBraganza, N., Gibbons, L. M., & Perri, M. G. (2009). Problem solving, treatment adherence and weight-loss outcome among women participating in lifestyle treatment for obesity. *Eating Behaviors*, 10(3), 146-151. <http://dx.doi.org/10.1016/j.eatbeh.2009.03.005>
- Novacek, J., Raskin, R., & Hogan, R. (1991). Why do adolescents use drugs? Age, sex, and user differences.

- Journal of Youth and Adolescence*, 20(5), 475-492. <http://dx.doi.org/10.1007/BF01540632>
- Okun, M. A., Zautra, A. J., & Robinson, S. E. (1988). Hardiness and health among women with rheumatoid arthritis. *Personality and Individual Differences*, 9(1), 101-107. [http://dx.doi.org/10.1016/0191-8869\(88\)90035-9](http://dx.doi.org/10.1016/0191-8869(88)90035-9)
- Patton, T. J., & Goldenberg, D. (1999). Hardiness and anxiety as predictors of academic success in first-year, full-time and part-time RN students. *Journal of Continuing Education in Nursing*, 30(4), 158.
- Phillips, J. (2011). Hardiness as a Defense against Compassion Fatigue and Burnout. *Journal of Emergency Nursing*, 37(2), 125. <http://dx.doi.org/10.1016/j.jen.2010.10.012>
- Ramlau, R., Didkowska, J., Wojciechowska, U., & Tarkowski, W. (2005). Tobacco smoking in Wielkopolska towards the end of 20th century. *Pneumonologia I Alergologia Polska: Organ Polskiego Towarzystwa Ftyzjopneumonologicznego, Polskiego Towarzystwa Alergologicznego, I Instytutu Gruzlicy I Chorob Pluc*, 73(2), 128.
- Riahi, M. E., Aliverdina, A., & Soleymani, M. R. (2009). Attitude of the boy's students toward the cigarette smoking in Ghaemshar city. *Iranian Journal of Epidemiology*, 5(3), 44-54.
- Schreurs, B., van Emmerik, H., Notelaers, G., & De Witte, H. (2010). Job insecurity and employee health: The buffering potential of job control and job self-efficacy. *Work & Stress*, 24(1), 56-72. <http://dx.doi.org/10.1080/02678371003718733>
- Toghianifar, N., Najafian, J., Pooya, A., Rabiei, K., Eshrati, B., Anaraki, J., & Sarrafzadegan, N. (2012). Association of Smoking Status with Quality of Life in a Cross-sectional Population-Based Sample of Iranian Adults Isfahan Healthy Heart Program. *Asia-Pacific Journal of Public Health*, 24(5), 786-794. <http://dx.doi.org/10.1177/1010539511403800>
- Triplett, R., & Payne, B. (2004). Problem solving as reinforcement in adolescent drug use: Implications for theory and policy. *Journal of Criminal Justice*, 32(6), 617-630. <http://dx.doi.org/10.1016/j.jcrimjus.2004.08.012>
- Vidrine, J. I., Reitzel, L. R., Figueroa, P. Y., Velasquez, M. M., Mazas, C. A., Cinciripini, P. M., & Wetter, D. W. (2011). Motivation and Problem Solving (MAPS): Motivationally Based Skills Training for Treating Substance Use. *Cognitive and Behavioral Practice*.
- WHO. (2013). World Health Organization. *Tobacco cessation*. Retrieved from <http://www.who.int/mediacentre/factsheets/fs339/en/index.html>

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/3.0/>).