

# Smoking Behavior on Public and Vocational High School Students in Indonesia: Modified Theory of Planned Behavior

Enny Trisna

Ph.D. Students in Economics. Postgraduate Studies, Faculty of Economics,  
Islamic University of Indonesia, Condongcatu, Yogyakarta

Anas Hidayat

Postgraduate Studies, Faculty of Economics, Yogyakarta Islamic University of Indonesia.  
Condongcatu, Yogyakarta

Zainal Mustafa EQ

Postgraduate Studies, Faculty of Economics, Yogyakarta Islamic University of Indonesia.  
Condongcatu, Yogyakarta

## Abstract

This study examines attitudes towards smoking, peer reference, self-efficacy towards smoking behavior with the intention of smoking as an intervening variable, and academic achievement as a moderating variable in public and vocational high school students in Indonesia. The analysis of data used Structural Equation Modeling (SEM) method. The results show a person who has high academic achievement, the attitude towards smoking does not affect smoking intention. Peer reference does not affect smoking intention, self-efficacy influences smoking intention and attitude towards smoking does not affect smoking behavior. Peer reference does not affect smoking behavior, self-efficacy does not affect smoking behavior and smoking intention affects smoking behavior. Attitude towards smoking and peer reference respectively have no effect on smoking intention. Likewise, the attitude towards smoking, peer reference, and self-efficacy have no effect on smoking behavior. The academic achievement is a moderating variable that weakens both indirect and total effect between self-efficacy and smoking behavior through smoking intentions. In other words, the academic achievement can weaken intention to smoke. Academic achievement is a moderating variable that weakens the influence of the attitude, smoking, peer reference and self-efficacy on smoking behavior mediated by intention.

**Keywords:** Attitudes towards smoking, peer reference, self-efficacy, smoking intentions, smoking behavior, and academic achievement.

**DOI:** 10.7176/EJBM/11-27-02

**Publication date:** September 30<sup>th</sup> 2019

## 1. Background of the Study

The first part of study background is identify the problems from theoretical aspects, and the second part is to explore problems empirical phenomena of proving theoretical models in this study. High school or vocational students in this study are teenagers. These two terms will be used interchangeably. The Theory of Planned Behavior (TPB) is a theory used to predict behavior, both behaviors related to human resources, marketing, social, and health and even later it is widely used to understand and predict health behavior (Conner and Sparks, 1996 in Millan and Conner, 2003). Some various predictors which until now still consistently affect behavioral intentions are the model developed by Ajzen and Fishbein (1991). Exogenous variables of TPB, namely attitudes, subjective norms, and behavioral control perceptions are superior predictors of intention and behavior (Armitage and Conner, 2001; Quine et al., 1990, Dzewaltowski, Noble and Shaw, 1990 in Moan, 2005).

Researchers use TPB as a grand theory. But the researchers modified the exogenous variables of the TPB to increase the predictive ability of smoking intentions toward smoking behavior. Especially, the relationship of teenage smoking behavior, namely attitudes toward smoking, peer reference, self-efficacy, as exogenous variables, smoking intentions as intervening variables and smoking behavior as endogenous variables then academic achievement as a moderating variable. Most smokers start and develop smoking behavior in adolescence (Brown et al., 1996 in Pennanen, 2012). Children and adolescents are most vulnerable as experimental smokers, smoking one or two puffs of cigarettes (Li et al., 2001 in Zhu et al., 2013). The smoking experiment among school children starts from the age of 13-15 years (Zhu et al., 2013), and even Grover (2011) states teens start smoking aged 10 to 15 years. This trend is worrying because smoking at a young age is highly predictive of the continuous consumption of smoking tobacco (Chassin et al., 1996 in Moan, 2005).

The government continues to reduce the number of novice smokers through Government Regulation number 109 of 2012. This regulation is the beginning of how the Indonesian government controls tobacco, especially for novice smokers. In the year of 2015 to 2019, it is targeted to reduce (the number of new smokers) from 7% to 5.2%. But in 2016 alone the figure rose to 8.8%. The data is a warning for the government as to how

to control cigarette consumption. Cigarettes are still a big problem that cannot be released. Indonesia is the number three country with the most smokers in the world after China and India (Ministry of Health, 2017). Previously, in 1990 and 2001 Indonesia ranks fourth after Pakistan, Turkey, and Bulgaria (Ramadhani and Hidayat, 2009).

There were five main concerns to overcome these problems. One of the problems is the increasing number of child smokers. Smoking is the beginning of moment for children to commit acts of violence. Initially, children smoked cigarettes, tried alcohol, used drugs to pornography, and finally committed violence. A smoking habit can harm child development. Protecting children from smoking is an effort to realize the future of Indonesia and the world for the better. According to Higgins and Conner (2003), efforts to reduce smoking among adolescents are very important to prevent the long-term adverse consequences of smoking on health. Smoking causes many health risks, including various forms of cancer, cardiovascular disease, and respiratory disease, and creates a financial and social burden that significant in society. Therefore, smoking prevention remains an important public health priority (Pepler and Atlas, 2000 in Su et al., 2015).. According to Budijanto (2014), many programs aimed at reducing the prevalence of smoking have focused on smoking prevention among adolescents, but interventions aimed at preventing this group from starting smoking are often unsuccessful (USDHHS, 1994, 2000).

Based on several relevant previous research, theoretically, there is still a need to modify the exogenous variables of planned behavior theory (TPB), especially for specific phenomena. Another consideration, empirically, the government's efforts to reduce smokers have not been succeeded as expected, especially for teenagers.

From the background of the study, the question of the research are as follows:

1. Does the attitude towards smoking influence smoking intention?
2. Does peer reference influence smoking intentions?
3. Does self-efficacy affect smoking intentions?
4. Does the attitude towards smoking influence smoking behavior?
5. Does peer reference influence smoking behavior?
6. Does self-efficacy affect smoking behavior?
7. Does the intention to smoke influence smoking behavior?
8. Is the intention of smoking a mediator of the effect between attitude towards smoking and smoking behavior?
9. Is the intention to smoke a mediator between peer reference and smoking behavior?
10. Is the intention of smoking a mediator of the effect between self-efficacy and smoking behavior?
11. Does academic achievement influence smoking behavior?
12. Does the interaction of smoking intentions with academic achievement influence smoking behavior?

## 2. Research Authenticity

The TPB model, has been mostly carried out by researchers in almost all contexts. After a simple meta-analysis, several variables in TPB could be replaced by other variables that were equal in position as predictors of intention. In addition to conducting meta-analyses from various journals, researchers have also discussed with various existing theories. The researchers concluded that peer reference replaces subjective norm variables. Researchers do not use subjective norms because the effect of subjective norms on intention are inconsistent. While a self-efficacy replaces the perceived behavioral control (PBC), researchers use the self-efficacy instead of PBC, according to Armitage and Conner (1999a, 1999b), self-efficacy shows internal ability while PBC shows external ability. Self-efficacy is more concerned with cognitive perception of control based on control factors internal, whereas PBC is more common, external factors. The researcher has added another variable as a moderator of the influence between intention and behavior, namely academic achievement. This additional variable complements TPB as a novelty of this research.

## 3. Literature Review and Hypothesis Development

### *Theory of Planned Behavior (TPB)*

The TPB is an extension of the theory of reasoned action (Ajzen and Fishbein, 1980). The central factor in the theory of planned behavior is the intention of individuals to carry out certain behaviors. Intention is assumed to capture motivational factors that influence behavior, an indication of how hard people want to try, how much effort they plan to carry out the behavior. TPB has been successfully applied in predicting various behaviors, including smoking (Moan, 2005) and TPB helps predict smoking behavior among adolescents or young adults (Higgins and Conner, 2003; Millan and Conner, 2003; Wilkinson and Abraham, 2004 in Kamimura et. al, 2018), as well as TPB provide predictions of good intentions because they combine social influence and personal factors as predictors. TPB says that a more positive attitude towards smoking (eg 'Smoking today will be fun'), supporting subjective norms (eg 'Most people who are important to me think that I should smoke today') and

PBC that bigger (for example, 'It's easy for me to smoke today') results in stronger behavioral intentions (for example, 'I intend to smoke today').

#### *Attitudes towards smoking*

Attitude is an individual's tendency to react with a certain level of liking or dislike for the behavior of a person's object, institution or event or to other discriminatory aspects of the individual world (Ajzen, 1993). Attitudes are positive or negative evaluations of people towards their behavior conceptualized as a predictor of intention (Topa and Moriano, 2010). Bagozzi (1992) states that attitudes might first be translated into desires (eg 'I want to do behavior x'), which then develops into an intention to act and act.

#### *Peer reference*

A peer reference is someone who is equal to someone else in ability, qualifications, age, background, and social status (<https://www.dictionary.com>) means that it can be interpreted as peer (peer) references. The grouping of smoking behavior in peer groups can occur because adolescents seek friendship with individuals who have similar interests, such as smoking is one of them (Urberg et.al, 1997; Vries et.al, 2006; in Mercken et.al, 2011). Peer references (peers) significantly influence students' smoking intentions (Scalici and Schulz, 2014). The empirical evidence also shows that adolescents with more friends smoker, will have a higher propensity to smoke (Kobus, 2003), where they can be influenced through two ways, through implicit influences such as through imitation and through direct influence ie direct pressure from friends to smoking (Mercken et.al., 2009). To determine the influence of peers on adolescent smoking behavior, including: the influence of good friends, the influence of friends in general and the influence of close friends of the opposite sex of teenagers / girlfriends (Rosmalen and Daniel, 1989), 'The influence of peer groups' has often been regarded as the main cause of adolescents start smoking (Evans, 1976 in Eiser et al., 1989).

#### *Self-efficacy*

Self Efficacy is defined as a cognitive variable that refers to people's beliefs about their ability to produce a specified level of performance that affects activities that affect their lives (Bandura, 1994). The concept of self-efficacy is used like behavioral control, which means the perception of ease or difficulty of a particular behavior. This is related to controlling belief, which refers to beliefs about the existence of factors that can facilitate or hinder the performance of behavior. Whereas Fishbein and Cappella stated that self-efficacy is the same as behavioral control in the integrative model (Fishbein and Cappella, 2006). So in this study self- efficacy is aimed at a person's beliefs about his ability to smoke in other words he feels that he is able to smoke, so that his smoking intention is higher and subsequently will become a smoker, conversely if someone feels sure that he is unable to smoke, then his smoking intention will be low and he will not be a smoker.

#### *Intention to smoke*

The intention of smoking is their decision to act, and reflects the amount of effort they are likely to make to smoke (Andrews et.al, 2004). 'Intention' usually represents a decision to exert effort to conduct actual behavior (Ajzen and Madden, 1986; Higgins and Conner, 2003 in Talip et.al, 2016). The intention of smoking is considered as the main predictor of smoking behavior (initiation and development) because many theories in social and health psychology assume that intentions cause behavior (Burton et.al., 1989; Tickle et.al., 2006 in Talip et.al, 2016) . The intention of smoking is mainly related to social and personal factors (Talip et.al, 2016). Social factors include family factors, peers, and teachers while personal factors contain demographic characteristics, psychological factors, personal characteristics and academic achievement (Talip et.al, 2016).

#### *Smoking behavior*

Behavior shows how hard people are willing to try or how much they will try to do the desired behavior that is smoking (Ajzen, 1991). Behavior may occur if a person has the skills needed to conduct a behavior, there are no environmental restrictions on carrying out strong behaviors and intentions. Intention is influenced by attitudes toward behavior, perceived norms about behavior, and self-efficacy with respect to behavior (Fishbein, 2000 in Sterling et.al, 2007). Individual factors include attitudes such as smoking intentions, sociodemographic factors including gender, race, academic problems and average scores related to student smoking behavior (Xu et.al, 2017). Because many theories in social and health psychology assume that intention causes behavior, then intention to smoke is considered a major predictor of smoking behavior (Xu et.al, 2017)

#### *Academic achievement*

Academic achievement is the extent to which students, teachers and institutions have achieved short-term or long-term goals, which are usually benchmarks of average grades, GPA (GPA) and Diplomas. Indicators of student academic achievement include verbal, quantitative and general assessment (Steinmayr et.al, 2017). According to Hausteina and Groneberg (2010) smoking does not only affect physical health alone, the habit of smoking tobacco for many years also affects the health of brain and psychological function. One of the cigarette content, nicotine, has an effect on the brain, among others, causing dependence and toxicity on cognitive functions that cause symptoms of concentration difficulties, this nicotine dependence effect which results in continuous exposure of cigarettes to smokers will later lead to cognitive decline. Decreased cognitive function will have an impact on the learning process and the acquisition of final grades (Hausteina and Groneberg, 2010).

An academic performance level was found to be inversely related to smoking behavior (Xu et.al, 2017).

#### 4. Hypothesis

- H<sub>1</sub>: Attitudes towards smoking have a positive effect on smoking intentions
- H<sub>2</sub>: Peer reference has a positive effect on smoking intentions.
- H<sub>3</sub>: Self efficacy has a positive effect on smoking intentions
- H<sub>4</sub>: Attitudes towards smoking have a positive effect on smoking behavior
- H<sub>5</sub>: Peer reference has a positive effect on smoking behavior
- H<sub>6</sub>: Self efficacy has a positive effect on smoking behavior
- H<sub>7</sub>: The intention to smoke positively influences smoking behavior
- H<sub>8</sub>: Attitudes towards smoking have a positive effect on smoking behavior by mediating smoking intentions
- H<sub>9</sub>: Peer reference has a positive effect on smoking behavior by mediating smoking intentions
- H<sub>10</sub>: Self efficacy has a positive effect on smoking behavior by mediating smoking intentions
- H<sub>11</sub>: Academic achievement has a negative effect on smoking behavior
- H<sub>12</sub>: The interaction of smoking intention with academic achievement has a positive effect on smoking behavior

The theoretical framework of the study:

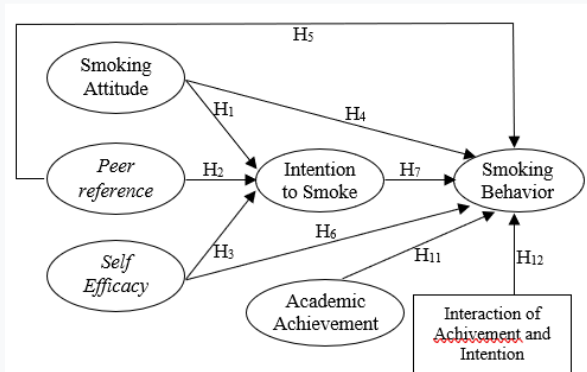


Figure 1. The theoretical framework of the study.

Note :

Hypothesis 8, 9 and 10 are indirect effects that are not drawn in the diagram, but will be tested statistically in the analysis of data.

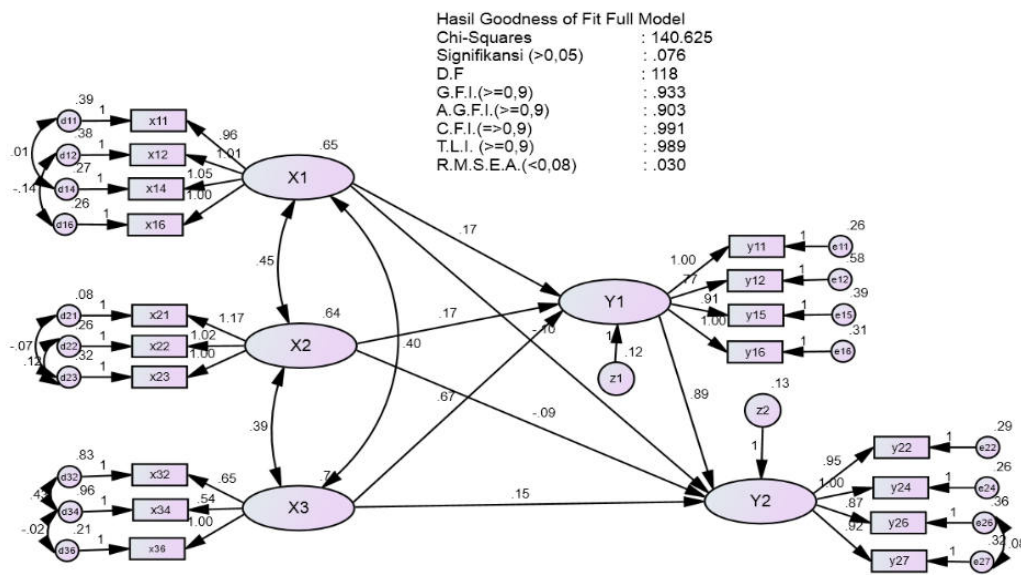
#### 5. Population

The population in this study were all students of class XI and class XII both from general and vocational high school (SMA / SMK) in Indonesia. In order to make the generalization area clear, then the population needs to be given a border or frame, so the population in this study is individual male students of class XI and XII in high schools / vocational schools in Indonesia. With these criteria or population frames, according to data from the Indonesian Central Bureau of Statistics, in 2017/2018, it is informed that the number of SMA / SMK in 2017/2018 is 27,205 (twenty seven thousand two hundred five) schools and the number of male students in class XI and class XII as many as 3,201,331 (three million two hundred and one thousand three hundred thirty-one people) students (Data and Statistics Center for Education and Culture, 2017), a sample of 217 students.

#### 6. Results and Discussion

Data processing is divided into two, namely the first explains the testing of the quality of the instrument (questionnaire), namely the requirements that must be met, namely validity and reliability, the second explains the analysis of data, descriptively and inferentially. Proof of hypothesis is performed using structural equation modeling (SEM) analysis.

The results of data processing for SEM are complete without moderator variables, at first they still cannot meet the requirements as a fit model. Therefore modifications are made to the model until the model is declared fit. The full model of SEM without moderating variables that has been declared fit can be seen in Figure 1.



Hasil Goodness of Fit Full Model  
 Chi-Squares : 140,625  
 Signifikansi (>0,05) : .076  
 D.F : 118  
 G.F.I.(≥0,9) : .933  
 A.G.F.I.(≥0,9) : .903  
 C.F.I.(≥0,9) : .991  
 T.L.I.(≥0,9) : .989  
 R.M.S.E.A.(≤0,08) : .030

Figure 1. The fullmodel of SEM without moderating variables that has been declared fit

Table 1. Goodness of Fit Test Result Without Moderated Variable.

Goodness of Fit Index	Initial Model		Modified Model	
	Results	Conclusion	Results	Conclusion
Chi-Square ( $X^2$ )	1068,765	Not-significant	140,625	Significant
Signifikansi ( $\geq 0.05$ )	0,000	Not-significant	0,076	Significant
GFI ( $\geq 0,90$ )	0,756	Not-significant	0,933	Significant
AGFI ( $\geq 0,90$ )	0,716	Not-significant	0,903	Significant
CFI ( $\geq 0,95$ )	0,892	Not-significant	0,991	Significant
TLI ( $\geq 0,95$ )	0,883	Not-significant	0,989	Significant
CMIN/DF ( $\leq 2,00$ )	2,35	Not-significant	1,19	Significant
RMSEA ( $\leq 0,08$ )	0,079	Significant	0,030	Significant

Table 2. Hypothesis Testing Result of Regression Model Without Moderated Variable.

Hypothesis	Coefficient	Sig	Conclusion
Attitude toward smoking → smoking intention	0,164	0,048	Significant
Peer reference → smoking intention	0,164	0,042	Significant
Self-efficacy → smoking intention	0,683	0,001	Significant
Attitude toward smoking → smoking behavior	-0,097	0,221	Not Significant
Peer reference → smoking behavior	-0,083	0,276	Not Significant
Self-efficacy → smoking behavior	0,154	0,357	Not Significant
smoking intention → smoking behavior	0,877	0,001	Not Significant

From Table 2, it can be concluded that:

- Hypothesis 1: "Attitude towards smoking has a positive effect on smoking intention" can be accepted (supported by empirical data), because the significance level of the test results ( $p = 0.048$  (less than 0.05)). This means that if a teenager addresses smoking as a positive thing (beneficial), then their intention to smoke will be high. Conversely, if a teenager treats smoking as a negative thing (detrimental), then their intention to smoke will be low.
- Hypothesis 2: "Peer reference has a positive effect on smoking intentions" is acceptable (supported by empirical data), because the significance level of the test results ( $p = 0.042$  (less than 0.05)). This means that if a teenager makes a peer reference as a reference, then their intention to smoke will be high. Conversely, if a teenager responds to peer reference not as a reference, then their intention to smoke will be low.
- Hypothesis 3: "Self efficacy has a positive effect on smoking intentions" is acceptable (supported by empirical data), because the significance level of the test results ( $p = 0.001$  (less than 0.05)). This means that if a teenager feels capable of becoming a smoker, then their intention to smoke will be high. Conversely, if a teenager feels



unsure of being a smoker, their intention to smoke will be low.

4. Hypothesis 4: "Attitude towards smoking has a positive effect on smoking behavior" cannot be accepted or rejected (not supported by empirical data), because the significance level of the test results ( $p = 0.221$  (greater than 0.05) . In other words, that the attitude towards smoking has no effect on smoking behavior, this means however the adolescent's attitude towards smoking will not affect smoking behavior.

5. Hypothesis 5: "Peer reference has a positive effect on smoking behavior" cannot be accepted or rejected (not supported by empirical data), because the significance level of the test results ( $p = 0.276$  (greater than 0.05). In other words, that peer reference has no effect on smoking behavior, this means that however teenage smoking behavior is not due to peer reference.

Smoking is traditionally seen as a badge of 'coolness' among teenagers. 'Coolness' is still identified by young people as one of the reasons why some of their peers smoke, (Eureka Strategic Research, 2005) research conducted in Western Australia for the Smarter than Smoking project shows that the reverse is increasingly true, with those who smoke often seen as 'loser' or 'trying too hard to be cool' (Wood et.al, 2005). Refusing an offer of cigarettes or stating that 'I don't smoke' is increasingly socially and normatively accepted among many youth groups (Wood et.al, 2005). Among groups with negative attitudes that apply to smoking, peer influence can certainly prevent the use of cigarettes. (Turner et.al, 2004; Kobus, 2003; Simons-Morton and Farhat, 2010)

6. Hypothesis 6: "Self-efficacy has a positive effect on smoking behavior" cannot be accepted or rejected (not supported by empirical data), because the significance level of the test results ( $p = 0.357$  (greater than 0.05). In other words, that self efficacy does not affect smoking behavior, this means that the level of self efficacy does not affect smoking behavior.

7. Hypothesis 7: "Smoking intention has a positive effect on smoking attitude" can be accepted (supported by empirical data), because the significance level of the test results ( $p = 0.001$  (less than 0.05). This means that if a teenager has a high intention to smoke then smoking will become their lifestyle (becoming a smoker). Conversely, if a teenager has a low intention to smoke, then they will avoid smoking in the future (non-smokers). The next analysis result is to include moderating variables in the model. The inclusion of moderator variables in the model makes the new model not meet the criteria for a fit model, therefore modifications are made until the model becomes fit. The full model of SEM that has been declared fit can be seen in the following image with the moderated variable.

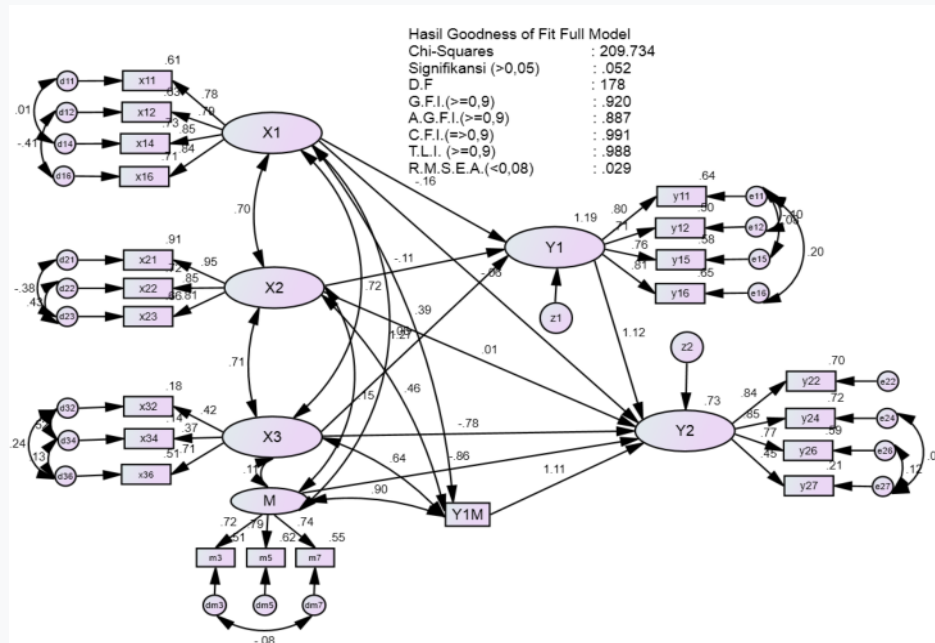


Figure 2. The fit full model of SEM with the moderated variable.

Table 3. Goodness of Fit Test with Moderated variable

Goodness Of Fit Index	First Model		Modified Model	
	Results	Conclusion	Results	Conclusion
Chi-Square ( $X^2$ )	240,656	Not Signiificant	209,734	Significant
Signifikansi ( $\geq 0,05$ )	0,003	Not Signiificant	0,052	Significant
GFI ( $\geq 0,90$ )	0,909	Significant	0,920	Significant
AGFI ( $\geq 0,90$ )	0,875	Moderate	0,887	Moderate
CFI ( $\geq 0,95$ )	0,984	Significant	0,991	Significant
TLI ( $\geq 0,95$ )	0,980	Significant	0,988	Significant
CMIN/DF ( $\leq 2,00$ )	1,31	Significant	1,18	Significant
RMSEA ( $\leq 0,08$ )	0,038	Significant	0,029	Significant

The impact of academic achievement as a moderated variable and the interaction between intention to smoke with academic achievement show the result:

Table 4. Hypothesis testing with Significant (Probability) Test

Hypothesis	Coefficient	Sig.	Conclusion
First, Attitude toward smoking $\rightarrow$ smoking intention	-.159	.268	Not significant
Peer reference $\rightarrow$ smoking intention	-.108	.432	Not significant
Self-efficacy $\rightarrow$ smoking intention	1.270	.001	Significant
Attitude toward smoking $\rightarrow$ smoking behavior	-.056	.698	Not significant
Peer reference $\rightarrow$ smoking behavior	.013	.926	Not significant
Self-efficacy $\rightarrow$ smoking behavior	-.785	.153	Not significant
smoking intention $\rightarrow$ smoking behavior	1.119	.001	Significant
Moderated variable $\rightarrow$ smoking behavior	-.857	.001	Significant
Smoking intention x Moderated $\rightarrow$ smoking behavior	1.107	.001	Significant

From Table 4 above table it can be concluded that:

First, if academic achievement is played as a moderating variable, then hypothesis 1 (first) which reads "attitude towards smoking has a positive effect on smoking intentions" cannot be accepted (rejected), because the significance level of the test results ( $p$ ) = 0.268 (greater than 0, 05). This means that if someone has a high academic achievement then the attitude towards smoking does not affect smoking intentions. This can be explained that when the intention is interacted with academic achievement, the emergence of the intention to smoke becomes something that is more common sense, not just an emotional feeling (irrational). If related to the findings from the research results, it can be explained that first the attitude towards smoking influences the intention but it turns out the attitude towards smoking no longer influences the intention when the intention is interacted with academic achievement. This means that academic achievement becomes a moderating variable that inhibits or weakens the influence of attitudes towards smoking with intention.

Teenagers who are still in high school / vocational school or the equivalent start using their common sense when going to make certain decisions, especially for smoking. No matter how high the academic achievements of adolescents who are still attending high school / vocational high school, their age is relatively of the same age / equivalent, so that the level of academic achievement possessed is also relatively equal in the quite high category. The high enough category for adolescent level cannot be equated with the high academic achievement of adults whose thought concept is more mature more mature. The decreasing effect of even being non-influential towards smoking with the intention of smoking, explains that they understand that smoking is self-defeating both for health and financially. In fact they also say that the impact of smoking not only on him, but also people around him. Thus by ignoring academic achievement, they are more likely to behave emotionally (think irrationally), but when academic achievement is interacted with intention, they become more rational students. So students who are still in high school / vocational school have high academic achievement can be used as an example or model of prevention of smoking intentions.

Second, if academic achievement is played as a moderating variable, then hypothesis 2 (second) which says "peer reference has a positive effect on smoking intentions" cannot be accepted (rejected), because the significance level of the test results ( $p$ ) = 0.432 (greater than 0, 05). This means that if someone has high academic achievement, peer reference has no effect on smoking intentions. Students who are still in high school / vocational high school with high achievements generally keep more distance from their groups in terms of behavior that they consider detrimental to themselves. High achievers will rationally choose who will be used as a patron or model in their behavior. So if they will continue to try not to enter into groups that have a positive attitude towards smoking. Students who have high academic achievement will continue to respect the group, but they can think rationally more, so that their smoking intentions are not due to group encouragement but more towards other things. Thus it can be concluded that academic achievement interacted with smoking intentions is

an obstacle and even a barrier to the influence of reference groups on smoking intentions.

Third, if academic achievement is played as a moderating variable, then hypothesis 3 (third) which reads "self efficacy has a positive effect on smoking intentions" can be accepted (supported by empirical data), because the significance level of the test results ( $p$ ) = 0.001 (smaller than 0, 05). This means that if someone has a high academic achievement, self-efficacy will increase their intention to smoke. When academic achievement is high, students think more rationally so that he smokes not because of his positive attitude towards cigarettes and is not influenced by the reference group (his friends who smoke) but he smokes because he has the ability to smoke, both in terms of his belief in his ability to buy cigarettes and because of the ease of getting cigarettes so that self-efficacy actually increases. So academic achievement interacted with smoking intention has the role of increasing the effect of self efficacy on smoking intention.

Fourth, if academic achievement is played as a moderating variable, then hypothesis 4 (fourth) which reads "attitude towards smoking has a positive effect on smoking behavior" cannot be accepted (rejected), because the significance level of the test results ( $p$ ) = 0.698 (greater than 0, 05). This means that if someone has a high academic achievement then the attitude towards smoking will not affect smoking behavior. This is consistent with the results of research that do not involve the academic achievement variable into the moderator variable. It is clear that the position of smoking intention is really an intervening variable (mediator) the effect of attitude towards smoking with smoking behavior.

Fifth, if academic achievement is played as a moderating variable, then hypothesis 5 (fifth) which says "peer reference has a positive effect on smoking behavior" cannot be accepted (rejected), because the significance level of the test results ( $p$ ) = 0.926 (greater than 0, 05). This means that if someone has high academic achievement, peer reference will not affect smoking behavior. This is consistent with the results of research that do not involve the academic achievement variable into the moderator variable. It is clear that the smoking intention variable is really an intervening variable (mediator) of the influence between peer references on smoking behavior.

Sixth, if academic achievement is played as a moderating variable, then hypothesis 6 (sixth) which reads "self efficacy has a positive effect on smoking behavior" cannot be accepted (rejected), because the significance level of the test results ( $p$ ) = 0.153 (greater than 0, 05). This means that if someone has a high academic achievement, self efficacy will not affect smoking behavior. This is consistent with the results of research that do not involve the academic achievement variable into the moderator variable. It is clear that the position of smoking intention is really an intervening variable (mediator) the effect of self efficacy on smoking behavior.

Seventh, if academic achievement is played as a moderating variable, then hypothesis 7 (seventh) which reads "smoking intention has a positive effect on smoking behavior" can be accepted (supported by empirical data), because the significance level of the test results ( $p$ ) = 0.001 (smaller than 0, 05). This means that if someone has high academic achievement, the intention to smoke will encourage someone to become a smoker or a smoking lifestyle.

From the overall hypotheses outlined above, attitude towards smoking and peer reference respectively do not directly affect smoking intention. Likewise, attitude towards smoking, peer reference and self efficacy respectively did not directly affect smoking behavior. Thus the indirect effect and the total effect in the model can be explained as follows:

First, by moderating academic achievement, the attitude towards smoking does not affect smoking behavior even though mediating the intention to smoke. So academic achievement is a moderating variable that weakens the indirect effect between attitudes towards smoking with smoking behavior through smoking intentions.

Second, by moderating academic achievement, peer reference has no effect on smoking behavior even though mediating smoking intentions. So academic achievement is a moderating variable that weakens the indirect effect between peer reference and smoking behavior through smoking intentions. Students who have high academic achievement will generally be in groups with students who have equal academic performance, because their behavior will be the same. Thus they prioritize rational thinking rather than emotional to join in doing something that they think is less profitable (negative)

Third, with the moderator of academic achievement, self efficacy still influences smoking behavior by mediating the intention to smoke, with an indirect effect coefficient of 1.421 and a total effect coefficient of 0.636. This can occur because self-efficacy is cognitive, especially phenomena related to personal judgments about one's ability to follow through with plans. The coefficient of the total effect is smaller than before the moderator, it can be concluded that academic achievement is a moderating variable that weakens the total effect between self efficacy and smoking behavior through smoking intentions.

## 7. Conclusion

1. If academic achievement is played as a moderating variable, then "attitude towards smoking has a positive effect on smoking intentions" cannot be accepted (rejected), because the significance level of the test results ( $p$ ) = 0.268 (greater than 0.05). This means that if someone has a high academic achievement then the attitude



towards smoking does not affect smoking intentions.

2. If academic achievement is played as a moderating variable, "peer reference has a positive effect on smoking intentions" cannot be accepted (rejected), because the significance level of the test results ( $p = 0.432$  (greater than 0.05)). This means that if someone has high academic achievement, peer reference has no effect on smoking intentions.

3. If academic achievement is played as a moderating variable, "self efficacy has a positive effect on smoking intentions" can be accepted (supported by empirical data), because the significance level of the test results ( $p = 0.001$  (greater than 0.05)). This means that if someone has a high academic achievement, self-efficacy (confidence or self-ability) affects smoking intentions.

4. If academic achievement is played as a moderating variable, then "attitude towards smoking has a positive effect on smoking behavior" cannot be accepted (rejected), because the significance level of the test results ( $p = 0.698$  (greater than 0.05)). This means that if someone has a high academic achievement then the attitude towards smoking will not affect smoking behavior.

5. If academic achievement is played as a moderating variable, then "peer reference has a positive effect on smoking behavior" cannot be accepted (rejected), because the significance level of the test results ( $p = 0.926$  (greater than 0.05)). This means that if someone has high academic achievement, peer reference will not affect smoking behavior.

6. If academic achievement is played as a moderating variable, then "self efficacy has a positive effect on smoking behavior" cannot be accepted (rejected), because the significance level of the test results ( $p = 0.153$  (greater than 0.05)). This means that if someone has a high academic achievement, self efficacy will not affect smoking behavior.

7. If academic achievement is played as a moderating variable, "smoking intention has a positive effect on smoking behavior" can be accepted (supported by empirical data), because the significance level of the test results ( $p = 0.001$  (less than 0.05)). This means that if someone has a high academic achievement, the intention to smoke affects smoking behavior.

8. From the overall hypotheses outlined above, the variables X1 (attitude towards smoking) and X2 (peer reference) respectively do not directly affect Y1 (smoking intention). Likewise, the variables X1 (attitude toward smoking), X2 (peer reference) and X3 (self efficacy) respectively did not directly affect Y2 (smoking behavior).

9. By moderating academic achievement, the attitude towards smoking does not affect smoking behavior even though mediating the intention to smoke. So academic achievement is a moderating variable that weakens the indirect effect between attitudes towards smoking with smoking behavior through smoking intentions.

10. By moderating academic achievement, peer reference has no effect on smoking behavior even though mediating smoking intentions. So academic achievement is a moderating variable that weakens the indirect effect between peer reference and smoking behavior through smoking intention.

11. By moderating academic achievement, self-efficacy continues to influence smoking behavior by mediating the intention of smoking, with an indirect effect coefficient of 1.421 and a total effect coefficient of 0.636. The coefficient of the indirect effect and the total effect is smaller than before the moderator, it can be concluded that academic achievement is a moderating variable that weakens the indirect or total effect between self efficacy and smoking behavior through smoking intention.

12. The analysis shows that the price of  $AdjR^2 = 0.725$  which can be interpreted that "72.50% change or variation in smoking behavior scores significantly explained by changes or variations in scores of attitudes towards smoking, peer reference, self efficacy, smoking intention, academic achievement and interaction of smoking intention with academic achievement simultaneously, while the remaining 27.50% is explained by other variables not included in the model".

13. By comparing the price of  $Adj. R^2$  before there is a moderating variable and the price of  $Adj. R^2$  after there is a moderating variable, it can be concluded that the price of  $Adj.R^2$  before there is a moderating variable = 0.807 is greater than the price of  $Adj.R^2$  after there is a moderating variable = 0.725. So it is proven that academic achievement is a moderating variable which weakens the influence of smoking attitude, peer reference and self efficacy variables on smoking behavior mediated by intention. In other words the intention to smoke can be weakened (sorted) by academic achievement.

## 8. Research Contribution

### *Theoretical Contributions*

Expanding the Implementation of Theory of Planned Behavior (TPB) through several modifications as a novelty to explain smoking behavior among adolescents in Indonesia. The results of this study are expected to provide empirical evidence that the modification of TPB theory, especially by adding moderating variables will strengthen the TPB's effect on smoking behavior. Of the various predictors that can still be said to consistently affect behavioral intentions, there is a model developed by Ajzen and Fishbein consisting of attitudes, subjective norms and behavioral control, but in this study by integrating several studies related to smoking intentions and

behavior, researchers tried to modify exogenous variables, which are to strengthen the applicability of TPB in relation to adolescent smoking behavior that consists of attitudes toward smoking, peer reference, and self efficacy as exogenous variables, smoking intentions as intervening variables, smoking behavior as endogenous variables and academic achievement as a moderation variable.

#### *Research Methodology Contribution*

Questionnaires in this study were distributed online, due to the wide distribution of research subjects (respondents), the researchers designed the questionnaire in software so that it could be uploaded online, so that anyone including himself was welcome to fill in, with the aim that the level of spread could reach all of Indonesia, by setting certain criteria to filter out the appropriate answers so that they can answer the research problem.

#### *Practical Contributions*

From the results of this study, if TPB is able to work well, it is also a momentum for stakeholders to prevent teenagers from smoking, because in Indonesia in general the prevention of smoking among adolescents is not optimal so this research becomes very relevant and in accordance with research needs the smoking prevention sector among adolescents at this time. In this case it shows that:

- a. The importance of the role of teachers and schools doing activities that can improve student academic achievement, such as the K-13 curriculum requires students to be active in the teaching and learning process and student independence is prioritized because of the research results obtained academic achievement can weaken the intention to smoke meaning that students with high academic achievement, have a low intention to smoke, create a curriculum that not only increases hard skills but can also increase soft skills such as outbound activities that aim to improve students' interpersonal and intrapersonal abilities and intensify extracurricular activities that benefit students so there is not much free time for students to hang out or gather with friends outside of school activities, socialize the dangers of smoking, applied No Smoking Area (KTR) and besides that there is a need to stop smoking clinics for students who have become smoking as well as supervision from the school the process of teaching teachers and students who smoke by making strict rules and actions for teachers and students who smoke in the school environment and building effective communication between teachers and students in order to increase student awareness not to smoke, in line with Nohair's research (2011) which suggests the most common reasons for smoking are: having free time (81.6%), relieving stress (63.2%) and seeing some teachers smoking (61.8%), research Poulsen et.al, (2002) in Pennanen, (2012), said that teachers who smoke during school hours have been found to be associated with adolescent smoking so that smoking bans for students and teachers have been shown to reduce the risk of teenage smoking (Piontek et.al, 2008 in Pennanen, 2012).
- b. The importance of the role of government to prevent smoking for adolescents such as giving strict sanctions for smokers who violate the rules that have been established, for example those who smoke in Non-Smoking Zones (KTR) are subject to fines, as well as the application of government regulations that have been issued properly implemented such as Government Regulations Republic of Indonesia Number 81 of 1999 concerning Safeguarding cigarettes for health, Government Regulation of the Republic of Indonesia Number 19 of 2003 concerning Safeguarding Cigarettes for Health, Republic of Indonesia Law no.32 of 2010 concerning smoking bans, Government Regulation (PP) number 109 of 2012 concerning Safeguarding Materials Containing Addictive Substances in the Form of Tobacco Products for Health.
- c. The results of the study are expected to be an evaluation material in order to make the right policies in terms of smoking prevention for adolescents such as the existence of decisive action for cigarette sellers who are caught selling cigarettes to children and adolescents under the age of 18 years because if seen on cigarette packets that are allowed to smoke age 18 years and above, and more promoting public service advertisements about the dangers of smoking to compensate for cigarette advertisements and prevention measures should be done as soon as possible starting from the beginning of adolescence given the age of adolescents who start smoking getting younger.

#### **9. Future Research**

- a. The interaction of academic achievement with smoking intention shows that academic achievement can strengthen or weaken students' smoking intention to continue to become smoking behavior, so academic achievement is referred to as a moderating variable. In further research it is necessary to deepen information about other indicators that are able to describe the ability of individuals to improve maturity so that it is more rational in thinking and making decisions, for example in terms of cognitive, affective and psychomotor which have an impact on improving academic achievement.
- b. This research does not involve other variables that are suspected to affect the results of research such as addiction because in cigarettes there is nicotine that causes addiction, this addiction is not only on cigarettes, but usually also includes addiction to certain cigarette brands (for example someone who is used to smoking with clove cigarettes, then he will not feel satisfied if replaced with other cigarettes), variable public service ads (both in terms of intensity, valence and consequence recipients), previous smoking trial behavior and personality systems.

- c. This study was only conducted on high school / vocational students throughout Indonesia by not including Madrasah Aliyah students, namely students in faith-based schools, so for further research it is better to include students in faith-based schools.
- d. This study is only intended for tobacco cigarettes, for further research needs to be examined about adolescents who smoke with electric cigarettes (electric smoke)

## References

- Ajzen, I. dan Fishbein, M. (1980), *Understanding attitudes and predicting social behavior*, New Jersey: Prentice-Hall.
- Ajzen, I. (1991), The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, Vol. 50, pp. 179–211.
- Ajzen, I , dan Madden, T. J. (1986) Prediction Of Goal-Directed Behavior: Attitudes, Intentions and Perceived Behavioral Control , *Journal of Experimental Social Psychology*, Vol. 22, pp. 453-474.
- Al Nohair, S.F., (2011), Prevalence of Smoking and its Related Behaviors and Beliefs Among Secondary School Students in Riyadh, Saudi Arabia, *Int J Health Sci (Qassim)*; 5 (1): 51–57.
- Andrews ,J.C., Netemeyer R.G., Burton,S., Moberg, D.P., Christiansen , A., (2004), Understanding Adolescent Intentions to Smoke: An Examination of Relationships Among Social Influence, Prior Trial Behavior, and Antitobacco Campaign Advertising , *Journal of Marketing* Vol. 68 110–123
- Armitage, C.J., dan Conner, M. (2001), Efficacy of the Theory of Planned Behaviour: A meta-analytic review, *The British Journal of Social Psychology*; Vol. 40, pp. 471
- Bandura, A., (1994) , *Self efficacy*, Encyclopedia Of Human Behavior (vol.4,pp.71-81) New York Academic Press
- Budijanto,(2014), Pengaruh Faktor Psikososial Terhadap Niat Berhenti merokok, *Disertasi Doktor Ilmu Ekonomi Program PasacaSarjana Fakultas Ekonomi Universitas Islam Indonesia Yogyakarta,31 Desember*
- Dzewaltowski, D. A., Noble, J. M. dan Shaw, J. M.,(1990) physical activity participation: social cognitive theory versus the theories of reasoned action and planned behavior, *Journal of Sport dan" Exercise Psychology*,12, pp.388-405.
- Eiser, J.R., Morgan , M., Gammage , P., Gray, E., (1989), Adolescent smoking: Attitudes, norms and parental influence, *British Journal of Social Psychoogy* , 28, 193-202
- Eureka Strategic Research, (2005), Youth tobacco prevention research project. Undertaken for the Australian Government Department of Health and Ageing. Canberra: *Department of Health and Ageing*
- Fishbein M, Cappella JN.,(2006), The role of theory in developing effective health communications. *Journal of Communication.*;56(s1):S1–S17.
- Haustein , K.O., Groneberg, D., (2010), Tobacco Or Health? Physiological and Social Damages Caused by Tobacco Smoking, *ook · DOI: 10.1007/978-3-540-87577-2*
- Higgins, A., dan Conner, M. (2003). Understanding adolescent smoking: the role of the theory of planned behaviour and implementation intentions. *Psychology, Health dan Medicine*, 8 (2), 173-186.
- Kamimura,A., Ahmmad ,Z., Pye, M, dan Gull, B. (2018), Peer Smoking and Smoking-related Beliefs Among College Students in Bangladesh, *J Prev Med Public Health*.
- Kobus, K. (2003). Peers and adolescent smoking. *Addiction*, 98 (1), 37-55.
- McMillan, B., dan Conner, M. (2003). Using the theory of planned behaviour to understand alcohol and tobacco use in students, *Psychology, Health and Medicine*, 8 (3), 317-328.
- Mercken L, Candel M, Willems P dan de Vries H., (2009), Social influence and selection effects in the context of smoking behavior: changes during early and mid adolescence. *Health Psychology* ;28(1):73–82.
- Mercken L, Candel M, van Osch L dan de Vries H., (2011), No smoke without fire: the impact of future friends on adolescent smoking behaviour. *British Journal of Health Psychology*; 16(1):170-88.
- Moan ,I.S., (2005), Smoking or not smoking: How well does the theory of planned behaviour predict intention and behaviour? *Thesis submitted in partial fulfilment of the requirements for the degree Philosophiae Doctor (Ph.D.)*
- Pennanen, M., (2012), School achievement, family factors and smoking prevention A three-year follow-up of a smoking prevention programme in Helsinki , *National Institute for Health and Welfate*, Helsinki, Finland
- Republic of Indonesia Government Regulation Number 19 of 2003 concerning Safeguarding Cigarettes for Health
- Government Regulation (PP) number 109 of 2012 concerning Safeguarding Materials Containing Addictive Substances in the Form of Tobacco Products for Health
- Quine,S., Stephenson, J.A., (1990), Predicting Smoking and Drinking Intentions and Behavior of Pre Adolescents: The Influence of Parents, Siblings, and Peers Family *Systems Medicine*, Vol. 8, No. 2
- Roosmalen E.H.V., dan Daniel, S.A.M., (1989), Peer Group Influence as a Factor in Smoking Behavior of Adolescents, *Winter*; 24, 96; Periodicals Archive Online pp. 801

- Scalici, F., Schulz, P.J., (2014) , Influence of Perceived Parent and Peer Endorsement on Adolescent Smoking Intentions: Parents Have More Say, But Their Influence Wanes as Kids Get Older *PLOS ONE* www.plosone.org | Volume 9 Issue 7 e101275
- Simons-Morton B and Farhat T, (2010), Recent findings on peer group influences on adolescent smoking. *Journal of Primary Prevention*;31(4):191-208.)
- Steinmayr, R., Meißner, A., Weidinger, A.F., Wirthwein L., (2017), *Academic Achievement*, Oxford Bibliographies, DOI: 10.1093/obo/9780199756810-0108
- Sterling, K.L., Diamond, P.M., Mullen, P.D., Pallonen, U., Ford, K.H., dan . McAlister ,A.L., (2007), Smoking-related self-efficacy, beliefs, and intention: assessing factorial validity and structural relationships in 9<sup>th</sup>–12<sup>th</sup> grade current smokers in Texas *Addict Behav.* 32(9): 1863–1876.
- Su, X., Sian, L.L., Griffiths, Gao, Y., Lau, J.T.F., (2015), Smoking behaviors and intentions among adolescents in rural China: The application of the Theory of Planned Behavior and the role of social influence , *Addictive Behaviors* 48;44-51.
- Talip, T., Murang Z., Kifli, N., Naing, L., (2016), Systematic Review of Smoking Initiation among Asian Adolescents, 2005-2015: Utilizing the Frameworks of Triadic Influence and Planned Behavior, *Asian Pacific Journal of Cancer Prevention, Vol 17*
- Turner L, Mermelstein R and Flay B., (2004), Individual and contextual influences on adolescent smoking. *Annals of the New York Academy of Sciences*; 1021:175–97.
- US Department of Health and Human Services, (2000), *Reducing tobacco use: a report of the Surgeon General*. Atlanta, Georgia: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health
- Wood L, Lang A and Coase P., (2005), *Smarter than Smoking Qualitative Research*. A research report. West Perth, Australia: *TNS Social Research*
- Xu, X., Liu, D., Sharma , M., dan Zhao, Y., (2017), Prevalence and Determinants of Current Smoking and Intention to Smoke among Secondary School Students: A Cross-Sectional Survey among Han and Tujia Nationalities in China, *Int. J. Environ. Res. Public Health*
- Zhu, C., Cai, Y., Li, J.M.N., Zhu, J., He, Y., Redmon, P., Qiao, Y., (2013), Predictors of Intention to Smoke among Junior High School Students in Shanghai, China: *An Empirical Test of the Information-Motivation-Behavioral Skills (IMB) Model*, *PLOS ONE* | www.plosone.org Volume 8 Issue 11 e80482