Insight: Jurnal Ilmiah Psikologi,
Vol. 25 No. 2, August 2023, pp. 120-130

e-ISSN: 2548–1800
p-ISSN: 1693–2552

# Smoking in adolescents: The effect of academic stress and smoking self-efficacy

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*Artikel history*

| *Received* | *Revised* | *Accepted* | *Published* |
|---|---|---|---|
| *2023-07-04* | *2023-07-16* | *2023-08-03* | *2023-08-30* |

**Keywords:**

Smoking;
Self efficacy;
Academic stress

**Abstract**

Although smoking is a harmful habit, a considerable number of people smoke, especially young people. Adolescents are encouraged to smoke for many reasons. The objective of this study was to evaluate the relationship between teenage smoking self-efficacy and academic stress prediction. One hundred adolescents who smoked served as the subjects. The smoking behavior scale, the academic stress scale, and the smoking self-efficacy scale were the tools used in this investigation. Multiple regression analysis was used to examine the data. Multiple linear regression analysis results indicated that smoking self-efficacy and academic stress have a significant predictive relationship with smoking behavior. This variable has a coefficient of determination of 28.8%. Stress from school has a lower contribution than smoking self-efficacy. Therefore, increasing smoking self-efficacy through improved emotional regulation skills and assertiveness when declining offers to smoke can help reduce adolescent smoking behavior. In addition, teaching teenagers how to adaptively handle their academic stress will prevent them from turning to smoking or cigarettes as a coping mechanism.

*How to cite*: Astuti, K., Waseso, A.P. (2023). Smoking in adolescents: The effect of academic stress and smoking self-efficacy. *Insight: Jurnal Ilmiah Psikologi*, *25*(2), 120-130. doi: https://doi.org/10.26486/psikologi.v25i2.3530

## INTRODUCTION

Based on the 2019 Southeast Asia Tobacco Control Alliance report (Wiwoho, 2020), with 65.19 million smokers, Indonesia is the nation with the greatest smoking prevalence in all of Southeast Asia. Using data from the 2018 Basic Health Survey (Kementerian Kesehatan Republik Indonesia, 2018) After China and India, Indonesia has the third-highest percentage of smokers worldwide. According to the 2018 Basic Health Research, one in three Indonesians, or 33 percent of the country's population, smoked, and two out of every three Indonesian men smoked, or 63 percent of smokers overall. This is the third-highest percentage of smokers in the world. Based on Riskesdas results in 2018 (Kementerian Kesehatan Republik Indonesia, 2018), the national prevalence of smoking behavior among those over ten is known to be 29.3%; in 2018, that number was slightly lower at 28.8%. In contrast, the prevalence in Yogyakarta's Special Region province was 23.5% in 2018. According to 2013 data, 7.2% of people aged 10 to 18 smoke regularly. This percentage rose to 8.8% in 2016 and 9.1% in 2018, with an average of 12.3 sticks smoked per day; Bangka Belitung had the highest number of 18.3 sticks smoked, while DIY had the lowest average of 10.

e-ISSN: 2548–1800
p-ISSN: 1693–2552

The government is concerned about the rising smoking rate, particularly among children and teenagers (15–19 years old). The non-communicable diseases that result from the unhealthy smoking habit are directly correlated with the high prevalence of smoking, which also progressively increases the financial and social costs associated with it. Loss of demographic bonus opportunities and an increase in the health burden will result from this rise in smoking prevalence. If only 10% of these smokers develop chronic illnesses as a result of their smoking, there will be about 6.5 million BPJS users and significant medical costs (Wiwoho, 2020). Adolescent smoking is frequently considered as a minor habit, despite the numerous risks associated with smoking. Teens who smoke face a number of long-term health risks, such as an increased risk of heart disease and stroke, a disruption in their physical fitness, an increased risk of lung cancer, a higher frequency of physical and mental health issues, an increased risk of alcohol and drug abuse, and a higher likelihood of engaging in other risky behaviors like fighting and promiscuous sexual behavior (Utari, 2021). Smoking among older adolescents significantly increased the probability of using alcohol, marijuana, hard drugs, or multiple drugs during young adulthood. Early initiation of tobacco use among adolescents is associated with the use of other substances (National Center for Chronic Disease Prevention and Health Promotion, 2012).

Tobacco smoking can be treated in a number of ways, but relapse rates are still high, so creative interventions are required to lower smoking rates worldwide (Staiger et al., 2018). Numerous initiatives have been implemented in Indonesia to address the issue of smoking, such as the warnings about the health risks of smoking that are printed on packs of cigarettes, the availability of Quit Line services for quitting, and the establishment of Smoking Free Areas (KTR) in 245 urban districts that are intended to restrict people's space for smoking (Kementerian Kesehatan RI, 2018). Similarly, several smoking behavior interventions have also been investigated and have produced a variety of findings. For instance, self-control exercises are successful in lowering smoking behavior (Ramopoly et al., 2015). Hypnotherapy with part therapy techniques decreased cigarette consumption (Giyati. et al., 2019). Bos et al., (2019) discovered that neither the experimental group nor the control group's daily cigarette consumption was significantly decreased by Inhibitory Control Training. Because of this, the program's availability has no direct effect on decreasing smoking behavior, as shown by Indonesia's high smoking rate.

Smoking among youth, including adolescents, is associated with many factors. National Center for Chronic Disease Prevention and Health Promotion, (2012) highlighted that early smoking is associated with a variety of factors, including low socioeconomic status, smoking among siblings and peer groups, the belief that smoking is normal, low academic achievement, a lack of ability to resist social pressure to smoke, low self-esteem or self-image, thinking that smoking has health benefits and low self-efficacy. Smoking is also associated with many factors, encompassing knowledge of the dangers of smoking (Rochayati & Hidayat, 2015), peer group interactions, family interactions, cigarette

e-ISSN: 2548–1800
p-ISSN: 1693–2552

advertisements and smoking attitudes (Rachmat et al., 2013), parenting and self-control (Hartini & Wulaningsih, 2015), and coping strategy for stress (Rosario et al., 2011).

Stress is believed to have a role in the development of smoking behavior, even though stress cannot be eliminated by smoking. Bawuna et al., (2017) said that teenagers are vulnerable to stress. Various academic problems cause stress (Alsulami et al, 2018). Overloading students with coursework, final exams, theses, and parent demands (off-campus) are the problems on campus. Academic stress is the term for the stress that adolescents feel as a result of issues with their education. Academic stress arises from the body's reaction to demands related to education that surpass an individual's capacity for adaptation (Alsulami et al., 2018). Exam pressure, academic overload, and oral presentation assignments are the three main sources of stress in the classroom. A person's academic performance will suffer and they may become more prone to unhealthy behaviors like smoking if their academic stress levels rise (Weitzman & Chen, 2005). Negative emotions as adolescents stress experience are related to smoking (Fucito & Juliano in Sarafino & Smith, 2014). Nichter et al., (2007) Adolescents frequently smoke to lessen their perceived stress, and smoking is thought to be a nonverbal cue for stress to obtain social support. Smoking is regarded as a stress and anxiety reliever. According to coping theories, smoking is a coping method for stress and other unpleasant emotions. Because nicotine suppresses the brain's nervous system, it causes biochemical reactions that have calming and pleasant effects (Sarafino & Smith, 2014).

On the other hand, many studies on smoking behavior involve variables of self-efficacy (Elshatarat et al., 2016; Gwaltney, C et al., 2009; Poggiolini, 2019). Bandura, (1997) claimed that a person's perception of his or her capacity to plan and execute the necessary actions to achieve the desired outcomes is known as perceived self-efficacy. Moreover, self-efficacy will distinguish people in their ways of feeling, thinking, and acting. There is a strong correlation between self-efficacy and social integration, high achievement, and health (Schwarzer, 1998). Some of the applications of self-efficacy theory in specific behaviors or situations encompass dietary self-efficacy, nutrition self-efficacy, exercise self-efficacy, controlled drinking self-efficacy, abstinence self-efficacy, and smoking self-efficacy (Schwarzer & Luszczynska, 2011). Velicer et al., (1990) outlined how a person's belief in his ability to refrain from smoking in circumstances that would otherwise encourage him to do so can be defined as his self-efficacy regarding smoking behavior. These scenarios include those involving positive emotions or social interactions, negative emotions, and addiction/habit situations (Velicer et al., 1990). When faced with a negative emotional circumstance or the temptation to smoke around other smokers, people with high self-efficacy will be able to defend themselves. Even when the urge to smoke arises, people will be able to control their desire not to smoke. Individuals who have high beliefs about their ability to quit smoking will be more confident in their ability to predict whether or not they will begin to change their behavior, how much effort they will put in, and how long they will be able to

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p-ISSN: 1693–2552

resist the urge to smoke. This is due to the fact that people with high smoking self-efficacy will be able to manage their surroundings and behavior, whereas people with low self-efficacy in their ability to refuse cigarettes will be more likely to experiment with smoking and start smoking regularly (Bandura, 1997). Adolescents' smoking-related self-efficacy is a proximal predictor of their non-smoking behavior and is consistently negatively connected with their intention to smoke (Tucker et al., 2002). High self-efficacy is related to success in quitting smoking and preventing the possibility of relapse (Elshatarat et al., 2016), self-efficacy is directly related to the intention to quit smoking (Poggiolini, 2019);

Adolescence smoking is known to be influenced by a number of factors. Adolescents who are still in formal education have higher levels of academic stress, and studies on health behavior consider smoking self-efficacy to be a significant variable. Thus, the study's hypothesis is that smoking among teenagers can be predicted by smoking self-efficacy and academic stress.

## METHOD

This study quantitatively employs correlational methods. Academic stress and smoking self-efficacy were the predictor variables, and smoking was the criterion variable. Through purposive sampling, 100 late adolescents who smoke regularly and reside in Yogyakarta were selected as respondents. The smoking behavior scale, the academic stress scale, and the smoking self-efficacy scale are the three instruments used in this study. With four alternative responses—Very Appropriate (SS), Appropriate (S), Not Appropriate (TS), and Very Unsuitable (STS)—and scores ranging from 4 to 1, the three scales are set up in the Likert Scale model.

Smoking behavior was measured using a scale prepared by Ramopoly et al., 2015) which was created based on factors related to smoking behavior, such as the purpose, intensity, location, and timing of smoking (Smet, 1994). For instance, smoking calms me down, and I discover that smoking helps me obtain through boredom. This scale has an alpha reliability coefficient of measurement of 0.903 and an item differential coefficient that ranges from 0.344 to 0.802. Academic stress scale for quantifying physical, emotional, cognitive, and interpersonal symptoms of academic stress Sarafino & Smith, (2014). i.e I feel anxious when the assignment deadline is due the next day. The reliability coefficient alpha of the measurement results for the academic stress scale is 0.936, and its item differential power ranges from 0.304 to 0.776. The smoking self-efficacy scale is employed to evaluate a subject's ability to resist smoking even in high-risk circumstances, such as social settings, uncomfortable emotions, and cravings. This scale refers to the Smoking Self Efficacy from Velicer et al., (1990). i.e When you first wake up early in the morning I need cigarette. The smoking self-efficacy scale has an alpha reliability of 0.9210 and item differences ranging from 0.544 to 0.805.

Multiple linear regression analysis was used to analyze the data and determine the effects of smoking self-efficacy and academic stress on smoking behavior.

e-ISSN: 2548–1800
p-ISSN: 1693–2552

## RESULTS AND DISCUSSION

### 1. Descriptive data

The score categorization of the subject's answers was obtained

a. Smoking behavior

Smoking behavior is seen from the function of smoking for the individual, time, and place of smoking. The results of the categorization of smoking behavior can be seen in the table below:

**Table 1.** Categorization of smoking

| Categorization | Convention | Score | N | Percentage |
|---|---|---|---|---|
| High | $X > (\mu + 1\sigma)$ | $X > 45$ | 48 | 48% |
| Moderate | $\mu - 1\sigma \leq X \leq \mu + 1\sigma$ | $30 \leq X \leq 45$ | 46 | 46% |
| Low | $X < \mu - 1\sigma$ | $X < 30$ | 6 | 6% |
| | | Total | 100 | 100% |

According to the Smoking Behavior Scale, 48% of the subjects (48 in total), 46% of the subjects (46 in total), and 6% of the subjects (six in total) dropped into the high category. The majority of the subjects fall into the high category of smokers, it can be concluded.

The amount of cigarettes the subject smoked in a given day, which was broken down into three categories, also revealed information about their smoking habits (Smet, 1994): light smokers (smoked 1-4 cigarettes/day), moderate (5-14 cigarettes/day), heavy (15-20 sticks/day). The results of the categorization based on the subject's smoking intensity can be demonstrated in the following table.

**Table 2:** categorization of smoker

| Categorization | Cigarette | N | Precentage |
|---|---|---|---|
| Heavy | 15-20 | 20 | 20% |
| Moderaate | 5 - 14 | 52 | 52% |
| Light | 1- 4 | 28 | 28% |
| | Total | 100 | 100% |

Table 2 indicates the percentage of subjects who were heavy smokers (20 subjects), moderate smokers (52%, 52 subjects), and light smokers (28%, 28 subjects). According to the data, college students' smoking habits vary greatly in terms of intensity; however, over half of them fall into the moderate or heavy smoking categories. The success of quitting smoking will be impacted by this smoking category.

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p-ISSN: 1693–2552

b. Academic Stress

The score on the academic stress scale divided into three categories were, high, moderate, and low. These categories are illustrated in Table 3.

**Table 3.** categorization of academic stress

| Categorization | Convention | Score | N | Precentage |
|---|---|---|---|---|
| High | $X > (\mu + 1\sigma)$ | $X > 72$ | 21 | 21% |
| Moderate | $\mu - 1\sigma \leq X \leq \mu + 1\sigma$ | $48 \leq X \leq 72$ | 68 | 68% |
| Low | $X < \mu - 1\sigma$ | $X < 48$ | 11 | 11% |
| | | Total | 100 | 100% |

According to Table 3, 21% of the subjects (21 subjects) reported high academic stress, 68% (68 subjects) indicated moderate academic stress, and 11% (11 subjects) stated low academic stress. These findings suggest that exams, lecture assignments, interactions with lecturers, and other academic tasks can all contribute to students' susceptibility to academic stress.

c. Smoking self-efficacy

According to Table 3, 21% of the subjects (21 subjects) reported high academic stress, 68% (68 subjects) indicated moderate academic stress, and 11% (11 subjects) stated low academic stress. These findings suggest that exams, lecture assignments, interactions with lecturers, and other academic tasks can all contribute to students' susceptibility to academic stress.

**Table 4.** categorization of smoke Self-efficacy

| Categorization | Convention | Score | N | Precentage |
|---|---|---|---|---|
| High | $X > (\mu + 1\sigma)$ | $X \geq 25$ | 27 | 27% |
| Moderate | $\mu - 1\sigma \leq X \leq \mu + 1\sigma$ | $17 \leq X \leq 24$ | 59 | 59% |
| Low | $X < \mu - 1\sigma$ | $X \leq 16$ | 14 | 14% |
| | | Total | 100 | 100% |

High smoking self-efficacy is a sign of a subject's propensity to withstand smoking temptation. When a person has high smoking self-efficacy, they can control their urge to smoke even when they are in a risky environment—such as around smokers—or when they are feeling down.

**2. Hypothesis Testing**

The result of the multiple linear regression analysis was F = 19,590 (p <0.01). This indicates that there is a significant correlation between smoking self-efficacy and academic stress. The

 e-ISSN: 2548–1800
p-ISSN: 1693–2552

simultaneous impact of academic stress and self-efficacy on smoking behavior is 28.8% in magnitude. It follows that smoking self-efficacy and academic stress have a significant impact on college students' smoking behavior. In this study we found $R^2$: 0,288, its mean have large effect size (Cohen in Kotrlik & Williams, 2003). Effect size is strength of relationship (American Psychological Association, 2017).

The influence of smoking self-efficacy on smoking behavior is significant (t: 5.013; p<0.01) and the effect of academic stress on smoking behavior is also significant (t: 3.904; p<0.0. Additionally, by adjusting for smoking self-efficacy, the results demonstrated a correlation between academic stress and smoking of r = 0.369 (p<0.01). This suggests that the more academic stress experienced, the greater the amount of smoking that occurs, and the less academic stress experienced, the less smoking that occurs. The academic stress variable's coefficient of determination for smoking behavior is 13.61%. The relationship between smoking self-efficacy and smoking behavior by reducing academic stress is r=-0.454 (p<0.01); in other words, smoking behavior tends to be high when smoking self-efficacy is low and low when smoking behavior is high. Smoking self-efficacy has a 20.61% coefficient of determination on smoking behavior.

## DISCUSSION

The study's findings suggest that smoking self-efficacy and academic stress are predictive factors for adolescent smoking. An individual's reaction to pressure regarding his education that is deemed to be beyond his capabilities is referred to as academic stress. An imbalance between demands and personal capabilities leads to pressure, which alters an individual's response in terms of their physical, emotional, and behavioral aspects (Defie & Probosari, 2018). The stress coping model (Wills et al., 2004) explains that stress is a predisposing factor to adolescent use of addictive substances, including smoking. Sunaryo, (2008) implies that a student's disruption of concentration and reduction in physical activity will occur when they are under a lot of stress. Smoking causes the blood to absorb nicotine, which in turn causes the release of serotonin and dopamine, which makes you feel content and at ease. Additionally, blood-borne nicotine stimulates the adrenal glands to release the hormone adrenaline, which aids the body in using extraordinary energy to act quickly and overcome fatigue (Maisto et al., 2002).

The nicotine regulation model (Sarafino & Smith, 2014) explains that people who smoke will keep smoking to maintain their bodies' levels of nicotine stable and prevent the symptoms of withdrawal from nicotine. They will find it difficult to quit smoking when they are stressed out because they already believe that nicotine will help them overcome their problems (Wills et al., 2004). Bawuna et al., (2017) demonstrated that stress levels and smoking behavior have a positive correlation, with each smoker's smoking behavior being influenced by their stress levels. When people encounter stressful

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p-ISSN: 1693–2552

circumstances and lack constructive coping mechanisms, they may resort to unhealthy ones, such as abusing addictive substances like nicotine found in cigarettes. The amount of cigarettes smoked daily increases with perceived stress (Lawless et al., 2015; Sarafino & Smith, 2014). In an educational setting, academic stress is not unusual. According to Lawless et al. (2015), stress is a major risk factor for smoking behavior, with smoking increasing as perceived stress rises. Consequently, to avoid using cigarettes or smoking as a coping mechanism for stress, teenagers who are also college or university students need to be able to manage their stress adaptively. It is imperative to quit smoking as it is a harmful habit that contributes significantly to mortality rates in numerous nations.

Self-efficacy is another factor that has been extensively researched concerning health behavior, including smoking behavior. Self-efficacy is the belief in one's abilities to form certain behaviors and perform certain tasks. The self-efficacy of an individual is contingent upon the function's domain and the surrounding circumstances of the behavior (Bandura, 1997). Thus proper self-efficacy measurement must involve belief in one's abilities, behavior, and the context in which the behavior occurs (Forsyth & Carey, 1998). The self-efficacy measurement can be considered reliable if all three of these factors are addressed, as it aligns better with the self-efficacy theory.

Schwarzer & Luszczynska, (2011) argued that health-related self-efficacy refers to a positive self-perception about one's capacity to withstand unhealthy behavior temptations and embrace a healthy lifestyle. Self-efficacy is measured in several health behavior studies to determine whether it can be used to spur behavior change. Condiotte & Lichtenstein, (1981) suggested a positive relationship between self-efficacy and success in quitting smoking to apply self-efficacy theory to smoking behavior. The results of his study indicate that behavior execution is more profitable when self-efficacy is higher (Condiotte & Lichtenstein, 1981). Clyde et al., (2019) demonstrated the reciprocal and two-way relationship between smokers' smoking behavior and their self-efficacy in quitting. Smoking self-efficacy refers to a person's confidence in his or her capacity to endure circumstances that may motivate them to smoke, such as social or positive affective environments, addictive or habitual environments, and negative affective surroundings (Velicer et al., 1990). When around other smokers or in situations where their emotions are low, people with high smoking self-efficacy will be able to resist the urge to smoke. Also, even when the urge to smoke emerges, people will be able to control their will not to smoke. When encountered with challenges and obstacles related to the temptation to smoke, people who have high smoking self-efficacy beliefs will be confident in their ability to predict whether someone will start changing their behavior, how much effort they will put forth, and how long they will stick with it. This is because individuals who have high smoking self-efficacy will be able to control their environment and behavior (Bandura, 1997). These findings suggest that smoking self-efficacy plays a significant role in preventing teenage smoking when adolescents are around other smokers, experience a negative emotional environment, or feel a desire to smoke (Velicer et al., 1990).

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p-ISSN: 1693–2552

The study's findings suggest that smoking behavior can be simultaneously predicted by smoking self-efficacy and academic stress. This study differs from earlier research on smoking. Bawuna et al., (2017); Lawless et al., (2015) show that stress levels are related to smoking behavior. Condiotte & Lichtenstein, (1981); Elshatarat et al., (2016) demonstrated the importance of self-efficacy in treating tobacco use and smoking cessation programs. Numerous earlier studies illustrate that stress and self-efficacy play a partially recognized role. As a result, the findings of this study differ from those of earlier studies. This study suggests that interventions aimed at reducing smoking behavior need to be integrated and address both academic stress and smoking self-efficacy factors at the same time.

## CONCLUSION

Based on the research results and discussion, it can be concluded that smoking self-efficacy and academic stress can affect smoking behavior in adolescents. Academic stress and smoking self-efficacy have a 28.8% impact on adolescent smoking behavior. Therefore, it is possible to decrease adolescent smoking behavior by enhancing their smoking self-efficacy, enhancing their ability to control negative emotions, and developing their assertiveness in refusing offers to smoke. Adolescents can also control their urge to abstain from smoking and reject peer pressure or invitations to smoke. Afterward, teaching teenagers how to adaptively handle their academic stress will prevent them from turning to smoking or cigarettes as a coping mechanism.

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