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Mechanism Distress Tolerance Driven Smoking Addiction Behavior Among Indonesian Adults

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ABSTRACT
In almost every year, Indonesia is experiencing higher burden of disease and an increase in the number of deaths due to smoking. To stop the increase in the number of smokers, the researchers look at the factors that play a role in smoking behavior. Previous research has shown that one of the factors is negative emotions will increase an individual's frequency of smoking, but other research conclude that higher negative emotions or lower distress tolerance does not increase smoking frequency. Therefore, to solve it, researchers focus to examine the role of distress tolerance toward smoking behavior in the context of Indonesian Adults. This research uses an associative descriptive quantitative design with path analysis technique. The samples of this study were taken proportionally and randomly with a total of 232 participants of Indonesian adults. The result is each decrease in distress tolerance will cause an increase in smoking behavior. Distress tolerance has a contribution of 12.2% to smoking behavior. Through this study, it was concluded that smoking behavior will increase if the individual poorly understands, accepts, places and regulates negative emotions. The findings of this study expand literature, and help reduce smoking behavior in addictive smokers ranging from themselves, practitioners to national regulations that can be carried out by the government.

Keywords: *Tolerance, Distress, Smoking behavior.*

1. INTRODUCTION

Cigarette consumption is the second leading cause of death and the fourth leading risk factor for disease in the world [1] because cigarettes contain more than 4000 chemicals and 20 of them are harmful to the human body [2]. Cigarettes are consumed with a percentage of 57% of the population of Asia and Australia, 23% of the population of Europe, 12% of the population of America and 8% are from Africa [3]. Almost every year, the number of smokers in Indonesia continues to increase [4], leading to increasing mortality rates and smoking-related diseases [3]. If this trend is allowed, about 7 million people from developing countries will be killed by smoking. Their people include people of productive age. The impact of smoking behavior is not only killing the smoker, but also people such as infants and children who are exposed to cigarette smoke as passive smokers.

The increase in smokers in Indonesia occurs due to the societal pattern that initiates smoking behavior from cigarette abuse or substance abuse before the legal age, followed by nicotine dependence and ends with nicotine addiction [5]. This reaction occurs because the body has adapted to the interaction between nicotine and nicotine acetylcholine cholinergic receptors (nAChRs) which releases dopamine, norepinephrine and serotonin, giving the user the feelings of calm and relaxation. This phase causes withdrawal symptoms when the user stops smoking [6]. Action is needed to stop the increase in the death rate by looking the influencing factors of smoking behaviors.

Human behavior, especially in smoking behavior, is very fit when explained through cognitive social theory proposed by Rotter. Rotter suggested that human behavior is the result of the interaction between the cognition and the environment [7]. Cognitive interaction with the environment can be seen through the distress tolerance variable. Distress is an unpleasant experience on a continuum of feelings of sadness, fear to more serious feelings such as depression, anxiety, and panic, feelings of isolation or spiritual crisis [8].

Therefore, distress tolerance is an individual's ability to cope with stressful situations [9]. Distress tolerance is a cognitive response that arises due to an unpleasant environment. From this theory, it is clear that there is an interaction between cognitive and environmental. Considered a cognitive response because it occurs autonomously [10], this perceives the stressor as a threat, triggering a biological reaction. The biological reaction begins with the release of epinephrine and adrenaline hormones that activate the acceleration of heart rate, blood pressure, respiration and mobilization of glucose in the blood [10]. Next, there is a either fight or flight response of the negative affect experienced.

Some smokers feel a much calmer mind when smoking [11]. So when in a stressful situation, smokers will rarely get angry or upset. As a result, most of them decide to become active smokers on the grounds that smoking is a stress reliever [12].

Rotter also revealed that behavior will persist if individuals receive positive reinforcement [13]. In smoking behavior, the pattern that arises will persist because individuals receive positive reinforcement internally in the form of feelings of calm, relaxation, enthusiasm, and others positive affect. As a result, smokers perform behaviors repeatedly to get continuous positive reinforcement.

The lower value on the distress tolerance variable indicates that the individual is less able to tolerate feelings of irritation. Therefore, said the individual will avoid negative emotions or move away from unpleasant situations through certain activities [14], such as smoking, drinking alcohol, taking illegal drug, etc. However, a high value of distress tolerance variable indicates that the individual is quite able to understand negative emotions, perceive negative emotions as acceptable, place negative emotions in the right place, and regulate emotions towards more positive endeavour.

Previous research explained that negative emotions increase an individual's vulnerability to smoking and frequency of smoking [15]. Other researchers conclude that lower distress tolerance does not cause a person to smoke more [16]. However, the role of distress tolerance on smoking behavior is not yet known, especially in the resulting addiction smoker in the context of Indonesian society.

Therefore, this study aims: (a) To investigate the mechanism of the role of distress tolerance on smoking addiction behavior in adult individuals in Indonesia; (b) To see the magnitude of the role distress tolerance in individuals. The findings of this study provide insight into how distress tolerance can improve smoking behavior.

The hypothesis of this study is that there is a role for tolerance distress to smoking behavior. The relation that exists is a negative relationship. As a result, any increase in tolerance distress will cause a decrease in smoking behavior. This hypothesis is made because the gradually decreasing value on the stress tolerance construct will make the individual unable to survive in an unpleasant situation. As a result, the individual will try to avoid these feelings by looking for things that can provide positive affection.

One activity that is often associated with positive effect, such as feeling calm and happy, is smoking. By burning a cigarette and smoking it, the individual's body will release neurotransmitters in the form of dopamine, norepinephrine, and serotonin which produce feelings of calm, happiness, and excitement. Therefore, the lower the distress tolerance value, the higher the smoking behavior is caused.

The challenges and difficulties in stopping smoking are because individuals cannot fulfill the dimensions of distress tolerance. Dimension of distress tolerance are a) tolerance, b) appraisal, c) absorption and d) regulation [17]. The individual's inability to carry out the tolerance dimension is characterized by the individual's inability to understand the negative emotions he or she feels. The low appraisal dimension makes individuals unable to perceive negative emotions as natural things. The low absorption dimension makes it difficult for individuals to place negative emotions at the right time and situation. The low regulation dimension makes it difficult for individuals to change their negative emotions into positive things

The role of distress tolerance raises certain smoking behavior. Smoking behavior is the behavior of burning tobacco and then smoking it through pipes, cigarettes, or e-cigarettes or vape [18]. The smoking behavior shown is divided into 4 types, namely light smokers, moderate smokers, heavy smokers, and very heavy smokers. Light smokers are individuals who smoke less than 10 cigarettes per day, moderate smokers can spend 11-21 cigarettes per day, heavy smokers can spend 21-30 cigarettes per day, while very heavy smokers spend more than 31 cigarettes per day.

The research framework emerged based on social learning theory. That smoking behavior is based on the individual's cognitive ability to tolerate distress form an environment that is considered threatening. The lower individual's ability to tolerate distress, the higher smoking behavior shown. A person's ability to tolerate distress can be seen through the dimension that shape it. If the subject fulfills more dimensions, then the ability to tolerate distress in the subjects is getting better. If the subject fulfills all dimension of distress tolerance, it causes low smoking behavior, so it is likely that the subject is in the light smoker category.

Figure 1 is a hypothetical model for the role of distress tolerance.

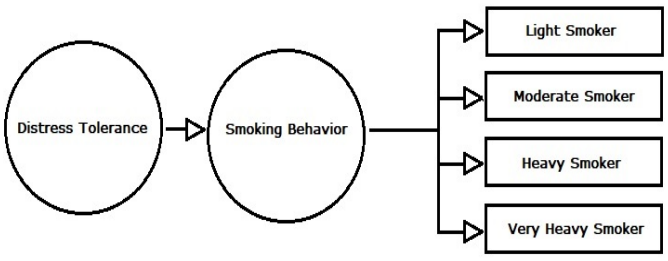

Figure 1 The model hypothesis

2. METHOD

This study involved 232 participants. The criteria include: a) Male and Female older than 17 years old; (b) a member of a community organization or mass organization in Cianjur; (c) Smokes daily, (d) Has been a smoker for more than 6 months. Subjects were selected through proportional random sampling technique, which is a sampling technique based on a predetermined area or population group.

Choosing the P community organization in Cianjur was based on the fact that the highest percentage of smokers in Indonesia is in West Java Province at 32.7%. In Cianjur Regency, the percentage of smokers is of 31.1%. 70% of the Cianjur citizens are also the members of the P community organization; therefore, this number can represent the smoking population in Indonesia.

The method used in this study is descriptive associative with path analysis techniques which aims to determine the role between two or more variables by measuring the coefficient or significance of the variables using statistical processing. The research instrument used was the Distress Tolerance Scale (DTS) to measure the distress tolerance variable with a reliability value of 0.837 and the Glover-Nilsson smoking behavioral questionnaire (GNSBQ) to measure smoking behavior with a reliability value of 0.755.

The procedure in this study begins with testing the validity and reliability of the measuring instrument. The researcher then tested the classical assumption as a prerequisite for the regression test. Classical assumption test consists of normality test, multicollinearity test and heteroscedasticity test. Normality test aims to conclude whether the observed population is normal. The multicollinearity test was conducted to determine whether there were symptoms of multicollinearity. The heteroscedasticity test is used to see whether the linear regression model has an inequality of variance from one residual to another.

The researcher then conducted a partial regression test to see the role of distress tolerance on smoking behavior. Lastly, to see the magnitude, the researcher tested the coefficient of determination.

3. RESULT AND DISCUSSION

The role of distress tolerance and conformity to smoking behavior was tested by classical assumption test method and multiple regression test. It was found that the data were normally distributed through normality testing, with a significance value of 0.200 > 0.05. The Q-q graph (figure 2) plot shows that the dots are close to the line. This means that the data does not contain bias in certain categories.

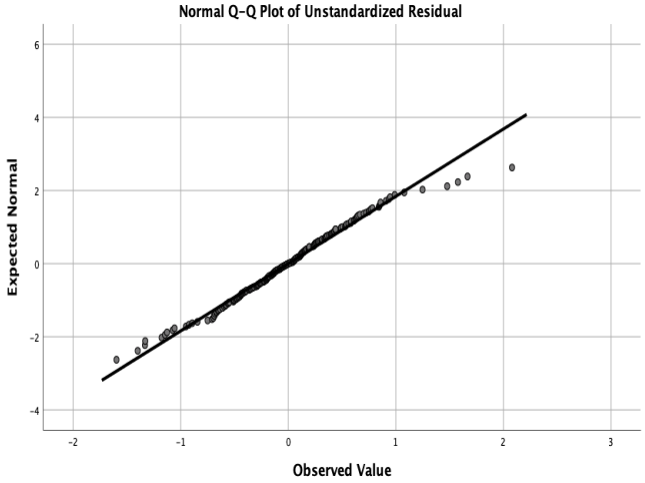

Figure 2 Normality test

There is also no multicollinearity in the data because the VIF value is 1,000 < 10 (figure 3).

Constant	Multicollinearity		
	t	sig	VIF
Distress Tolerance	-5.858	0.000	1.000

Figure 3 Multicollinearity test

The data does not contain heteroscedasticity, because the points are spread out (figure 4), so it can be ensured that the data distribution is consistent over time and can estimate the model correctly.

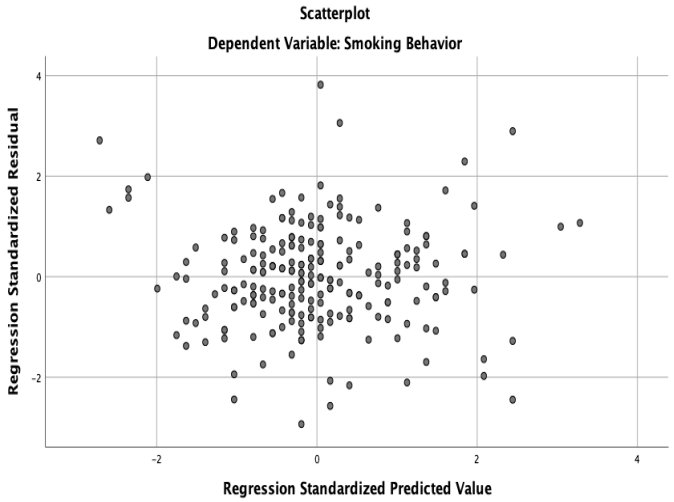

Figure 4 Scatterplot heteroscedasticity

Through regression analysis, it is known that the significance value is 0.000. Because the significance value is 0.000 < 0.05, then H1 is accepted, meaning that distress tolerance plays a role in smoking behavior.

Model	Unstandardized Coefficients		t	Sig.	R^2
	t	Std. Error			
Distress Tolerance	-0.33	-5.53	0.000	-5.53	0.122

Figure 5 Regression test and coefficient determination (R^2)

The regression coefficient for the independent variable distress tolerance is negative, indicating that there is a non-unidirectional role between distress tolerance and smoking behavior. The regression coefficient for the distress tolerance variable is -0.33, which means that for one unit increase in distress tolerance, it will cause a decrease in smoking behavior by 0.33. So it can be concluded that the lower a person's ability to understand, accept, place, and regulate negative emotions, the higher the smoking behavior of said person.

After being proessed using categorization based on the mean and standard deviation, it was found that the subjects with low distress tolerance were 20 participants or 8.6% of the total number of participants. Subjects included in the moderate category amounted to 195 peoples or 84.1%. Subjects with high distress tolerance totaled 17 participants with a percentage of 7.3%. So most of the participants' ability to tolerate distress is moderate, which tends to be low. This means that in performing the ability to tolerate disrtress, the subject is less able to tolerate negative emotions. Detailed explanation in figure 6.

Category	f	%
Low of distress tolerance	20	8.6
Moderate of distress tolerance	195	84.1
High of distress tolerance	17	7.3
Total	232	100.0

Figure 6: The category of distress tolerance on the subject

The type of smoker that produced the most was moderate smoker. Detailed explanation as in figure 7

Number of Cigarrete / day	Category	f	%
1-10 cigarette stick	Light smoker	78	33.6
10-20 cigarette stick	Moderate smoker	111	47.8
20-30 cigarette stick	Heavy smoker	37	15.9
Above 30 cigarette stick	Very heavy smoker	6	2.6
Total		232	100

Figure 7: Type smoker that produce

From above explanation, a distress tolerance mechanism is formed that shapes smoking addiction behavior. It begins with a tendency for individuals to have low distress tolerance, making individuals more susceptible to trying smoking behavior. This is then followed by the existence of a supportive environment for individuals to try cigarettes before the legal age, leading to substance abuse. At this stage they are still a light smoker. If the individual has passed the legal age, smoking behavior usually develops to moderate or even to very heavy smoking behavior depending on their ability to tolerate distress. The individual then enters the phase of nicotine dependence.

If the body has adapted to the usual dose of cigarettes consumed, it will lead to nicotine addiction. The addiction phase will cause individuals to feel withdrawal symptoms when they try to stop smoking. The better the individual at tolerating distress, the less likely the individual is to try cigarettes and exacerbate smoking behavior, because the individual will not increase the dose of cigarettes if they are distressed.

The magnitude of the contribution of the role of distress tolerance is obtained through the coefficient of determination test. Through this test, it was found that distress tolerance has a contribution through R^2 (figure 5) of 12.2% to smoking behavior while the other 87.8% is explained by other variables.

This finding is contradictory to research conducted by Veilleux [16], that lower distress tolerance does not cause smokers to smoke with a higher smoking frequency. This study shows that lower distress tolerance make greater smoking frequency. This difference in results may be due to differences in participants' cultural backgrounds. This clearly affects the level of understanding of the impact of smoking or risk perception of the subjects. According to previous studies, risk perception determines the frequency of smoking in individuals [19]. In Indonesia, efforts to increase risk perception include campaigning for the adverse effects that arise from smoking behavior, but this has a minor effect on the smoking habits of the Indonesian people. As a result, people continue to increase the frequency of smoking as long as they have not experienced the adverse effects.

The campaign has little to no effect because Indonesian people are unlikely to obey regulations or become law abiding citizens. Indonesia is ranked 102 out of 106 countries in terms of complying with regulations. Therefore, cooperation between the government and the people is needed to reduce smoking behavior in Indonesian society.

This study has limitations, one of which is not factoring how long the individuals have been smokers. It is important to look at how long an individual has been a smoker, because the frequency of smoking behavior is also influenced by how long the individual has been a smoker [20].

4. CONCLUSION AND SUGGESTION

Overall, the results support the proposed framework. The framework is that decrease in distress tolerance will increase smoking behavior. Therefore, the conclusion of this study is that the worse the individual at tolerating negative emotions or distress, the higher the smoking behavior which is indicated by the increasing frequency of cigarettes consumption.

The findings of this study contribute to the clinical psychology literature and are practical for any smokers with nicotine addiction who wish to quit smoking. From a theoretical perspective, this study expands the literature on distress tolerance as a smoking behavior factor. To stop nicotine dependence, a program that improves distress tolerance is needed.

For smokers with nicotine addiction, this study can be used as a reference. In order to reduce or stop smoking behavior, they need to better tolerate negative feelings in a way that individuals are willing to accept and understand their negative feelings and are able to put these emotions in the right place, so that individuals can replace the desire to smoke to something more positive. The government can also get involved in reducing the number of smokers.

Efforts to stop smoking behavior can also be started with coping strategies against distress [21]. The first strategy is problem focus coping, which is direct action to solve problems or seek information related to solutions. The method used is a direct action effort. One of the examples is replacing smoking with other activities such as chewing gum. The second strategy is emotional focus coping, which refers to desire to reduce negative affect reactions to stress. Aims to control, regulate, and direct emotional reaction to stressful situations so that negative emotional reactions do not appear. One example of this emotional control is by remembering the dangers of smoking and seeing pictures of victims because of smoking.

The most direct action to stop or reduce smoking behavior is to close the cigarette industry. However, it will reduce the country's foreign exchange earnings. Another alternative that the government can do is to monitor the use of cigarettes and narrow the space for cigarette users. The effort in monitoring the use of cigarettes may include the establishment of vending machines for the sale of cigarettes. This machine requires the buyer to present an identity card to verify that the buyer is at legal age. This is complemented by efforts to narrow the space for smoking users, which restricts smoking to special rooms along with certain requirements, such as carrying a specially designed cigarette wallet to collect ash and cigarette butts. People who violate the rules are given sanctions or fines. With this, smoking behavior in general will decrease.

Future research is expected to overcome the limitations in this study, including looking at the history of being a smoker and seeing the risk perception of the Indonesian adults. The uniformity of smoking history ranges allows further research to be able to see impact of distress tolerance on smoking behavior as a whole. Because the longer that person is smoking, the higher is the smoking behavior [20]. Information about risk perception on the subject can also be the answer to the differences in results with previous studies.

Through this research, practicing psychologists or psychological scientists are expected to develop a smoking addiction cessation program based on an understanding of distress tolerance. Program that adhere to the concept of distress tolerance are related to mindfulness-based programs. This program can be combined with a nicotine replacement therapy (NRT) program.

AUTHORS CONTRIBUTIONS

IY and ST led the project. IY and ST conducted research in the field. IY took the data, processed the data, and wrote the manuscript. ST and MJ supervised and revised the manuscript.

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