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The Influence of Self-Concept and Locus of Control on Rural Preadolescent Tobacco Use

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Abstract

Purpose: To examine the influence of self-concept (home, school, peer) and locus of control (internal, external) on rural preadolescent tobacco use (use, never use).

Methods: A cross-sectional design with a sample of fourth and fifth grade students ($N = 666$), ages 8 through 12, and enrolled in five rural public schools in Georgia. Four brief scales were utilized: Student Information Data Form, Hare Self-Esteem Scale, Nowicki-Strickland Children's Locus of Control Scale, and Tobacco Use Self-Report. Data were analyzed using descriptive statistics, chi-square, t -test, and logistic regression.

Results: Preadolescent tobacco users totaled 9.2% of the sample, which was greater than the rural norm of 4.2% to 5%. Those who used tobacco were more likely to be boys (OR = 2.9; 95% CI = 1.65, 5.09; $p = .0002$), have lower home self-concept score (OR = 0.93; 95% CI = 0.88, 0.99; $p = .03$), and have lower school self-concept score (OR = 0.93; 95% CI = 0.88, 0.98; $p = .009$) than those who never used tobacco.

Conclusion: We found that being male was the most important factor associated with experimental smoking and that self-concept was also associated. Further studies are recommended to identify other contributing factors of tobacco use among rural preadolescents.

***Keywords:* Self-Concept, Locus of Control, Tobacco Use, Preadolescents, Rural**

Introduction

Tobacco use is the single leading preventable cause of premature death and disability in the United States, accounting for over 440,000 deaths each year among adults, or an estimated one in every five deaths.¹ Approximately 3 million adolescents

in the United States use tobacco.²

Each day in America, approximately 4,400 teens and preteens try their first cigarette and an additional 2,000 children become regular smokers.³ The younger the individual begins to use tobacco, the more likely that the individual will

smoke as an adult.⁴ Earlier onset is also associated with heavier use; those who begin to use tobacco as young adolescents are likely to be the heaviest users of tobacco as adults. Commonly considered as a “gateway drug,” use of tobacco is also associated with other forms of substance abuse, such as alcohol and marijuana use.⁴ Tobacco use is also a predictor of risky behavior in adolescents, as well as of violent events, such as car accidents and homicides.^{5,6}

Healthy People 2010 has targeted tobacco use as one of the 10 leading health indicators for adolescents and adults in the United States.⁷ One of the objectives included in *Healthy People 2010* is to reduce cigarette smoking by adolescents from 35% to 16% in 2010. Another objective of *Healthy People 2010* is to increase by at least one year the age of first use of tobacco by adolescents.⁷

The prevalence of tobacco use continues to be of national concern.^{2,8,9} Approximately 88% of adults who have tried a cigarette have done so by the age of 18 years. In addition, 71% of daily smokers become smokers before reaching age 18. The average age when smokers

first tried a cigarette was 14.5 years, and the average age at which they became daily smokers was 17.7 years.⁴

Literature Review

One out of three U.S. adolescents uses tobacco by age 18.⁴ The prevalence of tobacco use among middle school (grades 6 through 8) and high school students from the Youth Tobacco Surveys (YTS) gives some insight into the severity of the problem of tobacco use among youths of all ages.^{2,3} Current nationwide surveys on the prevalence of tobacco use among elementary school age students in grades five and under have not been conducted, although the Centers for Disease Control and Prevention (CDC) indicated that over 8% of middle school students began tobacco use before the age of 11 years.² A study of children in grades kindergarten through sixth found that the average percentage of tobacco use among grades kindergarten through fifth was 4.7%, but increased to 17.4% in the sixth grade.¹⁰ According to the U. S. Surgeon General, if adolescents can be kept tobacco-free, most will be

less likely to start using tobacco as adults.⁴

The Georgia Youth Tobacco Survey reported that among middle school students, the prevalence of ever using tobacco and current tobacco use were 49% and 14%, respectively, in 1999. ¹¹ The prevalence of ever using tobacco was 51% among male students and 47% among female students, and was higher for students in grade eight (59%) than for students in grade six (36%).¹¹

Studies indicate that children are initiating tobacco use at a younger age. In predicting adolescent smoking in a prospective study of personality variables, Burt et al.¹² found that smoking initiation began among children as young as fifth grade. In the study of the roles of gender, race, socioeconomics, and developmental status among children, Harrell et al.¹³ found that smoking initiation was common among children in grades three and four. Sarvela et al.¹⁰ found that smoking initiation occurred among children as young as kindergarteners in a study of first use of cigarettes among rural and small town elementary school children.

Tobacco use has many negative consequences for young people. Most adolescent smokers are addicted to nicotine, and are unable to quit smoking.⁴ Adolescents are more likely to use tobacco if they have lower levels of school achievement, lower self-images, fewer skills to resist pervasive influences to use tobacco, and friends who use tobacco. Cigarette advertising appears to increase young people's risk of smoking by affecting their perceptions of the pervasiveness, image, and function of smoking. Reducing adolescent use of tobacco and its negative effects successfully require community-wide efforts that include tobacco tax increases, enforcement of minors' access laws, youth-oriented mass media campaigns, and school-based tobacco use prevention programs.⁴

Understanding potential factors that may influence preadolescents to initiate and continue tobacco use may be useful in the development of tobacco prevention and smoking cessation intervention programs. Two potential factors that may influence tobacco use among preadolescents are self-concept and locus of control.^{2,4,14} Self-concept of

preadolescents is greatly impacted by factors in the home (parental approval), among their peers (peer acceptance), and in the school (scholastic achievement).¹⁵⁻¹⁸ Health behaviors of children are directly related to social-psychological factors of family relationships, school interactions, and self-image. Data support the position that the child's sense of control is critical to the child's evaluation of the self.¹⁸ As children enter preadolescent years, they learn emotional independence from parents and other adults. Self-control over life events increases, including control over those events that affect personal health. Thus, the variables of self-concept and locus of control are essential factors in which to evaluate the health behaviors of preadolescents with regard to tobacco use.

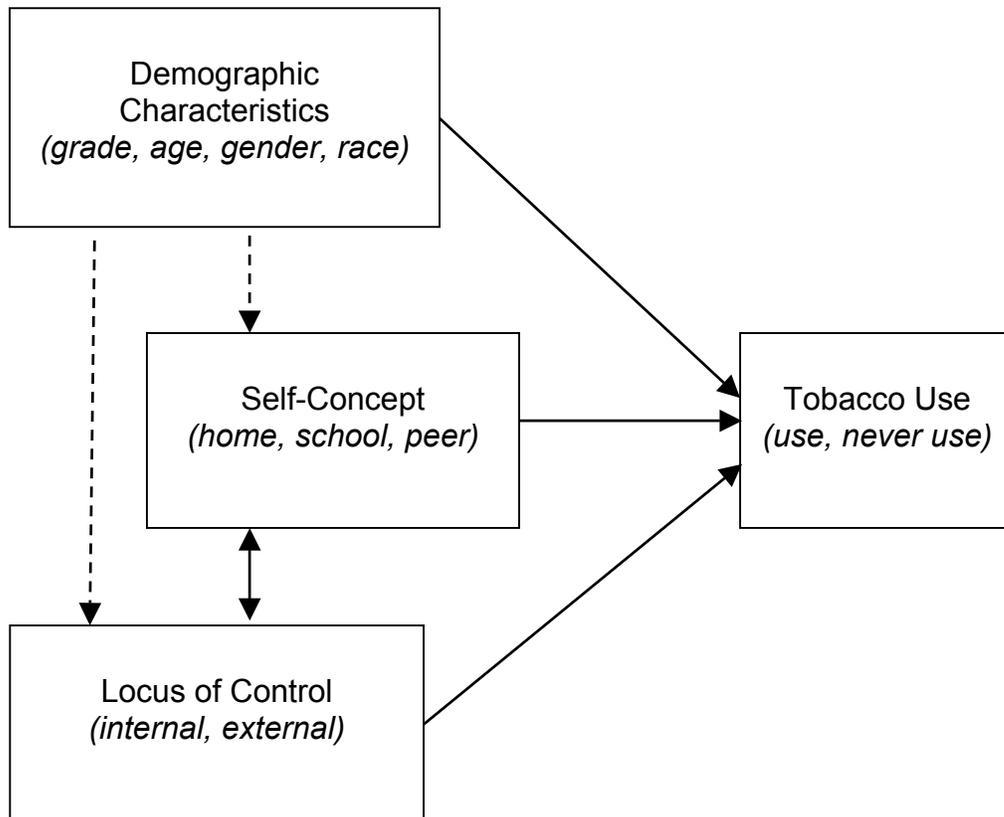
Most of the youth tobacco surveys conducted nationwide recruited participants from school systems and health care facilities in urban settings for the purpose of capturing relatively large sample sizes.² Few studies have investigated tobacco use among preadolescents, however, more extensive research is needed to examine factors that affect tobacco

use among rural preadolescents.^{10,13,19,20}

Three theoretical frameworks guided this study: self-concept development theory,^{16-18,21-29} social learning theory,³⁰ and locus of control theory (Figure 1).³¹ Self-concept is broadly defined as a person's perception of oneself, and is multifaceted and influenced by scholastic competence, social acceptance, family approval, athletic competence, and physical appearance.^{31,32} In social learning theory, personality represents an interaction of the individual with his or her environment and is influenced by behavior potential, expectancy, and reinforcement value.³⁰ Locus of control, as a reinforcement, is categorized into two components: "internal" control and "external" control.³¹ Internal locus of control refers to the perception of the event (as a reward or reinforcement) as being dependent upon the individual's own behavior and control, whereas, external locus of control refers to the perception of the event (as a reward or reinforcement) as being independent of the individual's own behavior and may

be considered as being beyond personal control.

Figure 1
Theoretical Framework Guiding this Study



Purpose and Research Questions.

The purpose of this study was to identify and measure potential factors that may influence rural preadolescent tobacco use. The following research questions were used to guide this study and were outlined in Figure 1:

1. What is the self-concept of the preadolescent sample?
2. What is the locus of control of the preadolescent sample?
3. What is the tobacco use of the preadolescent sample?
4. What is the relationship between the preadolescents' demographic characteristics and tobacco use?
5. What is the relationship between the preadolescents' self-concept and tobacco use?

6. What is the relationship between the preadolescents' locus of control and tobacco use?
7. Does the effect of self-concept and locus of control on tobacco use differ by demographic characteristics (grade, age, gender and race) among rural preadolescents?
8. What is the relationship between both the preadolescents' demographic characteristics and self-concept on their tobacco use?
9. What is the relationship between both the preadolescents' demographic characteristics and locus of control on their tobacco use?
10. What is the relationship between both the preadolescents' self-concept and locus of control on their tobacco use?

Methods

A cross-sectional design was employed to explore potential factors in rural preadolescents, specifically students in grades four and five, that may be associated with tobacco use. Concepts measured were self-concept, locus of control, and tobacco use. Tobacco use was operationally defined as cigarette smoking. The purpose of this article is to report the

findings of tobacco use among rural preadolescents related to their self-concept scores and locus of control scores. Independent variables included demographic characteristics of grade, age, gender, and race; self-concept as it related to home, peer, and school environments; and locus of control as being internal or external. The dependent variable was tobacco use as being use or never use.

Sample. Participants were preadolescents from five schools in three counties located in Georgia. Inclusion criteria were identified as children who were: (a) enrolled in grades four and five in public school systems in rural counties with population of less than 25,000, (b) within the age range of 8 to 12 years, and (c) able to read and write in English. Sample analysis estimated the sample size to be $N = 553$.

Instruments. Four research instruments were incorporated into one questionnaire entitled "Survey on How You Feel About Yourself" that required an average of 25 minutes to complete. The 54-item survey was formatted as follows: the Student Information Data Form (grade, age, gender, and race); the Hare Self-Esteem Scale (home, peer, and school

self-concept);¹⁵ the Nowicki-Strickland Children's Locus of Control Scale (internal versus external);³³ and the Tobacco Use Self-Report (use or never use).³⁴

The Nowicki-Strickland Children's Locus of Control Scale had a fourth grade reading level and consisted of 19 items having a Yes/No response. The Hare Scale had a fifth grade reading level. Each self-concept item of the Hare Scale had four responses: strongly disagree, disagree, agree, and strongly agree. Each positively-stated item was scored as (1) for strongly disagree to (4) for strongly agree. Each negatively-stated item was scored as (1) for strongly agree to (4) for strongly disagree. The scores ranged from 10 (lowest self-concept score) to 40 (highest self-concept score) for each subscale of home, school, and peer. The Hare Scale was found to correlate .83 with both the Coopersmith ³⁵ and Rosenberg ²⁷ self-esteem scales that measured home, school, and peer self-concept attributes.

Cronbach's alpha coefficient was performed on the Hare Self-Esteem Scales and the Nowicki-Strickland Children's Locus of Control Scale to determine their internal reliability.

Reliability coefficients were moderately high to relatively high: .74 for peer self-concept, .79 for school self-concept, and .80 for home self-concept. The reliability coefficient of .54 for the Locus of Control Scale was low indicating that the items did not measure the construct of locus of control consistently for this sample. A possible reason for a low reliability coefficient may be that each student had a different interpretation of the question item. Another possible reason may be that the level of understanding for this scale was higher than was comprehended by the sample. However, this reliability coefficient was similar in strength to a previous study in which the reliability for this scale was .63. ³³

Tobacco use was operationalized to correspond with the Tobacco Use Self-Report³⁴ instrument as follows:

1. I smoke cigarettes daily. (regular use)
2. I smoke cigarettes once in a while. (occasional use)
3. I used to smoke cigarettes just about everyday, but I do not smoke now. (former use)
4. I have smoked cigarettes a few times, but do not use them now. (experimental use)

5. I have never smoked cigarettes.
(never use)

The scoring of this instrument was as follows: (a) Responses for regular use, occasional use, former use, and experimental use were combined to indicate *use* of tobacco, and (b) only the responses for never use comprised the tobacco *nonuse* group. Tobacco use was collapsed into two categories: use and never use since the frequency of tobacco use for this study was small ($n = 61, 9.2\%$).

Procedure. Approval was received from the Institutional Review Board at the Medical College of Georgia. The superintendents and principals of participating elementary schools granted permission to conduct the study in their schools. A projected sample of $N = 1,200$ students was estimated to give a 50% response rate of 600 students, which would approximate the desired sample size for this study. Approximately 1,235 students were invited to participate in the study and only $N = 666$ (53.9%) consented to participate. The number of classrooms chosen to survey in each school (based on a classroom size of 20 students) was in proportion to the student enrollment for each school in comparison with the total

student population of 1,663 fourth and fifth graders. Although attempts were made at randomly selecting classrooms (as the unit of analysis), this was accomplished for only 3 of the 5 schools. In the other two schools, all fourth and fifth grade classrooms were invited to participate in the study at the request of the principals.

Prior to data collection, the primary investigator explained the study to participating students in grades four and five using a script as a guide for consistency in content delivery. Parent or guardian informed consent and child assent forms were distributed to the students to take home. At the end of the same week, the survey was administered and data collected for those students who assented and had parent or guardian consent. The students were instructed to circle their best response directly on the survey form. To facilitate visual and auditory learning styles, each survey item was read aloud twice by the principal investigator. No data was linked to any identifying information; therefore, both confidentiality and anonymity were insured.

Data Analysis. Data were analyzed using descriptive statistics, chi-square analyses, *t*-tests, and univariate and multivariate logistic regression.

Results

The students were evenly distributed between grade four and grade five (Table 1). The majority of the students were ages 9 and 10, which was consistent with the ages of students generally enrolled in grades four and five, respectively. There were more girls (57.8%, $n = 385$) than boys participating in the study. The majority of the sample was black

(61.7%, $n = 411$) which was representative of the percentage of total black students enrolled in the five participating schools.

A small group ($n = 61$, 9.2%) reported tobacco use. Only one participant used tobacco daily. Table 1 shows the distribution of participants by classification of tobacco use. The highest frequency of tobacco use was experimental use ($n = 47$, 7.1%), which was consistent with data of the national Youth Survey indicating that most adolescents experimented with cigarette smoking.²

Table 1
Description of Participants by Demographic Characteristics
and Tobacco Use (N = 666)

Demographic Characteristic	Frequency (N)	Percent (%)
Grade		
4	340	51.0
5	326	49.0
Age		
8	1	0.2
9	225	33.8
10	286	42.9
11	130	19.5
12	24	3.6
Gender		
Boy	281	42.2
Girl	385	57.8
Race		
White	233	35.0
Black	411	61.7
Other	22	3.3
Classification of Tobacco Use		
User (9.2%)		
Daily Use	1	0.2
Occasional Use	6	0.9
Former Use	7	1.0
Experimental Use	47	7.1
Never Use	605	90.8

Mean self-concept scores for home, school, and peer were obtained. The sample had the highest mean self-concept score for home ($M = 33.4$), followed by school, ($M = 30.3$), with peer ($M = 28.5$) being last.

The majority of the sample had internal locus of control (58.7%, $n = 391$). The mean internal locus of control score was 10.1, while the

mean external locus of control score was 8.9. A score of 10 or more was needed to identify a preadolescent as internal for items related to internal locus of control, while a score of 10 or more was needed to identify a preadolescent as external for items related to external locus of control. The student was either internal or external according to their responses; however, the degree of

internality or externality could not be determined by the mean score.

T-tests were used to evaluate the mean for self-concept subgroups for tobacco use and tobacco never use. The mean for *home self-concept* for tobacco use was compared with the mean for *home self-concept* for tobacco never use and was found to be significantly different ($p = .0002$). The study found that tobacco users ($M = 31.3, SD = 4.6$) had a lower *home self-concept* score than tobacco never users ($M = 33.6, SD = 4.6$). The mean for *school self-concept* for tobacco use was compared with the mean for *school self-concept* for tobacco never use and was also found to be significantly different ($p < .0001$). The data supported that tobacco users ($M = 27.6, SD = 6.5$) had a lower *school self-concept* score than tobacco never users ($M = 30.5, SD = 5.3$). There was no significant difference ($p = .09$) when comparing the mean for *peer self-concept* between tobacco users and tobacco never users.

A chi-square test was used to determine if a relationship existed between locus of control and tobacco

use. A significant relationship was found between tobacco use and locus of control ($p = .0074$). The study found that those who used tobacco were more likely to have external locus of control (57.4%) than those who never used tobacco (39.7%).

Results of the univariate and multivariate logistic regression analyses are given in Table 2. In the multivariate model, the study found that those who used tobacco were 2.9 times more likely to be *boys* than those who did not use tobacco (95% CI = 1.65, 5.09; $p = .0002$). Those who used tobacco had *lower home self-concept* score (OR = 0.93; 95% CI = 0.88, 0.99; $p = .03$) and *lower school self-concept* score (OR = 0.93; 95% CI = 0.88, 0.98; $p = .009$) than those who did not use tobacco. The odds ratio of tobacco use for external locus of control was significant with univariate logistic regression analysis, but was nonsignificant in the multivariate analyses (Table 2).

Table 2
Logistic Regression on Tobacco Use by Gender, Self-Concept, and Locus of Control

Variable	Odds Ratio	95% Confidence Intervals	p Value
<u>Univariate Models</u>			
Gender			
Boy vs. Girl	2.66	(1.54, 4.60)	.0005
Self-Concept			
Home Self-Concept	0.91	(0.86, 0.96)	.0003
School Self-Concept	0.91	(0.87, 0.95)	<.0001
Peer Self-Concept	0.96	(0.91, 1.01)	.09
Locus of Control			
External vs. Internal	2.05	(1.20, 3.49)	.008
<u>Multivariate Model</u>			
Gender			
Boy vs. Girl	2.90	(1.65, 5.09)	.0002
Home Self-Concept	0.93	(0.88, 0.99)	.03
School Self-Concept	0.93	(0.88, 0.98)	.009

Discussion

The total of the sample who used tobacco was 9.2% ($n = 61$). In previous studies, the percent of children who used tobacco in rural settings ranged from 4.2% to 5%.^{10,13,20} The percent of tobacco users in this study was approximately twice that of previous studies. A possible explanation for this difference may be related to the variability in the instruments used to collect data related to tobacco use and in the scoring of these instruments. Previous studies utilized tobacco use surveys that ranged from a simple questionnaire

in which a Yes/No response was given to answering multiple-choice questions in more detailed surveys similar to the Youth Tobacco surveys of CDC. The scoring of various instruments in previous studies were not standardized.^{10,13,20} Since the frequency of tobacco use for this study was small, the five categories for tobacco use were collapsed into only two categories: *use* (as ever use or current use) and *never use*. A second possible explanation for the increased frequency of tobacco use may be related to the fact that tobacco is one of the major agricultural products grown in this

southeastern state.³⁶ Historically, entertainment activities for youths are limited in rural settings as compared to those in urban areas. Coupling limited activities with easier access to tobacco, it is not surprising that tobacco use is higher than the norm in this rural southeastern state.

The study found that tobacco use was more prevalent among boys than among girls ($OR = 2.9, p = .0002$). This finding was consistent with previous studies conducted by the Centers for Disease Control in which middle school boys were 1.4 times more likely to use tobacco than were girls in the same age group.² Although the intent of this study was not to investigate the factors related specifically to gender and tobacco use, a few assumptions may be inferred. One assumption is that boys are more likely to experiment with cigarette smoking than are girls. Another assumption is that boys are more likely to experiment with cigarette smoking at an earlier age than are girls. Traditionally in U.S. culture, there is an expectation that boys will experiment with cigarette smoking more so than will girls. For this reason, boys are more apt to

admit to smoking, whereas girls are more apt to be discreet when asked about smoking.

The study found that tobacco users had lower home self-concept and school self-concept scores than tobacco never users. There was no significant difference when comparing the mean for peer self-concept between tobacco users and tobacco never users. These findings were consistent with the work of Bonaguro and Bonaguro.¹⁴ Although significant at $p = .03$ and $p = .009$, respectively, both home and school self-concepts had odds ratios of 0.93 indicating that there was only a small relationship between low home and low school self-concepts and tobacco use. The study did not find any significant relationships between the subscales of self-concept and gender related to tobacco use. Further extensive investigation utilizing a more in-depth instrument is needed to evaluate the effect of self-concept and gender on preadolescent tobacco use.

Although a significant relationship was found between tobacco use and locus of control in the univariate analyses, locus of control was not significant in the

multivariate logistic regression analyses. A possible explanation may be that locus of control was not a strong indicator of tobacco use when other variables were factored into the relationship. A larger sample size may be necessary to determine the impact of locus of control on tobacco use for this age group. There was no significant relationship between male gender and locus of control on tobacco use.

A limitation of this study is the inability to generalize findings to all rural counties of this southeastern state due to nonrandomized selection of students. Other limitations relate to research methodology, such as the use of cross-sectional design and self-report data collection. Possible fear of parental or teacher repercussions may have affected the responses made by students.

Tobacco use studies among rural preadolescents were few in numbers. National youth tobacco surveys tended to focus on urban settings where there were greater concentrations of students in a given school environment.² A recommendation for future study would be to conduct a statewide

study on tobacco use in rural communities to investigate the prevalence of tobacco use among rural preadolescents. An even greater endeavor would be to conduct a nationwide study of tobacco use among rural preadolescents with an effort at identifying other contributing factors, such as diet, exercise, health status, and sociodemographic variables that may affect rural as well as urban preadolescents. Another recommendation for future study would be to include the evaluation of alcohol and drug use along with tobacco use when assessing self-concept for this target population. In addition, a study involving a control group (without drug or tobacco prevention intervention) and an experimental group (participating in a drug, alcohol, and tobacco prevention program) would be recommended as a future study since tobacco use, as a “gateway drug,” has been linked to other forms of substance abuse.⁴

There are several implications from the study findings. Qualitative studies of preadolescent males may need to be conducted to better understand the factors that

contribute to tobacco use. Larger studies and longitudinal studies are justified to investigate other contributing factors involved with tobacco use. In particular, further extensive study is needed to investigate contributing factors, such as family members who smoke or friends who smoke, that may make preadolescent males more vulnerable to smoking in rural settings. Another implication would be the exploration and in-depth understanding of issues related to the experience of growing up for preadolescent males.

The findings of this study were not strong, except for the male gender being significant as a factor in

preadolescent tobacco use. In general, the study findings offered two major recommendations for tobacco prevention program development: (a) addressing boys as being at risk for cigarette smoking, and (b) reinforcing self-concept related to home and school in tobacco avoidance decision making. School-based tobacco prevention programs are instrumental in raising awareness among preadolescents of the risks involved with tobacco use. Only when there is a marked decrease in tobacco initiation in America's youth will changes occur in morbidity and mortality related to tobacco use.

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