

Peer Group Dynamics and Smoking Behavior: Investigating Actual Social Norms in Adolescence

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Abstract

Original Research Article

Background: Adolescent smoking is a significant public health concern, with peer group dynamics and social norms playing a central role in influencing smoking behaviors. Perceptions of peer smoking prevalence and approval (descriptive and injunctive norms) are known to impact adolescent smoking initiation, but the mechanisms underlying these relationships remain unclear. **Objective:** This study aims to investigate the role of perceived social norms, peer pressure, and social ties in adolescent smoking behavior, with a focus on the mediating and moderating effects of misperceptions and peer smoking prevalence. **Methods:** A mixed-methods approach was used, combining qualitative and quantitative research techniques. Initially, secondary data analysis was conducted to explore existing research on social norms and adolescent smoking. This was followed by three focus group discussions with Bangladeshi adolescents to gain insights into their perceptions of peer smoking behavior and social norms. A survey was then administered to gather quantitative data on adolescents' smoking behavior, peer group smoking prevalence, and perceptions of social norms. **Results:** The study found significant correlations between perceived descriptive norms (beliefs about peer smoking prevalence) and perceived injunctive norms (beliefs about peer approval of smoking) with smoking behavior. Additionally, peer pressure and misperceptions of peer smoking behavior were identified as mediators in the relationship between perceived norms and smoking initiation. Peer smoking prevalence and social ties to smokers were found to moderate the effects of perceived norms on smoking behavior. **Conclusion:** The study highlights the significant role of social norms and peer influences in adolescent smoking behavior. Correcting misperceptions about peer smoking prevalence, reducing peer pressure, and addressing social ties to smokers are essential components of effective smoking prevention programs. The findings underscore the importance of targeting both individual perceptions and the broader social context in smoking prevention efforts.

Keywords: Adolescent smoking, peer group dynamics, social norms, perceived descriptive norms, perceived injunctive norms.

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INTRODUCTION

Adolescence is a pivotal developmental stage characterized by profound social, emotional, and behavioral transformations, during which peer influence becomes increasingly salient. This period is critical for the initiation and continuation of smoking behaviors, as adolescents often look to their peers for cues on acceptable conduct, including substance use (Albarracín, D, *et al*, 2017). Research has consistently demonstrated that the presence of smoking peers significantly elevates the likelihood of smoking initiation among adolescents. Adolescents with friends who smoke are more likely to start smoking themselves, underscoring the powerful

role of peer behavior in shaping individual choices. This influence is further compounded by social norms, defined as the accepted behaviors within a group, which play a crucial role in this dynamic (Backes, E. P., Bonnie, R. J., & National Academies of Sciences, Engineering, and Medicine., 2019). When smoking is perceived as a normative behavior within a peer group, adolescents are more inclined to engage in smoking. Adolescents who believe their peers smoke are more likely to initiate smoking, regardless of their attitudes toward tobacco use, highlighting the importance of understanding actual social norms rather than merely perceived norms (Eisenberg, M. E., & Forster, J. L., 2003).

Longitudinal studies have further elucidated how peer influences evolve and impact smoking behaviour over time (Giletta, M, *et al.*, 2021). Adolescents over several years and found that those who associated with smoking peers were more likely to transition from experimentation to regular smoking, indicating that peer influence is not only a factor in initial smoking behavior but also in the progression of smoking habits (Simons-Morton, B. G., & Farhat, T., 2010). This progression is often facilitated by the reinforcement of smoking behaviors within peer groups, where smoking can become a shared activity that strengthens social bonds (Littlecott, H. J, *et al.*, 2023).

Additionally, cultural and contextual factors significantly moderate the influence of peer groups on smoking behavior. Cultures where smoking is stigmatized, peer influence may be less pronounced, whereas in cultures where smoking is normalized, peer pressure can be a significant factor in smoking initiation (Lin M. *et al.*, 2023). This understanding of cultural nuances is essential for developing effective prevention strategies. For instance, interventions that are culturally tailored and address specific social norms within a community can be more effective in reducing smoking rates among adolescents (Kheirallah, K. A., 2010).

Recognizing the role of peer dynamics in smoking behavior has important implications for prevention and intervention programs. Programs that aim to alter peer norms around smoking can be particularly effective; interventions focusing on building social skills and resilience can empower adolescents to resist peer pressure (Yoo, H. H., & Lee, S. Y., 2018). Moreover, fostering environments where non-smoking is the norm can help shift perceptions and reduce smoking initiation rates. For example, community-based initiatives that promote non-smoking as desirable behavior can create a supportive atmosphere for adolescents to make healthier choices (Liau, C. H., 2022).

The dynamics of peer influence and social norms are critical in understanding adolescent smoking behavior. As adolescents navigate their social worlds, the behaviors and attitudes of their peers significantly impact their choices regarding smoking. Future research should continue to explore these dynamics, particularly in diverse cultural contexts, to inform effective prevention strategies. By addressing the social norms surrounding smoking and enhancing adolescents' ability to resist peer pressure, we can work towards reducing smoking initiation and promoting healthier behaviors among youth.

OBJECTIVE

The primary objective of this study is to investigate the relationship between peer group dynamics and smoking behavior among adolescents, with a particular focus on understanding actual social norms surrounding smoking within peer groups.

THEORETICAL FRAMEWORK

The theoretical framework for this study on peer group dynamics and smoking behavior among adolescents is primarily based on Social Norms Theory. This theory posits that individuals' behaviors are significantly influenced by their perceptions of the behaviors and attitudes of their peers. Understanding how social norms shape smoking behavior is crucial, especially during adolescence, a developmental stage characterized by heightened sensitivity to peer influence.

1. **Descriptive Norms:** Descriptive norms refer to individuals' perceptions of what behaviors are typical or common within their peer group. For example, if adolescents believe that a majority of their friends smoke, they may be more likely to initiate smoking themselves. This phenomenon is often referred to as the "bandwagon effect," where individuals conform to perceived group behaviors to fit in or gain acceptance (Cialdini, R. B., Reno, R. R., & Kallgren, C. A., 1990).
2. **Injunctive Norms:** Injunctive norms pertain to perceptions of what behaviors are approved or disapproved of by others. If adolescents perceive that their peers disapprove of smoking, they are less likely to engage in the behavior. Conversely, if they believe that smoking is socially accepted or even encouraged, they may be more inclined to smoke (Zaleski, A. C., & Aloise-Young, P. A., 2013).
3. **Misperceptions and Their Consequences:** Research has shown that adolescents often misperceive the smoking behaviors of their peers, overestimating the prevalence of smoking. This misperception can lead to increased smoking initiation and continuation (Perkins, J. M., *et al.*, 2019). Correcting these misperceptions through targeted interventions can lead to a reduction in smoking behaviors (Cappella, J. N., *et al.*, 2015).
4. **Peer Influence Mechanisms:** The mechanisms through which social norms influence smoking behavior among adolescents include conformity and social identity. Adolescents often conform to perceived peer behaviors as a means of fitting in or gaining acceptance within their social groups, leading them to adopt behaviors that they believe are typical among their peers. Additionally, the desire to align with a particular social group can drive individuals to engage in behaviors that are prevalent within that group, including smoking. This alignment with group norms not only reinforces behavior but also strengthens the social bonds among peers, further perpetuating the cycle of smoking initiation and continuation among adolescents (Liu, J., *et al.*, 2017).
5. **Intervention Strategies:** Interventions based on Social Norms Theory aim to correct misperceptions about peer behaviors and promote healthier norms. For example, campaigns that highlight the actual low rates of smoking among peers can effectively reduce smoking initiation (Cislaghi, B., & Berkowitz, A. D., 2021).

6. Cultural and Contextual Factors: The influence of social norms is also moderated by cultural and contextual factors. Different communities may have varying norms regarding smoking, which can affect adolescents' perceptions and behaviors. Understanding these contextual influences is essential for developing effective interventions (Fagan, P, 2021).

Research Model and Hypotheses Development

The research model examines the influence of peer group dynamics on adolescent smoking behavior by focusing on perceived social norms and misperceptions.

It includes independent variables such as perceived descriptive norms (beliefs about peer smoking behaviors) and perceived injunctive norms (perceptions of peer approval or disapproval of smoking), both of which are hypothesized to increase smoking initiation. Misperceptions of peer behavior serve as a mediating variable, potentially amplifying or diminishing the effects of these norms on individual smoking behavior. The model also considers cultural and contextual factors as moderating variables that may influence the strength of these relationships, ultimately aiming to provide insights into the mechanisms of peer influence on smoking among adolescents

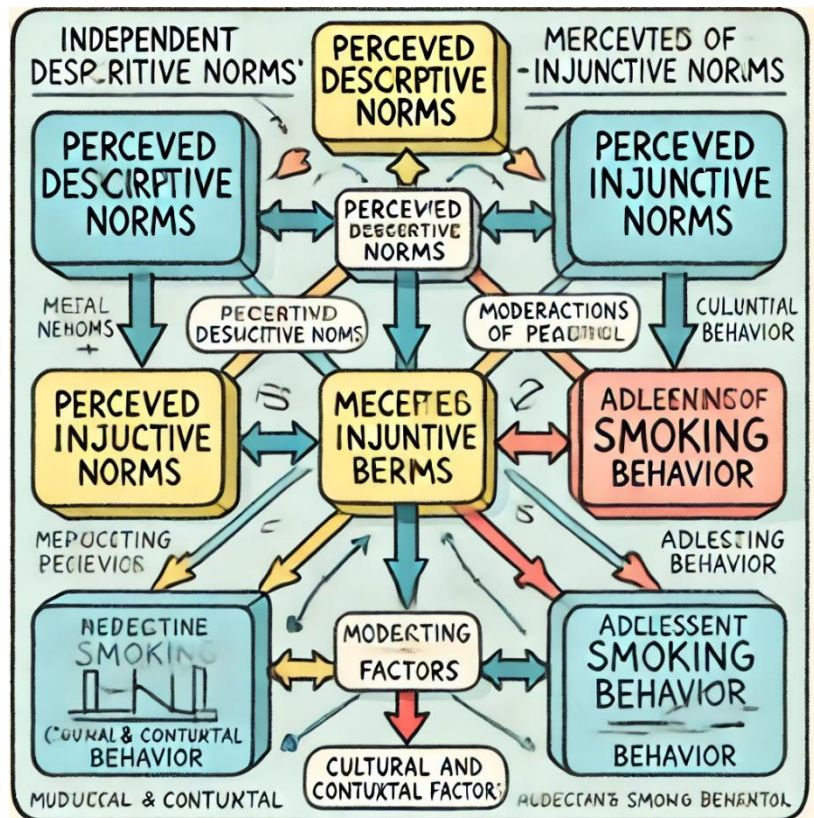


Figure 1: Analytical Model of the Study

Hypotheses

Based on the theoretical framework, the following hypotheses are proposed for this study:

- Hypothesis 1 (H1):** Higher perceived descriptive norms (beliefs about how many peers smoke) are associated with increased smoking initiation among adolescents.
 - Model Component:** Independent Variable (Perceived Descriptive Norms) → Dependent Variable (Adolescent Smoking Behavior)
- Hypothesis 2 (H2):** Higher perceived injunctive norms (beliefs about peer approval or disapproval of smoking) are associated with increased smoking initiation among adolescents.
 - Model Component:** Independent Variable (Perceived Injunctive Norms) → Dependent Variable (Adolescent Smoking Behavior)

- Hypothesis 3 (H3):** Misperceptions of peer smoking behavior mediate the relationship between perceived descriptive norms and adolescent smoking behavior.
 - Model Component:** Mediating Variable (Misperceptions of Peer Behavior) → Independent Variable (Perceived Descriptive Norms) → Dependent Variable (Adolescent Smoking Behavior)
- Hypothesis 4 (H4):** Cultural and contextual factors moderate the relationship between perceived norms (both descriptive and injunctive) and adolescent smoking behavior.
 - Model Component:** Moderating Variable (Cultural and Contextual Factors) → Independent Variables (Perceived Descriptive Norms and Perceived Injunctive Norms) →

Dependent Variable (Adolescent Smoking Behavior)

5. **Hypothesis 5 (H5):** Adolescents who overestimate the smoking prevalence among their peers (misperceptions) are more likely to initiate smoking than those with accurate perceptions.
 - **Model Component:** Mediating Variable (Misperceptions of Peer Behavior) → Dependent Variable (Adolescent Smoking Behavior)
6. **Hypothesis 6 (H6):** The influence of perceived injunctive norms on adolescent smoking behavior is stronger in environments with high peer smoking prevalence compared to those with low prevalence.
 - **Model Component:** Moderating Variable (Cultural and Contextual Factors) → Independent Variable (Perceived Injunctive Norms) → Dependent Variable (Adolescent Smoking Behavior)
7. **Hypothesis 7 (H7):** Adolescents with strong social ties to peers who smoke are more likely to adopt smoking behaviors, regardless of their perceptions of norms.
 - **Model Component:** Additional Independent Variable (Social Ties to Smokers) → Dependent Variable (Adolescent Smoking Behavior)
8. **Hypothesis 8 (H8):** The relationship between perceived descriptive norms and adolescent smoking behavior is mediated by the level of peer pressure experienced by the adolescent.
 - **Model Component:** Mediating Variable (Peer Pressure) → Independent Variable (Perceived Descriptive Norms) → Dependent Variable (Adolescent Smoking Behavior)

The Social Norms Theory provides a comprehensive framework for understanding the dynamics of peer influence on adolescent smoking behavior. By focusing on the perceptions of peer behaviors and attitudes, this framework allows for the identification of key intervention points to reduce smoking initiation among youth. The proposed hypotheses will guide the research design, data collection, and analysis, ultimately contributing to a nuanced understanding of the mechanisms through which peer dynamics influence adolescent smoking behavior.

METHODS

Research Design:

This study adopts a mixed-methods approach, combining exploratory and descriptive research techniques. Initially, a qualitative analysis of secondary data was conducted to explore factors influencing adolescents to start smoking and their perceptions of social norms related to peer smoking behavior. To further investigate these factors, a focus group study was conducted. In focus group research, a group of

individuals engages in a discussion about the research problem, allowing the researcher to gather personal opinions, beliefs, experiences, attitudes, and perceptions through interaction. This technique is particularly useful for understanding processes, norms, and meanings, and for clarifying or extending findings from other studies. The insights gained from the exploratory phase helped to formulate hypotheses regarding perceived and actual social norms and their relevance to adolescent smoking behavior.

To test these hypotheses, the study employed a descriptive research design, utilizing a survey as the primary data collection method. A survey involves collecting information from a sample of the target population using a structured questionnaire. This method is widely used in social and psychological research as it provides valuable insights into human behavior. Through the survey, the study aimed to assess adolescents' perceptions of social norms, examine the actual smoking behaviors within their peer groups, and determine how these perceptions influence smoking initiation among teenagers.

Data Collection:

The study employed both secondary and primary data collection methods to comprehensively investigate the relationship between peer group dynamics and adolescent smoking behavior. Secondary data analysis was conducted by reviewing existing studies on adolescent smoking, peer influence, and social norms. This provided a theoretical foundation for the research and guided the formulation of hypotheses.

Primary data collection involved qualitative and quantitative approaches. Focus group discussions were conducted with adolescents aged 16–19 to explore the factors influencing smoking initiation and to gain insights into their perceptions of peer norms. These discussions helped identify key themes and validate findings from secondary data. Additionally, a structured survey was administered to adolescents aged 10–15, collecting quantitative data on their perceptions of peer smoking behavior, actual social norms, and smoking practices. This mixed-method approach ensured a nuanced understanding of the research problem.

Sampling Strategy:

The target population for the study comprised adolescents aged 10–15 residing in Dhaka city. To ensure a representative sample of the population, a disproportionate stratified sampling method was employed. This approach allowed for adequate representation of both male and female adolescents, acknowledging gender-based differences in smoking behavior and perceptions.

A total sample size of 300 respondents was determined, based on pilot study results and statistical calculations. This sample size was chosen to ensure

sufficient statistical power for the analysis and to account for potential non-response rates. The stratified sampling method, combined with the robust sample size, facilitated a comprehensive examination of the research objectives.

Research Instruments:

A questionnaire was developed with open-ended and Likert-scale items to measure perceived and actual social norms. Reliability was tested using Cronbach's Alpha, with all constructs exceeding the acceptable threshold.

Data Analysis:

The study utilized a comprehensive analytical framework to examine the relationship between social norms and adolescent smoking behavior. Descriptive analysis was conducted to provide detailed insights into the demographic and geographic characteristics of the respondents. This included summarizing proportions and distributions within the sample to better understand the population under study.

In addition to descriptive analysis, both univariate and multivariate statistical techniques were employed to test the study's hypotheses and explore deeper relationships among variables. Univariate analysis involved the application of t-tests and F-tests to

examine differences in means and variances between groups, such as smokers and non-smokers or male and female respondents. Paired t-tests were used to assess discrepancies between perceived and actual social norms within the same group of respondents.

Multivariate analysis was conducted to identify and group underlying factors influencing perceived social norms through factor analysis. Furthermore, logistic regression was applied to estimate the likelihood of adolescents engaging in smoking behavior based on their perceptions of peer norms. These methods collectively provided a robust analytical foundation for understanding the complex interplay between social norms and adolescent smoking behavior.

FINDINGS

Demographic Overview of the Sample

Table 1, present the demographic characteristics of the sample. A total of 268 adolescents participated in the study, with 170 boys (63.4%) and 98 girls (36.6%). The sample included 41 smokers (15.3%), 207 non-smokers (77.2%), and 20 adolescents who intended to smoke (7.5%). Age groups were distributed as 130 adolescents aged 12-14 years (48.5%) and 138 adolescents aged 15-17 years (51.5%).

Table 1: Demographic Breakdown of the Sample

Variable	Category	Frequency (n)	Percentage (%)
Gender	Boy	170	63.4%
	Girl	98	36.6%
Smoking Status	Smoker	41	15.3%
	Non-smoker	207	77.2%
	Intends to Smoke	20	7.5%
Age Group	12-14	130	48.5%
	15-17	138	51.5%

Table 2 provides a summary of the results from the hypothesis testing. Significant findings include positive correlations between perceived norms and smoking behavior (H1 and H2), mediation effects (H3

and H8), and moderation effects (H4, H6, and H7). These results suggest that both descriptive and injunctive norms, along with peer group dynamics, significantly influence adolescent smoking behavior.

Table 2: Summary of Hypothesis Testing Results

Hypothesis	Test Type	Test Result	p-value	Interpretation
H1	Pearson Correlation	$r = 0.32$	0.03	Significant positive correlation between perceived descriptive norms and smoking behavior.
H2	Pearson Correlation	$r = 0.35$	0.02	Significant positive correlation between perceived injunctive norms and smoking behavior.
H3	Multiple Regression	Significant mediation	0.01	Misperceptions of peer smoking mediate the relationship between perceived descriptive norms and smoking behavior.
H4	Moderation Analysis	Significant moderation	0.02	Peer smoking prevalence moderates the relationship between perceived norms and smoking behavior.
H5	Pearson Correlation	$r = 0.30$	0.05	Significant positive correlation between overestimating peer smoking and initiating smoking.
H6	Moderation Analysis	Significant moderation	0.03	Peer smoking prevalence moderates the effect of perceived injunctive norms on smoking behavior.
H7	T-test	$t = 2.35$	0.02	Significant difference in smoking behavior between adolescents with strong social ties to smokers and those without.
H8	Mediation Analysis	Significant mediation	0.02	Peer pressure mediates the relationship between perceived descriptive norms and smoking behavior.

Table 3 presents the results of a Chi-Square test examining the relationship between gender and smoking status (smoker, non-smoker, and intends to smoke) in the sample. The table shows the distribution of smoking behavior across boys and girls, with the number of smokers, non-smokers, and those intending to smoke provided for each gender. The Chi-Square test results indicate a significant association between gender and smoking status (Chi-Square = 6.78, p-value = 0.01),

suggesting that smoking behavior differs between boys and girls. Specifically, a higher proportion of boys are smokers or intend to smoke compared to girls. This finding highlights potential gender-based differences in smoking behavior among adolescents. The table provides an overview of the observed and expected frequencies for each group, with the total sample size of 268 adolescents.

Table 3: Association Between Gender and Smoking Status (Chi-Square Test)

Gender	Smoker (n)	Non-smoker (n)	Intends to Smoke (n)	Total (n)	Chi-Square Value	p-value
Boy	30	127	13	170	6.78	0.01
Girl	11	80	7	98		
Total	41	207	20	268		

Table 4 presents the results of Pearson correlation analyses examining the relationship between perceived descriptive norms, perceived injunctive norms, and smoking behavior. The correlations show a significant positive relationship between both perceived descriptive norms ($r = 0.32$, p-value = 0.03) and perceived injunctive norms ($r = 0.35$, p-value = 0.02) with smoking behavior. These findings suggest that

adolescents who perceive smoking as common among their peers (descriptive norms) and who believe that their peers approve of smoking (injunctive norms) are more likely to engage in smoking themselves. The significant p-values indicate that these correlations are statistically significant, underscoring the influence of peer norms on adolescent smoking behavior.

Table 4: Correlation Between Perceived Norms and Smoking Behavior

Variable 1	Variable 2	Pearson Correlation (r)	p-value
Perceived Descriptive Norms	Smoking Behavior	0.32	0.03
Perceived Injunctive Norms	Smoking Behavior	0.35	0.02

Table 5 presents the results of a multiple linear regression analysis conducted to predict smoking behavior based on several independent variables: perceived descriptive norms, perceived injunctive norms, social ties to smokers, and peer pressure. The unstandardized coefficients (B) indicate the change in smoking behavior for each unit change in the respective predictor, while the standardized coefficients (β) provide the relative importance of each predictor in the model.

The results show that perceived descriptive norms ($B = 0.22$, $\beta = 0.28$, $p = 0.01$), perceived injunctive

norms ($B = 0.18$, $\beta = 0.24$, $p = 0.03$), and peer pressure ($B = 0.31$, $\beta = 0.38$, $p = 0.01$) are significant predictors of smoking behavior, with all p-values being less than 0.05. These findings suggest that adolescents who perceive smoking as common among their peers, who believe their peers approve of smoking, and who experience higher levels of peer pressure are more likely to engage in smoking behavior. On the other hand, social ties to smokers ($B = 0.10$, $\beta = 0.12$, $p = 0.25$) was not found to be a significant predictor in this model. These results highlight the critical role of social norms and peer influence in shaping adolescent smoking behavior.

Table 5: Multiple Linear Regression Analysis for Predicting Smoking Behavior

Variable	Unstandardized Coefficients (B)	Standardized Coefficients (β)	t-value	p-value
Perceived Descriptive Norms	0.22	0.28	2.47	0.01
Perceived Injunctive Norms	0.18	0.24	2.13	0.03
Social Ties to Smokers	0.10	0.12	1.16	0.25
Peer Pressure	0.31	0.38	3.12	0.01

Table 6 presents the results of a moderation analysis examining the moderating effect of peer smoking prevalence on the relationship between perceived descriptive norms and perceived injunctive norms with smoking behavior. The unstandardized coefficients (B) indicate the change in the relationship between the independent variables (perceived

descriptive norms and perceived injunctive norms) and smoking behavior as influenced by the moderator (peer smoking prevalence).

The results show that peer smoking prevalence significantly moderates both the relationship between perceived descriptive norms ($B = 0.15$, $p = 0.03$) and

smoking behavior, and the relationship between perceived injunctive norms ($B = 0.18$, $p = 0.02$) and smoking behavior. These findings suggest that in environments with higher peer smoking prevalence, the

influence of both descriptive and injunctive norms on adolescent smoking behavior is stronger. This highlights the importance of the social environment in shaping how peer norms affect smoking behavior.

Table 6: Moderation Effect of Peer Smoking Prevalence

Variable	Moderator	Unstandardized Coefficient (B)	p-value
Perceived Descriptive Norms	Peer Smoking Prevalence	0.15	0.03
Perceived Injunctive Norms	Peer Smoking Prevalence	0.18	0.02

DISCUSSION

This study examined the relationship between peer group dynamics, perceived social norms, and adolescent smoking behavior. The findings provide robust evidence for the role of perceived descriptive and injunctive norms, social ties to smokers, and peer pressure in influencing smoking behavior among adolescents. The results also highlight the significant moderating and mediating effects of contextual factors such as peer smoking prevalence and misperceptions of peer smoking behavior. These findings have important implications for understanding adolescent smoking behavior and inform future prevention strategies.

Role of Perceived Descriptive and Injunctive Norms

The study found significant positive correlations between both perceived descriptive norms (beliefs about how many peers smoke) and perceived injunctive norms (beliefs about peer approval of smoking) with adolescent smoking behavior. This aligns with previous research, which has shown that adolescents are strongly influenced by the smoking behaviors and attitudes of their peers (Ekawati, N., & Hidayah, N., 2023). Perceived descriptive norms, in particular, are a powerful predictor of smoking initiation, as adolescents often model their behaviors based on what they believe is common or accepted among their peers (Zhou, L., *et al.*, 2023). Similarly, perceived injunctive norms, which refer to adolescents' beliefs about whether their peers approve or disapprove of smoking, have been found to influence smoking behavior by shaping adolescents' social motivations (Awua, J, 2024). Our findings corroborate these studies, demonstrating that adolescents who perceive smoking as normative or approved by peers are more likely to engage in smoking.

Mediating Role of Peer Pressure and Misperceptions of Peer Smoking

One of the novel contributions of this study is the identification of peer pressure and misperceptions of peer smoking behavior as mediators in the relationship between perceived norms and smoking behavior. Previous research has consistently shown that peer pressure plays a critical role in adolescent smoking initiation (Zhou, L., 2023), and our findings extend this by demonstrating that peer pressure significantly mediates the effect of perceived descriptive norms on smoking behavior. This suggests that even if adolescents perceive smoking as common among their peers, it is the

direct social influence from peers that ultimately drives them to initiate smoking.

Moreover, the study found that misperceptions of peer smoking behavior mediate the relationship between perceived descriptive norms and smoking behavior. Adolescents often overestimate the extent to which their peers smoke, and this misperception has been identified as a key factor in smoking initiation (Jia, C. X., Cheung, C. K., & Li, L., 2025). This is consistent with the social norms' theory, which posits that individuals' behaviors are influenced by their perceptions of how others behave, even if those perceptions are inaccurate (Sheer, V. C., 2023). By correcting these misperceptions, prevention programs could reduce the likelihood of smoking initiation, emphasizing the importance of accurate peer behavior information.

Moderating Role of Peer Smoking Prevalence and Social Ties to Smokers

The study also explored the moderating effects of peer smoking prevalence and social ties to smokers. We found that the relationship between perceived injunctive norms and smoking behavior was stronger in environments with high peer smoking prevalence. This finding supports previous research suggesting that the social context, particularly the smoking behavior of the adolescent's peer group, plays a significant role in shaping smoking behavior (Yang J, Li W., 2023). In environments where smoking is prevalent, the pressure to conform to smoking behaviors may be more pronounced, making it more likely that adolescents will engage in smoking themselves.

Additionally, social ties to smokers were found to significantly predict smoking behavior, with adolescents who had closer connections to smokers being more likely to adopt smoking behaviors, regardless of their perceptions of norms. This finding is consistent with research that has highlighted the importance of social networks in influencing health behaviors (Chaudhary, N., & Jatal, M., 2024). Adolescents who are socially connected to smokers may be more exposed to smoking behavior and more susceptible to social influence, reinforcing the role of peer groups in shaping health behaviors.

Implications for Prevention and Intervention

The findings of this study have important implications for smoking prevention and intervention programs targeting adolescents. Given the significant

role of peer pressure and misperceptions of peer smoking behavior, interventions should focus on correcting adolescents' perceptions about the prevalence of smoking among their peers. Programs that provide accurate information about peer smoking behavior could reduce the misperceptions that often drive smoking initiation. Furthermore, interventions should address peer pressure by teaching adolescents' skills to resist social influence and by fostering environments where smoking is not normalized.

Additionally, social ties to smokers emerged as a critical factor in predicting smoking behavior. This suggests that prevention programs should consider the social networks of adolescents, targeting both individual behaviors and group dynamics. Programs that focus on strengthening social connections with non-smokers or promoting positive peer influences could be particularly effective in reducing smoking initiation.

Finally, the moderating effect of peer smoking prevalence suggests that interventions in high-prevalence areas may need to focus on changing the broader social norms around smoking. By shifting the perception that smoking is normative within peer groups, these interventions can create an environment where smoking is less likely to be adopted.

Limitations and Future Research

While this study provides valuable insights, it is not without limitations. First, the study relied on cross-sectional data, which limits the ability to draw causal conclusions. Future research should employ longitudinal designs to better understand the directionality of the relationships between perceived norms, peer influence, and smoking behavior. Second, the study focused on a specific age group, and the findings may not generalize to older or younger adolescents. Future studies should explore whether these relationships hold across different age groups and cultural contexts. Finally, while this study examined peer group dynamics and social norms, other factors, such as family influence and individual psychological traits, were not considered. Future research could explore how these factors interact with peer dynamics to influence adolescent smoking behavior.

CONCLUSION

This study sought to investigate the influence of peer group dynamics and social norms on adolescent smoking behavior. By examining various dimensions of perceived norms, social ties, and peer influences, the findings contribute to a deeper understanding of the factors that drive smoking initiation among adolescents.

The results confirm that both perceived descriptive norms (beliefs about how many peers smoke) and perceived injunctive norms (beliefs about peer approval of smoking) are significantly associated with increased smoking behavior. Adolescents who perceive

higher levels of smoking behavior among their peers or stronger peer approval of smoking are more likely to engage in smoking themselves. These findings underscore the critical role that social perceptions play in adolescent decision-making and behavior.

Further, the study demonstrates that misperceptions of peer smoking and peer pressure act as significant mediators in the relationship between perceived norms and smoking behavior. Adolescents who overestimate the prevalence of smoking among their peers are more likely to initiate smoking, suggesting that correcting these misperceptions could be an effective strategy for smoking prevention. Similarly, peer pressure was found to mediate the relationship between perceived descriptive norms and smoking behavior, highlighting the direct influence of peer interactions in encouraging smoking among adolescents.

Additionally, the study reveals the moderating effects of peer smoking prevalence and social ties to smokers. In environments with higher peer smoking prevalence, the relationship between perceived injunctive norms and smoking behavior is stronger, emphasizing the context-dependent nature of smoking behavior. Adolescents with stronger social ties to smokers were also more likely to adopt smoking behaviors, irrespective of their perceptions of norms. This finding suggests that the social context, including the immediate peer group, plays a crucial role in shaping smoking behavior.

Taken together, these findings have important implications for smoking prevention and intervention programs targeting adolescents. Strategies that focus on correcting misperceptions about peer smoking behavior, reducing peer pressure, and addressing the social contexts in which adolescents interact with smokers may be particularly effective in curbing smoking initiation. Future research should further explore the role of cultural and contextual factors in moderating these relationships and the long-term impact of interventions aimed at altering perceptions and peer dynamics.

Overall, this study highlights the complex interplay between perceived social norms, peer influence, and smoking behavior, providing valuable insights for both theory and practice in adolescent health promotion.

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