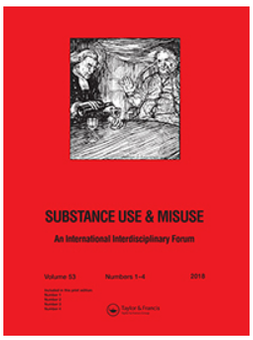

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ORIGINAL ARTICLE

Interpersonal and Intrapersonal Differences among Adolescent Nonsmokers, Ex-Smokers, and Smokers

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ABSTRACT

Background: A large body of research has traced tobacco dependence among adolescents to a series of intrapersonal and interpersonal factors. However, there are remaining questions regarding the differences on these factors related to tobacco use. *Objectives*: We sought to investigate intrapersonal and interpersonal differences among adolescent nonsmokers, ex-smokers, and smokers. *Methods*: We used data from a 3-year project designed to investigate and address tobacco dependence among 1071 students ($M_{age} = 15.76$, $SD = 1.52$; girls = 51.54%) who were recruited from 11 high schools. Participants, filling out a survey, provided information on tobacco use (nonsmoker, ex-smoker, and smoker), tobacco-related experiences (smoking-related risk perception, parental smoking, number of friends who smoke, resisting peer pressure to smoke), cognitive variables (metacognitive skills), and personality traits (disinhibition and impulsivity). *Results*: Results from a discriminant function analysis showed that smokers and ex-smokers reported more disinhibition, impulsivity, number of friends who smoke and less self-control under peer pressure to smoke compared to nonsmokers. Ex-smokers reported less metacognitive processes, more smoking-related risk perception and were less likely to have parents who smoke. *Conclusions/Importance*: Interventions and campaigns aimed to persuade adolescents to stop smoking should work to develop adaptive metacognitive skills and an accurate risk perception of tobacco use.

KEYWORDS

Tobacco; adolescence; regular smokers; ex-smokers; occasional smokers; metacognition; personality

Introduction

The investigation of individual and interpersonal factors predicting patterns of smoking behaviors during adolescence is of crucial importance and essential for successful smoking prevention (Kandel & Logan, 1984; Tyas & Pederson, 1998).

Peer and parental smoking have been identified as important interpersonal risk factors for tobacco use (Cengelli, O'Loughlin, Lauzon, & Cornuz, 2012; Mercken, Sleddens, de Vries, & Steglich, 2013). However, many researchers have highlighted the significant role that self-control under peer pressure plays in moderating the association between peer influence and smoking (Baumeister & Vonasch, 2015; Cengelli et al., 2012).

Another important line of research emphasizes the role of personality traits in predicting tobacco use. For example, disinhibition, a component of the sensation seeking personality trait, and impulsivity remain among the strongest factors associated with smoking (Harris et al., 2014; Hwang & Park, 2015; López-Torrecillas et al., 2014).

Finally, multiple studies have confirmed that metacognitive skills, namely, cognitive processes involved in the appraisal, control, and monitoring of thinking, are significantly correlated with smoking and with failure to quit smoking (Nosen & Woody, 2014; Spada, Caselli, Nikčević, & Wells, 2015).

The present study examined the extent to which the abovementioned interpersonal and intrapersonal factors discriminate three categories of smokers: nonsmokers, ex-smokers, and smokers.

We expected that smokers would have higher levels of disinhibition and impulsivity, higher numbers of smoking peers, presence smoking parents, lower self-control under peer pressure to smoke, lower risk perception of tobacco, and higher metacognitive processes. Nonsmokers were expected to show opposite patterns on the abovementioned associations. Finally, ex-smokers were expected to report higher self-control under peer pressure and lower metacognitive processes compared to the other groups.

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Method

Participants

The current study uses data from a research-intervention project designed to investigate and address tobacco dependence among students from eleven high schools in the North of Italy. This project was executed by the Italian League for the Fight Against Tumors in Milan (LILT-Sezione di Milano) a nonprofit, volunteer organization involved in cancer education, support, and research.

Students had the opportunity to voluntarily participate in anonymous cross-sectional school-wide surveys. The study recruited a total of 1071 adolescents ($M_{age} = 15.76$, $SD = 1.52$; girls = 51.54%) over a 3-year recruitment period (2014–2016). 40.99% of the participants lived in urban areas, 16.06% in suburban areas, 40.15% in small towns, and 2.80% in a rural areas. 11.20% of the sample reported a nationality other than Italian.

Measures

After reporting demographic characteristics including age and gender, participants answered a series of measures described below.

Smoker types. Through a single item, participants identified themselves as "non-smoker," "ex-smoker," "occasional smoker," and "frequent smoker." Since the use of a single item may bias the categorization of the last two categories, occasional smokers and frequent smokers were collapsed into one category.

Tobacco-related experience. Students indicated how dangerous they considered tobacco to be for their health (1 = Harmless; 5 = Extremely Dangerous).They were then asked if their parents were smokers (0 = No; 1 = Yes) and how many of their friends smoked (1 = Nobody; 6 = Everybody). Finally, the ability to withstand peer pressure to smoke was assessed via one question measured on a scale from 1 (Not capable at all) to 5 (Completely capable).

Personality traits and cognitive variables. The Multidimensional Questionnaire for Adolescents (QMA; Couyoumdjian, Baiocco, & Del Miglio, 2007) assesses personality traits, cognitive variables, and attachment representations associated with risky behaviors. Among the nine scales comprised in the QMA, three scales were used for the purpose of the present study: Disinhibition (7 items; $\alpha = .74$), which measures the desire to engage in socially undesirable activities; the Metacognitive Capabilities (19 item; $\alpha = .80$), which measures the cognitive processes involved in the appraisal, control, or monitoring of thinking; and impulsivity (8 item; $\alpha = .71$), which measures the tendency to display behavior characterized by little or no consideration of the consequences. For each dimension, participants were asked to answer a series of statements using a scale from 1 (Totally False) to 5 (Totally True).

Analysis

A discriminant function analysis was used to evaluate statistical separation across the three smoker types. Measures of personality traits (disinhibition, impulsivity), cognitive processes (metacognitive capabilities, risk perception of tobacco), self-regulation under peer pressure to smoke, number of smoking friends and presence of smoking parents were used to create new latent variables known as discriminant functions which then predict membership as one of the three smoker types.

Results

Among sample respondents, 61.72% self-identified as nonsmokers, 4.95% as ex-smokers, and 33.33% as smokers.

A Discriminant Function Analysis was estimated in order to anticipate and explain membership in the three smoker categories. Two discriminant functions were calculated. The first function accounts for 96.65% of the discriminating ability of the discriminating variables, and the second function accounts for 3.35%. Combination of the two functions significantly differentiated the three smoker type categories, $\Lambda = 0.57$, $\chi^2(20) = 565.96$, $p < .001$. The second function in isolation significantly discriminated between the categories, $\Lambda = 0.57$, $\chi^2(20) = 565.96$, $p < .001$. To identify the measures that optimally represented the discriminant functions, the standardized loadings of the structure matrix were interpreted.

Measures with the strongest loadings on Function 1 were disinhibition ($r = .68$), number of smoking friends ($r = .62$), resistance to peer pressure to smoke ($r = -.53$), age ($r = .36$), and impulsivity ($r = .32$). Risk perception of tobacco use ($r = -.56$), metacognitive processes ($r = .47$), and having parents who smoke ($r = .34$) showed the strongest loadings on Function 2. Thus, Function 1, which mostly discriminates groups based on instinctual satisfaction (i.e., disinhibition and impulsivity) and peer influence (i.e., number of smoking friends and resistance to peer pressure to smoke) was named "instinctual and peer factors." Function 2, discriminating groups based on cognitive skills (i.e., risk perception of tobacco use and metacognitive processes) and parental influence (i.e., having both parents smoking) was named "cognitive and parental factors."

As seen in Table 1, the first function increased the separation between smokers and ex-smokers from nonsmokers. This indicated that smokers and ex-smokers showed

Table 1. Discriminant function analyses: functions at group centroids.

	Discriminative functions	
Smoker types	Instinctual and peer factors	Cognitive and parental factors
Nonsmokers	− .66	.02
Ex-smokers	.53	− .68
Smokers	1.13	.07

higher disinhibition, higher number of smoking friends, lower self-control under peer pressure, higher age, and higher impulsivity compared to nonsmokers. Notably, regular smokers reported higher scores on this function compared to ex-smokers.

The second function mostly discriminated between ex-smokers from the other two categories. The opposite direction of the group centroids indicated that ex-smokers reported higher risk perception of tobacco, lower metacognitive capabilities, and not having parents who smoke.

The overall classification accuracy was 68.11% (72.62% for nonsmokers, 52.83% for ex-smokers, and 61.90% for smokers).

Discussion

This present study focused on distinguishing three types of smoking experiences among Italian adolescents: nonsmokers, ex-smokers, and smokers. We considered the complexity of the problem of smoking and examined how the three groups are distinctly characterized by selected characteristics that have been studied in previous research as risk factors for tobacco use.

Consistent with the literature (Cengelli et al., 2012; Kopstein, Crum, Celentano, & Martin, 2001; Mitchell, 1999; Tyas & Pederson, 1998), instinctual tendencies, and peer influence were among the most relevant when distinguishing those who use tobacco from those who do not. Notably, smokers showed higher levels on these factors compared to ex-smokers.

The results suggest that primary interventions with adolescents would benefit from a focus on the social acceptability of smoking in order to limit the peer influence as a risk factor. Moreover, the findings regarding disinhibition and impulsivity suggest that it may be appropriate for primary prevention programs to substitute and displace sensation-seeking needs among adolescents high in disinhibition.

The distinctiveness of ex-smokers is apparent if we take into account the second discriminant function, which was characterized by low levels of metacognitive processes, more risk perception of tobacco and greater propensity for parents who smoke. These results are consistent with the triphasic metacognitive formulation of addictive behaviors, which proposes that aspects as attentional bias, extended thinking (i.e., desire thinking, rumination and worry), and thought suppression (i.e., a copying strategy that attempts to keep certain thoughts out of awareness) should be associated with addictive behaviors (Spada et al., 2015). Moreover, metacognitive processes—such as negative appraisals of craving thoughts related to the addictive behavior, rumination and greater efforts to control these experiences—have been found to be significantly stronger among individuals who fail to abstain (Nikcevic & Spada, 2008; Nosen & Woody, 2014; Spada et al., 2015). These findings also suggested that an adequate risk perception of tobacco use may be an important goal of preventive interventions (Berg, Romero, & Pulvers, 2015; Myers, 2014). Finally, contrary to most studies that indicate that parental smoking is a strong predictor of child smoking onset (Cengelli et al., 2012; de Vries, Candel, Engels, & Mercken, 2006; Mercken et al., 2013), our findings suggest that parental smoking has a more influential role in the decision to quit smoke. These findings show that secondary prevention is another important way to reduce the long-term effects of tobacco use. Stopping smoking before the age of 30 eliminates about 97% of the long-term negative effects of smoking (Pirie et al., 2013). While our findings suggest that primary prevention programs are more effective when affecting adolescents' instinctual modalities, secondary prevention programs seems to be more appropriate among adolescents when focused on cognitive aspects. As recommended by public health practitioners (Centers for Disease Control and Prevention [CDC], 2014; Task Force on Community Preventive Services, 2001; U.S. Department of Health and Human Services, 2000), interventions and campaigns intended to persuade adolescents to stop smoking should work on the development of an accurate risk perception of tobacco use through warning labels on tobacco-product packaging and advertising as well as antitobacco mass media messages. Finally, working on the development of adaptive metacognitive skills would be helpful in antismoking counseling practices. Specifically, secondary interventions should focus on modifying smoking-related rumination thoughts and to interrupt extended thinking.

There are some limitations in this study that need to be addressed. In addition to the cross-sectional design, the leading limitation of this study is the use of a single item to identify different smoker types. A more robust measure would allow us to more reliably discriminate specific smoker subgroups, such as occasional smokers and regular smokers.

Taken together, our findings contribute to the existing literature on tobacco use by showing that smokers, ex-smokers, and smokers are substantially different from one another in terms of intrapersonal and interpersonal factors.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

References

Baumeister, R. F., & Vonasch, A. J. (2015). Uses of self-regulation to facilitate and restrain addictive behavior. *Addictive Behaviors*, *44*, 3–8. https://doi.org/10.1016/j.addbeh.2014.09.011

Berg, C. J., Romero, D. R., & Pulvers, K. (2015). Perceived harm of tobacco products and individual schemas of a smoker in relation to change in tobacco product use over one source among young adults. *Substance Use & Misuse*, *50*(1), 90–98. https://doi.org/10.3109/10826084.2014.958858

Cengelli, S., O'Loughlin, J., Lauzon, B., & Cornuz, J. (2012). A systematic review of longitudinal population-based studies on the predictors of smoking cessation in adolescent and young adult smokers. *Tobacco Control*, *21*(3), 355–362. https://doi.org/10.1136/tc.2011.044149

Centers for Disease Control and Prevention. (2014). *Best Practices for Comprehensive Tobacco Control Programs—2014*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.

Couyoumdjian, A., Baiocco, R., & Del Miglio, C. (2007). The QMA: Evaluation of personality, cognitive and motivational factors associated to risky behaviours. *Bollettino Di Psicologia Applicata*, *246*, 43–54.

de Vries, H., Candel, M., Engels, R., & Mercken, L. (2006). Challenges to the peer influence paradigm: Results for 12–13 source olds from six European countries from the European smoking prevention framework approach study. *Tobacco Control*, *15*(2), 83–89. https://doi.org/10.1136/tc.2003.007237

Harris, M., Penfold, R. B., Hawkins, A., Maccombs, J., Wallace, B., & Reynolds, B. (2014). Dimensions of impulsive behavior and treatment outcomes for adolescent smokers. *Experimental and Clinical Psychopharmacology*, *22*(1), 57–64. https://doi.org/10.1037/a0034403

Hwang, H., & Park, S. (2015). Sensation seeking and smoking behaviors among adolescents in the Republic of Korea. *Addictive Behaviors*, *45*, 239–244. https://doi.org/10.1016/j.addbeh.2015.01.041

Kandel, D. B., & Logan, J. A. (1984). Patterns of drug use from adolescence to young adulthood: I. Periods of risk for initiation, continued use, and discontinuation. *Am J Public Health*, *74*(7), 660–666.

Kopstein, A. N., Crum, R. M., Celentano, D. D., & Martin, S. S. (2001). Sensation seeking needs among 8th and 11th graders: characteristics associated with cigarette and marijuana use. *Drug and Alcohol Dependence*, *62*(3), 195–203. https://doi.org/10.1016/S0376-8716(00)00170-8

López-Torrecillas, F., Nieto-Ruiz, A., Velasco-Ortuño, S., Lara-Fernández, M., López-Quirantes, E. M., & Castillo-Fernández, E. (2014). The role of impulsivity in dropout from treatment for cigarette smoking. *Comprehensive Psychiatry*, *55*(7), 1609–1613. https://doi.org/10.1016/j.comppsych.2014.06.004

Mercken, L., Sleddens, E. F. C., de Vries, H., & Steglich, C. E. G. (2013). Choosing adolescent smokers as friends: The role of parenting and parental smoking. *Journal of Adolescence*, *36*(2), 383–392. https://doi.org/10.1016/j.adolescence.2012.12.004

Mitchell, S. H. (1999). Measures of impulsivity in cigarette smokers and non-smokers. *Psychopharmacology*, *146*(4), 455–464. https://doi.org/10.1007/PL00005491

Myers, L. B. (2014). Changing smokers' risk perceptions for better or worse? *Journal of Health Psychology*, *19*(3), 325–332. https://doi.org/10.1177/1359105312470154

Nikcevic, A. V., & Spada, M. M. (2008). Metacognitions across the continuum of smoking dependence. *Behavioural and Cognitive Psychotherapy*, *36*(3), 333–339. https://doi.org/10.1017/S1352465808004293

Nosen, E., & Woody, S. R. (2014). Acceptance of cravings: How smoking cessation experiences affect craving beliefs. *Behaviour Research and Therapy*, *59*, 71–81. https://doi.org/10.1016/j.brat.2014.05.003

Pirie, K., Peto, R., Reeves, G. K., Green, J., Beral, V., Women, M., & Collaborators, S. (2013). The 21st century hazards of smoking and benefi ts of stopping : a prospective study of one million women in the UK. *The Lancet*, *381*(9861), 133–141. https://doi.org/10.1016/S0140-6736(12)61720-6

Spada, M. M., Caselli, G., Nikčević, A. V., & Wells, A. (2015). Metacognition in addictive behaviors. *Addictive Behaviors*, *44*, 9–15. https://doi.org/10.1016/j.addbeh.2014.08.002

Task Force on Community Preventive Services. (2001). Recommendations regarding interventions to reduce tobacco use and exposure to environmental tobacco smoke. *American Journal of Preventive Medicine*, *20*(2S), 10–15.

Tyas, S. L., & Pederson, L. L. (1998). Psychosocial factors related to adolescent smoking: A critical review of the literature. *Tobacco Control*, *7*(4), 409–420. https://doi.org/10.1136/tc.7.4.409

U.S. Department of Health and Human Services. (2000). *Healthy people 2010: Understanding and improving health*. Washington, DC: U.S. Department of Health and Human Services.