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Lei Yong, Wu Yuxuan

Faculty of Education Science, Sichuan Normal University
Chengdu, Sichuan, China

Institute of Special Education, Faculty of Education, Palacký University
Olomouc, Czech Republic

Smoking behaviours in teenagers – companion and relationship influence mediated by the self-control effect

Introduction

Nowadays youths have become a huge consumer group in the cigarette consumption market. A report by China's Ministry of Public Health in 2008 on smoking control concluded that among 130,000,000 teenagers (13–18 years old), 15,000,000 are smokers, and what's more, those who have attempted to smoke count over 40,000,000.

According to Fang, Li and Dong's survey in 1996, in primary and middle school twenty percent of the students have learned to smoke. Teenagers' smoking behaviour is directly related to their adult smoking behaviour. According to a survey by China's Ministry of Public Health, 75% of adult smokers start between the ages of 14–24. Currently, researchers are focusing on the reasons, factors, approaches, and treatment strategies related to teenagers' smoking behaviour. Some studies analyze smoking behaviour from the perspective of the social environment, and the results show that companions' smoking is one of the most important and stable factors (Flay et al., 1983). Companions are inclined to smoke if one teenager is a smoker (Conrad et al., 1992). Adolescence is the transition phase from childhood to adulthood, and relationships with companions have a unique role which cannot be replaced by adults during the teenager's developmental process (Fang, 1997). Cheng and Sang (2002) state that a companion is a person with the same or similar social cognition as the individual with whom he/she lives or studies together with. A companion group is often classified in two ways: as a one-way selection or two-way selection. One-way selection has two main forms: in the first, individuals choose a companion group by themselves according to their own situation; in the second, individuals determine their companion group according to some criteria, such as interests, hobbies, personalities, abilities, etc (Fang et al., 2001). Two-way selection is when individuals make the choice according to the wishes of both sides, and includes two kinds of methods: social measurement and network technology (Feng, 2009).

Researchers generally believe that companions can influence young people's development and adaptation (Brendgen, Vitaro, and Bukowski, 2000). Berndt et al.

(1989) point out that companions' influence on teenagers can be positive, but it also can be negative depending on the characteristics of the group of friends. A friend that doesn't behave badly can prevent the teenager from getting involved in anti-social behaviour (Brown, Lohr, and McClenahan, 1986). However, if the contrary is true (i.e. the friend exhibits negative behaviour), this can lead to the existence and development of bad behaviour (Elliott, Huizinga, and Ageton, 1985). Interactions between individuals and companions increase in adolescence. Since most teenagers live with companions, this provides a natural background for them to discuss their life or learn from each other (Fang, 1997). Compared to parent-child relationships, equality and mutual benefits, a lot of mutual understanding, and similarly developing task and emotional experiences produce many common communication topics between teenagers and companions (Fang, 1997). Furthermore, companions are an important form of support for the development of social psychology, and can provide a kind of important security for exploring a new environment (Berndt and Keefe, 1995). There are similar goals and expectations among companions, in particular, close friends and same sex companions (Hallinan and Williams, 1990). Some research results show that having contact with 'bad companions' is a powerful predictor of adolescent problematic behaviour (Hawkins, Catalano, and Miller, 1992; Moffitt, 1993).

When smoking for the first time, most teenagers are in the presence of their companions. Good friends have a greater impact on smoking behaviour than other peers and groups. Fang's (1997) results illustrate that an important factor of teenagers' smoking attempts is the number of smokers who are good friends. Unger et al. (2002) point out that 55.8% of teenagers who smoke obtained their first cigarette from classmates or friends; the smoking rate of good friends is 53.32% for smokers but 12.5% for non-smokers. According to the national survey conducted in 70 secondary schools in China in 1996, 50.8% of young smokers are impacted by their companions. It is more likely that teenagers smoke if their companions are in favour of smoking; the more companions that smoke, the greater the likelihood that the given youth will smoke, and vice versa (Fang et al., 2001). Bauman and Fisher (1986) find that there is a significant correlation ($p < .001$) of adolescent smoking behaviour with both the perceived or actual smoking behaviour of their companions. Mosbach and Leventhal (1988) believe that the group teenagers want to join is in accordance with their attitude and behaviour – different groups have different smoking rates. There is an extremely significant relationship between adolescent smoking behaviour and smoking by the best friend. In adolescence, the smoking rate of the best friend is 44.8%, whereas the non-smoking rate of the best friend is only 6.5% – the proportion of smoking is 7 times that of non-smoking (Urberg, 1992).

Kopp et al. (1982) define self-control as an individual's self-regulatory behaviour that matches the individual's values and social expectations, can stop or lead to specific behaviour, and controls the impulse of violating ethical standards. Posner and Rothbart (2000) propose the concept "effortful control" and consider it as a kind of ability – restraining a superior reaction and implementing an inferior reaction. Liu (1998) believes that children execute management and control on self-cognition, self-emotion, and self-behaviour, etc. according to social expectations and requirements. Wang and Chen (2004) define self-control as the ability to restrain

and manage self-cognition, self-emotion, and self-behaviour according to social standards, and see it as a kind of will. Self-regulation is a complex system that has its own unique structure. It is an internal mechanism that lets individuals guide their goal orientation with time and environmental change (Carver and Scheier, 2000). Low self-control can explain the relationship between teenagers' bad behaviour and other factors. For instance, teenagers with low self-control tend to choose teenagers for companions with the same low self-control. Gottfredson et al. (1990) illustrate that individuals with low self-control easily behave badly in bad contexts; they think low self-control is a chief factor that leads to bad behaviour. Zheng and Zhang (2007) find that the lack of self-control not only induces criminal actions, but also brings with it social consequences, for instance, difficulties in establishing social connections, tendencies to come into contact with bad companions, dealing with a lot of pressure, and so on. In this article, we define self-control as one's own active control of psychology and behaviour. It is a conscious choice without external supervision and comprises adjusting and controlling behaviour appropriately, inhibiting impulses, resisting temptation, and postponing satisfaction to achieve objectives. Teenagers' smoking behaviours can be influenced by companionship. Thus, an attempt will be made to investigate the mediating effect of self-control in teenagers.

In reference to the abovementioned theoretical background, the presented research was conducted to verify the following hypotheses: H1. There will be a significant distinction in gender and grade on the influence of companions' smoking and self-control; H2. There will be a significant correlation between the influence of companions' smoking and smoking behaviour; H3. There will be a significant correlation between smoking behaviour and self-control; H4. Self-control will be a mediating effect on the relationship between companions' smoking and teenagers' smoking behaviour.

Method

Our study adopts Feng's (2005) questionnaire of companions' influence on teenage smoking behaviour. The questionnaire's factors include: knowledge of companions' smoking, companions' smoking behaviour, pressure exerted by the companions, and smoking opportunities afforded by companions. The questionnaire uses a five-point scoring system: full compliance, rather in line with, uncertain, not consistent, and totally inconsistent.

The study uses certain questionnaires, such as the "Smoking Questionnaire" from the U.S. National Institute on Drug Abuse, and the "Youth Smoking Survey" from Fang (1996). The study also adopts the "Youth Self-Control Questionnaire" from Wang and Lu (2003). The questionnaire includes three dimensions: emotional self-control, behavioural self-control, and mental self-control.

Sample and survey administration procedures

In this study, samples were obtained from four middle schools in Chengdu City, Si Chuan province, China. All students were divided into 3 different grades: grade 2 in junior high school and grade 1 and grade 2 in senior high school. The questionnaires were given to students between the ages of 14–17. In total, 700 questionnaires were

obtained, all of which were recycled, maintaining the valid questionnaires after eliminating the invalid, with a recycling rate of 83.6%.

Results

In general, companions' smoking behaviour received the highest score and pressure exerted by companions got the lowest score (Table 1).

	knowledge of companion's smoking	companion's smoking behaviour	pressure exerted by companion	smoking opportunities afforded by companion	companion's influence
M	3.197	3.533	1.861	2.489	4.486
SD	1.005	1.103	.971	1.200	1.669

Tab. 1. Mean and standard deviation of companions' influence

To inspect gender and grade differences in companions' influence, an analysis of variance was conducted to examine interaction effects. The results are shown in Table 2.

	gender		grade		gender * grade	
	F	P	F	P	F	P
knowledge of companion's smoking	48.976	.000	3.367	.035	3.165	.043
companion's smoking behaviour	83.630	.000	8.249	.000	7.590	.001
pressure exerted by companion	40.362	.000	10.668	.000	2.120	.121
smoking opportunities afforded by companion	117.628	.000	21.332	.000	2.781	.063
companion's influence	107.311	.000	23.350	.000	4.530	.011

Tab. 2. Interaction of gender and grade on companions' influence

Gender differences in the influence teenagers' companions have are at an extremely striking level for the four factors. The differences in grades also stand out. The interaction of gender and grade is significant for the knowledge of companions' smoking, as well as companions' smoking behaviour and influence. However, pressure from a companion and the opportunity to smoke did not have a significant interaction.

The relationship between a companion's influence and smoking behaviour can be seen in Table 3. Four factors concerning companions' influence had a significant positive correlation with students' smoking behaviour.

	knowledge of companion's smoking	companion's smoking behaviour	pressure exerted by companion	smoking opportunities afforded by companion
smoking behaviour	.296**	.403**	.461**	.621**

** p<0.01

Tab. 3. Analysis of smoking behaviour and companions' influence

Multiple regressions were conducted to further explore the relationship between companions' influence and smoking behaviour.

	R	R2	Adjusted R2	F	standardized coefficient
smoking opportunities afforded by companion	.621	.386	.386	366.445***	.621***

*** p<0.001

Tab. 4. Multiple regression analysis of companions' influence and smoking behaviour

It can be seen from Table 4 that smoking opportunities afforded by a companion have the greatest influence – a positive prediction can be drawn from this.

Gender differences in self-control were found that were significant in three factors as well as in overall self-control (Table 5).

	gender		grade		gender * grade	
	F	P	F	P	F	P
emotional self-control	16.363	.000	1.418	.243	1.347	.261
behavioural self-control	21.146	.000	6.696	.001	.310	.734
mental self-control	4.067	.044	6.714	.001	.024	.976
overall self-control	18.374	.000	6.153	.002	.471	.624

Tab. 5. Interaction of self-control on gender and grade

As can be seen from Table 5, gender differences in self-control are significant in three factors and in overall self-control. Grade differences do not achieve a significant level in emotional self-control. Grade differences in self-control are significant for behavioural self-control, mental self-control, and overall self-control. An interaction of gender and grade does not achieve a significant level in three factors of self-control and overall self-control.

After the comparison of these three factors and overall self-control, the following is obvious:

- For behavioural self-control, junior grade 2 is significantly different from senior grade 1 and senior grade 2;
- For mental self-control, junior grade 2 is significantly different;
- For overall self-control, junior grade 2 is significantly different from senior grade 1 and senior grade 2;
- For emotional self-control, junior grade 2, senior grade 1, and senior grade 2 are not significantly different.

The study hypothesizes that teenagers will smoke due to their companions' influence. However, some students exhibit smoking behaviour, while others do not. Internal self-control might stop teenagers from being influenced by their companions' smoking behaviour.

Negative correlations were found between self-control and smoking behaviour (Table 6).

	emotional self-control	behavioural self-control	mental self-control
Smoking behaviour	-.239**	-.374**	-.230**

* ** p<0.01

Tab. 6. Analyses of smoking behaviour and self-control

Table 6 shows that emotional self-control, behavioural self-control, mental self-control, and smoking behaviour are negatively related.

A predictive function of behavioural self-control on smoking behaviour was found (Table 7).

	R	R2	Adjusted R2	F	net F	standardized coefficient
behavioural self-control	.374	.140	.140	95.061***	95.061	-.374***

***p<0.001

Tab. 7. Regression analyses of self-control and smoking behaviour

The analysis shows that behavioural self-control has the greatest influence on smoking behaviour and that it has a negative predictive function on the smoking behaviour of teenagers.

There is a relationship between companions' influence, self-control, and smoking behaviour.

In the same external environment, some youths exhibit smoking behaviour, while others do not. This indicates that the internal characteristics of teenagers should be taken into consideration when dealing with youths' smoking behaviour. This study assumes that self-control regulates the relationship between smoking behaviour and companions' influence.

A mediating effect of self-control on the relationship between companions' influence and smoking behaviour was found by exploring the relationship between companion's influence, self-control, and smoking behaviour (Table 8).

	emotional self-control	behavioural self-control	mental self-control	smoking behaviour
smoking behaviour	-.239**	-.374**	-.230**	1
knowledge of companion's smoking	-.111**	-.241**	-.150**	.296**
companion's smoking behaviour	-.191**	-.308**	-.195**	.403**
pressure exerted by companion	-.157**	-.342**	-.173**	.461**
smoking opportunities afforded by companion	-.278**	-.455**	-.299**	.621**

$p < 0.01$, $N = 585$

Tab. 8. Analyses of companions' influence, self-control and smoking behaviour

The results presented in Table 8 show that:

(1) Smoking behaviour and companions' influence in all factors has a significant positive correlation.

(2) Self-control and smoking behaviour are negatively correlated, and companions' influence and smoking behaviour are negatively correlated.

A mediating effect of self-control on the relationship between companions' influence and smoking behaviour was found. Mediating effects of the three self-control factors on the relationship between knowledge of companion's smoking and smoking behaviour were explored.

The results in Table 9 show that there are no mediating effects of self-control on knowledge of companion's smoking and smoking behaviour.

	Predictor variable	ΔR^2	F	B	t
First step: main effect	knowledge of companion's smoking				
	emotional self-control	.131	43.707***	-.208	-5.357***
	behavioural self-control	.185	66.174***	-.322	-8.348***
	mental self-control	.123	40.838***	-.190	-4.843***

Second step: mediating effect	knowledge of companion's smoking x emotional self-control	.131	29.103***	-.008	-.197
	knowledge of companion's smoking x behavioural self-control	.186	44.356***	.033	.878
	knowledge of companion's smoking x mental self-control	.123	27.199***	.009	-0.229

* p<0.05** p<0.01***p<0.001

Tab. 9. Mediating effect of self-control on knowledge of companion's smoking and smoking behaviour

However mediating effects of the three self-control factors on the relationship between companion's smoking behaviour and their own smoking behaviour were found.

The results presented in Table 10 show that emotional self-control and mental self-control have a mediating effect on companion's smoking behaviour and their own smoking behaviour.

	Predictor variable	ΔR^2	F	B	t
First step: main effect	companion's smoking behaviour				
	emotional self-control	.190	68.130***	-.168	-4.408***
	behavioural self-control	.232	87.758***	-.276	-7.235***
	mental self-control	.186	66.686***	-.157	-4.130***
Second step: mediating effect	companion's smoking behaviour x emotional self-control	.196	47.201***	-.080	-2.136*
	companion's smoking behaviour x behavioural self-control	.234	59.053***	-.046	-1.222
	companion's smoking behaviour x mental self-control	.192	46.060***	-.077	-2.024*

* p=.05** p=.01*** p<.001

Tab. 10. Mediating effect of self-control on companion's smoking behaviour and their own smoking behaviour

There were no mediating effects of the three self-control factors on the pressure exerted by a companion and smoking behaviour. The results in Table 11 show that there is no mediating effect of self-control on pressure exerted by a companion and smoking behaviour.

	Predictor variable	ΔR^2	F	B	t
First step: main effect	companion's pressure				
	emotional self-control	.241	92.303***	-.171	-4.662***
	behavioural self-control	.266	105.313***	-.246	-6.498***
	mental self-control	.236	89.797***	-.155	-4.218***

Second step: mediating effect	companion's pressure ^x emotional self-control	.243	62.075***	-.044	-1.212
	companion's pressure ^x behavioural self-control	.266	70.099***	-.006	-.160
	companion's pressure ^x mental self-control	.239	60.667***	-.053	-1.441

*** $p < 0.001$

Tab. 11. Mediating effect of self-control on pressure exerted by a companion and smoking behaviour

Mediating effects of the three self-control factors on the relationship between smoking opportunities afforded by a companion and smoking behaviour were positive (Table 12).

	Predictor variable	ΔR^2	F	B	t
First step: main effect	smoking opportunities afforded by companion				
	emotional self-control	.391	186.552***	-.071	-2.116*
	behavioural self-control	.397	191.236***	-.116	-3.198**
	mental self-control	.388	184.593***	-.049	-1.439**
Second step: me- diating ef- fect	smoking opportunities ^x emotional self-control	.392	125.111***	.043	1.323
	smoking opportunities ^x behavioural self-control	.403	130.882***	.083	2.557*
	smoking opportunities ^x mental self-control	.393	125.594	.074	2.244*

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Tab. 12. Mediating effect of self-control on smoking opportunities and smoking behaviour

It can be seen from Table 12 that behavioural self-control and mental self-control play a role in positively mediating the effect between smoking opportunities afforded by a companion and smoking behaviour.

Discussion

The main research aim was to investigate companions' influence and smoking behaviours in teenagers. Bandura's observed learning theory (1986) explains the relationship between companions' influence and smoking behaviour – there is very frequent contact among friends, who play an essential part in the life of teenagers. Therefore, companions' smoking behaviour, knowledge of smoking and smoking opportunities afforded by the companion, as well as inducing conduct for smoking set a learning example for smoking behaviour.

The means of pressure exerted by a companion are the lowest. Yang (2002) holds that when young people disobey social norms or social regulations, they tend to attribute it to external factors; they consider their own smoking behaviour to be subjected to companions' smoking behaviour or the opportunities for smoking afforded by their companions, never considering it as negative pressure exerted by their friends. An investigation among students who indulge in smoking shows that

students believe that smoking together is a part of social interaction, and rejecting this means being unsocial. Compared with a lack of a 'sense of belonging' because of being excluded, they consider the pressure to be lighter than the bad emotional experience.

Gender differences in companions' influence are extremely significant between total scores and the four factors – boys are impacted by companions' influence more than girls. This conclusion is consistent with other research results (Griesbach et al., 2003). The possible reason for this is that according to traditional Chinese society, male smoking behaviour is considered normal behaviour, which facilitates social contact with each other, and is a very effective way of releasing tension. However, female smoking is unacceptable because it always involves a bad impression and habits.

In terms of facing pressure (that is not in favour of smoking), boys are naturally less likely than girls. The study finds that smoking behaviour of individuals is impacted by companions in junior grade 2 more sufficiently than in the other two grades. The underlying reason may be related to the critical transition period of the younger youths.

Correlation analysis showed that the four factors of companions' influence have a positive correlation with smoking behaviour. Fang's (2001) study shows that the smoking behaviour of companions impacts the smoking behaviours of teenagers more significantly. We believe that the reasons for this are that knowledge of smoking behaviour shows attitudes toward smoking, which are moral judgments from the internalization of external standards. Students are at a significant point in time when they go against external authority (such as teachers, parents) and shape their own moral standards. They begin to form so-called reasonable moral judgments according to their own cultural values.

There is a positive predictive function between smoking opportunities afforded by companions and smoking behaviour. Maybe the reason for this lies in the fact that students probably find it hard to say no to their companions' advice concerning smoking. They consider that a rejection will hurt their feelings, and if they can't get along well with others their status will drop among their friends in the group.

Gender differences in self-control achieve a significant level on the three factors and the overall score, and even at an extremely significant level on emotional and behavioural self-control. Girls score higher than boys on self-control. The behavioural self-control of boys has a significantly lower score than girls, but girls' score on emotional self-control is significantly lower than boys. Yang and Song's (2000) study also shows that gender differences are significant in the development of self-control. Moreover, all differences in girls are more significant than in boys. The reason may be that girls are more sensitive to facing external factors, whereas males often exhibit behavioural problems. In addition, the physical development of boys and girls is totally different. We know that girls step into the physiological developmental stage earlier than boys, which makes the girls perform more maturely in many aspects of self-control.

Grade differences in self-control achieve a significant level among behavioural self-control, mental self-control, and the overall score of self-control, but the factor of emotional self-control does not. Wei's (2009) study also suggests that the main

effect of teenagers' self-control is manifested in two aspects – behavioural self-control and mental self-control, but does not show much in terms of emotional self-control. The reason may be that junior students are more susceptible to the influence of authority than senior students. They are also more willing to obey teachers and parents and constrain their behaviour by conforming to external social rules. However, the senior students' awareness of independence lets them not only depend on but also fight against authority.

Although there is no directly related research on self-control and youth smoking behaviour, research results on self-control and adolescent behavioural problems show that self-control factors have a universal influence on drug abuse in adolescents. The lower the self-control, the greater the chance of drug abuse, which supports the idea that low self-control causes youth drug abuse (Zheng and Zhang, 2007). Gifford (2002) considers that essentially, self-control is a selection process among behaviours of different values for individuals. Teenagers' smoking behaviour proves that they meet the characteristics of their group. According to Gifford's psychological mechanism of the self-control paradigm, students with lower self-control need to get compensation in a short time, which may be companions' appreciation, acceptance, or approval.

The results showed that behavioural self-control has a significant negatively predictive function for the smoking behaviour of teenage students. According to Gifford's theory, smoking behaviour of students is closely related to their low self-control behaviour. When their companions have actual smoking behaviour and persuade them to smoke, they will more likely choose smoking and be consistent with their companions' behaviour due to their own low self-control.

The higher the self-control scores, the less vulnerable an individual is to a friend's persuasion to smoke. Students with low self-control are more vulnerable to the companion's influence and select and develop smoking behaviour. The relationship between companions' smoking behaviour and teenagers' smoking behaviour will be weakened by enhancing students' emotional self-control and mental self-control. This means that if the companions are heavy smokers, their friends are more likely to smoke. But if students themselves have strong emotional and mental self-control, they will less likely be impacted.

Conclusions

The influence of companions' smoking is distinctly different according to gender and grade, and the same goes for self-control. There is a significant positive relation between the influence of companions' smoking and smoking behaviour, while self-control and smoking behaviour are negatively related. Behavioural self-control is a negatively predictive function for teenagers' smoking behaviour ($p < 0.01$). Emotional self-control and mental self-control have a negative mediating effect on the relationship between companions' smoking behaviour and teenagers' smoking. Behavioural self-control and mental self-control have a negative mediating effect on smoking opportunities afforded by a companion and teenagers' smoking behaviour.

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Abstract

Self-control can be defined as active control of one's own psychology and behaviour. It is a conscious choice without external supervision and comprises adjusting and controlling behaviour appropriately, inhibiting impulses, resisting

temptation, and postponing satisfaction to achieve objectives. Teenagers' smoking behaviour can be influenced by companionship. 700 participants were randomly chosen from middle schools. The results sustain the hypothesis that self-control partially mediates the relationship between students' smoking behaviour and companions' influence.

The influence of companions' smoking is distinctly different according to gender and grade. There are significant positive relations between the influence of companions' smoking and smoking behaviour, while self-control and smoking behaviour are negatively related. Behavioural self-control is a negative predictor of smoking behaviour in teenagers ($p < 0.01$). Emotional self-control and mental self-control have a negative mediating effect on companions' smoking and teenagers' smoking. Behavioural self-control and mental self-control have a negative mediating effect on the relationship between smoking opportunities afforded by companions and teenagers' smoking behaviour.

Palenie u młodzieży – wpływ relacji społecznych i towarzystwa zapośredniczony przez samokontrolę

Streszczenie

Samokontrola stanowi umiejętność aktywnego kontrolowania własnego zachowania. Polega na dokonywaniu świadomego, pozbawionego zewnętrznego przymusu, wyboru właściwego zachowania, hamowaniu impulsów, opieraniu się pokusie, odrzucaniu zadowolenia związanego z osiągnięciem celu. Grupa społeczna może wywierać wpływ na palenie papierosów u nastolatków. Przebadano 700 losowo wybranych uczniów ze szkół gimnazjalnych. Uzyskane wyniki potwierdzają hipotezę zakładającą, że samokontrola jest czynnikiem pośredniczącym w relacji pomiędzy paleniem przez uczniów a wpływem towarzystwa.

Wpływ palącego towarzysza jest wyraźnie zróżnicowany w zależności od płci i klasy szkolnej. Istnieje znaczący pozytywny związek pomiędzy wpływem palenia towarzysza a reakcją młodzieży, podczas gdy samokontrola i reakcja palenia są powiązane w sposób negatywny. Samokontrola behawioralna jest negatywnym predykatorem reakcji palenia u nastolatków ($p < 0.01$). Samokontrola emocjonalna i samokontrola poznawcza stanowią negatywne czynniki pośredniczące w relacji pomiędzy paleniem grupy rówieśniczej a paleniem badanych nastolatków. Samokontrola behawioralna i samokontrola poznawcza mają negatywny pośredniczący wpływ na relację pomiędzy dostępnymi sytuacjami palenia w towarzystwie a reakcją palenia nastolatków.

Address for correspondence:

Lei Yong or Wu Yuxuan

Institute of Special Education, Faculty of Education,

Palacký University, Zizkovo nam 5, 77140 Olomouc, Czech Republic

tianya 516888@yahoo.com.ch